

K&F SPECTRA 212



User's Manual

EN | Translation of the original instructions

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**Important Information,
Please Read Before Use!**

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1. Introduction

Thank you for purchasing a KLING & FREITAG product. To guarantee trouble-free operation and enable your KLING & FREITAG SPECTRA 212 system to achieve its full potential, please read this manual carefully before use. You will find that your K&F SPECTRA 212 is truly a versatile pro-grade tool that meets all requirements in terms of audio quality and safe installation.

1.1 Icons Used



This icon indicates a risk of injury or death. Not following these instructions may result in serious health problems including potentially fatal injuries.



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



This icon marks instructions for proper use of the described products. Not following these instructions may cause malfunctions or damage.



This icon marks information provided for simplified use of the described products.

1.2 About this user's manual

© KLING & FREITAG GMBH, all rights reserved.

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

We assume no responsibility for technical specifications, dimensions, weights, and properties.

All information in this manual is subject to change without notice.

To ensure safe operation, all persons using the system must have access to this guide and all other relevant material during installation. Don't set up or operate the system before you have carefully read and fully understood this manual. Keep the manual readily available on site at all times.

All KLING & FREITAG manuals are originally authored in German.

KLING & FREITAG spare manuals are separately available for order or can be downloaded

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2. Product Description

The K&F SPECTRA 212 is a compact 3-way speaker with equalization in two ways. Separate K&F power amplifiers are required for driving the speaker. The K&F SPECTRA 212 features a detachable midrange/tweeter unit that can be rotated by 90°. This allows for using it as a point source or – as part of an array – as a line source. The midrange/tweeter unit is mounted inside the enclosure using 14 grille-screws and two extra locking screws. To rotate the unit by 90° in order to change between point source and line source operation, first remove the 14 grille screws, the grille, and the locking screws, then align the unit as desired and replace all screws and the grille. In addition, use the switch at the rear panel to change between point source and line source operation.

With regard to its weight of 48 kg, two people are required for handling the K&F SPECTRA 212.

In point-source operation, the H/V beam width is 60° × +5/–25°. This allows for using a K&F SPECTRA 212 as a single high-performance top. The asymmetric vertical beamwidth simplifies orientation towards the audience and at the same time reduces unwanted ceiling reflections. In line source operation, the H/V beamwidth is 30° × 60°.

The connection system and the optionally available K&F rigging system allow for creating and suspending either a horizontal line of up to six K&F SPECTRA 212 or a vertical array of up to four K&F SPECTRA 212.

2.1 Intended Use

Be sure to use the SPECTRA 212 only with system amplifiers or controllers approved by KLING & FREITAG. The product is designed for permanent indoor use. You can also operate it in an outdoor setting if it is sufficiently protected against the effects of unfavorable weather conditions. This product is not designed for prolonged use in corrosive environments.

When using the optional K&F SPECTRA 212 subwoofer adapter, you can use K&F subwoofers as a pedestal provided the required stability is ensured. Refer to the manual for K&F SPECTRA 212 accessories for more information. The connection system and the optionally available K&F rigging system allow for creating and suspending either a horizontal line of up to six SPECTRA 212 or a vertical array of up to four SPECTRA 212. In outdoor use, if the product is suspended using the optional K&F rigging system, be sure to guy it and to end operation at wind forces of 8 bft or more. People may safely stand below the structure during operation.

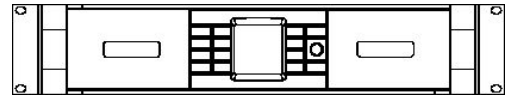
Installation and operation must be performed by qualified event technicians or appropriately trained persons. Planning must be performed and responsibility be taken by qualified personnel only.

Any other use not described in this document is not an intended use.

2.2 System Requirements for Operation

Recommendation:

K&F PLM+ 20k44 (SystemAmp, ProRental)
K&F PLM+ 12k44 (SystemAmp, ProRental)



or

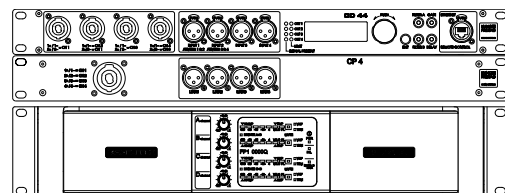
Recommendation:

K&F D200:4 (SystemAmp, InstallSound)
K&F D120:4 (SystemAmp, InstallSound)
K&F D80:4 (SystemAmp, InstallSound)



or

K&F SystemRack:



2.3 Items Included

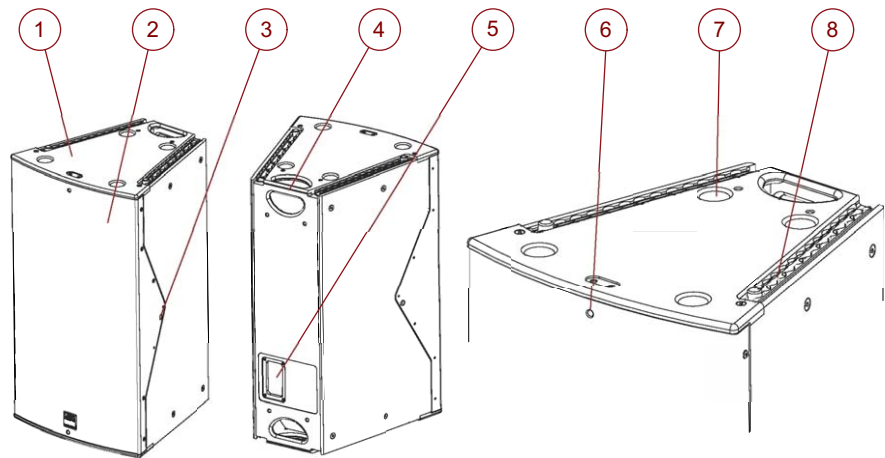
- (1x) K&F SPECTRA 212 speaker
- (1x) User's Manual



Tip

We recommend a SystemAmp of the K&F PLM+ series.

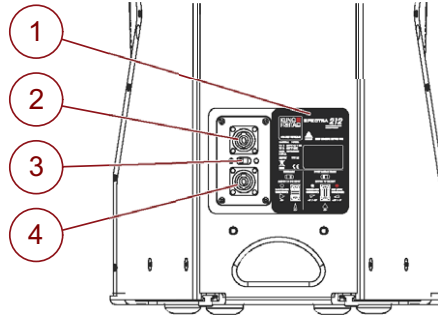
2.4 Components



1. Housing
2. grille
3. View port for mode detection of the 'K&F VariQ' unit
4. handle
5. Terminal
6. 'Camlock'-fixture for transportation cover
7. Stacking grooves at cover, adjacent: stacking feet at bottom
8. Flying bar

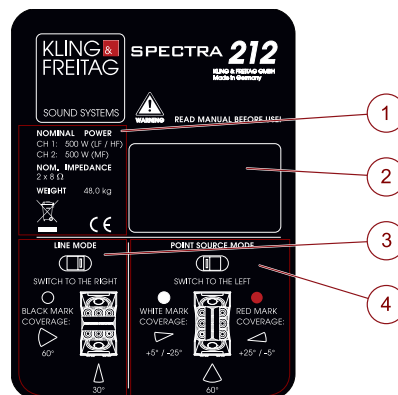
2.5 Connectors and Controls

The operating panel of the K&F SPECTRA 212 provides the following controls and connectors:



1. Labels with typ- and switch disclaimer
2. SpeakOn port 1
3. Switch for 'point source' and 'line source' adjustment
4. SpeakOn port 2

2.6 Label



1. Technical specifications for loudspeaker
2. Serial number
3. Short description switch position 'Line Mode'
4. Short description switch position 'Point Source' mode

3. Safety Instructions

3.1 Instructions for Speaker Placement



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

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

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

3.2 Safety Instructions for Stacked Speakers



Tipping speakers impose a deadly risk for people standing near-by!

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

Always make sure that the speakers are sufficiently secured, so they cannot fall over even when external forces affect the speaker stack. Before installation, carefully check whether there are any external factors that may cause the stack to fall over. These include, for example, the ground slope or bearing capacity, winds, and impacts of persons or vehicles. Qualified and appropriately trained installation personnel are in charge of evaluating the scenario and performing all required steps (including statics analysis). Proof of stability must be obtained if and as necessary.

Stacked systems must not fall over even if they are inclined by 15° in any direction. If this requirement is not fulfilled, be sure to take appropriate steps. E.g. lashing the

Where the stability of installed systems cannot be proven without additional safety measures, those systems must be effectively secured against sliding and tipping to achieve compliance. For example, secure the system against tipping using water tanks or floor bolts. Other possible measures include lashing the speakers onto a suitable base or fastening them using straps.

With applications where winds may occur, for example, outdoor events, tradeshowes, etc., be sure to perform extra stability checks.

Make sure that the feet of stacked subwoofers engage with the corresponding hollows of the lower speaker.

3.3 Preventing Hearing Damage



Keep your distance from operating speakers. This equipment is capable of delivering sound pressure levels in excess of 90dB SPL, which may cause permanent hearing damage.

3.4 Protecting the Speakers, Reliability

Notice

Be sure to connect the K&F SPECTRA 212 speaker to a K&F SystemAmp or a K&F SystemRack.

Never feed audio at excessive levels to the speaker. This may be caused by mixing consoles, equalizers, effect equipment, etc. and should be indicated on this equipment. Clipping at the power-amp output is typically shown by a red clipping indicator. In any case, be sure to lower the signal level once it sounds distorted.

For damage caused by

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

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

Signals that may damage the speakers include the following:

- Continuous high-volume signals at high frequencies, continuous audio feedback
- Continuously distorted signals at high levels
- Sounds occurring when connecting, disconnecting, or switching on a device on the audio system while the speaker is on

Never place your speakers

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

Damage Caused by the Speaker's Magnetic Fields

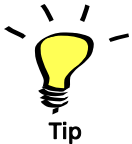
Even when not connected, loudspeakers continuously produce a magnetic field. Therefore, when transporting or placing the speaker, be sure to keep a minimum distance of about 1 meter between the speaker and magnetic disks or computer/video displays.

4. Setup and Beamwidth

The K&F SPECTRA 212 supports various setups ranging from single use to arrays of up to six speakers.

To change between line source and point source and thus also the coverage angle of the speaker, you need to remove the grille and rotate the K&F VariQ unit by 90°. The VariQ unit incorporates the tweeters and the midrange speakers and is installed as a compact assembly in the enclosure.

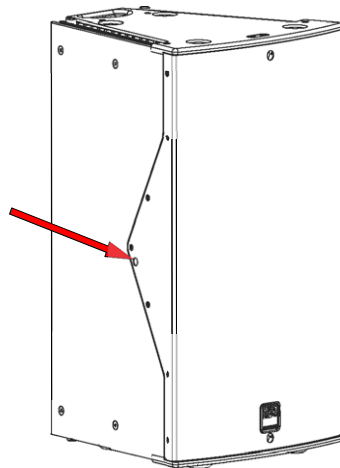
4.1 Line source, Point source



Tip

To confirm the current VariQ installation, you **don't** need to remove the grille.

An opening at the side allows for viewing the color code of the current speaker beamwidth.



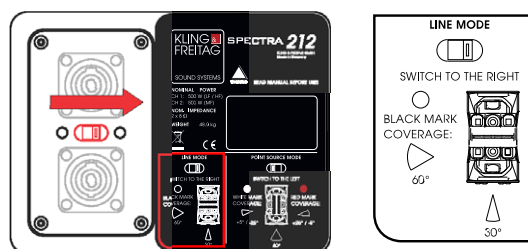
- **black:** The K&F VariQ is configured for the line source mode. The symmetric H/V beamwidth is $60^\circ \times 30^\circ$.
- **white:** The K&F VariQ is configured for the point source mode. The H/V beamwidth is $60^\circ \times 30^\circ$. Vertically, it radiates asymmetrically with $+5^\circ / -25^\circ$ **downtilt**.
- **red:** The K&F VariQ is configured for the point source mode. The H/V beamwidth is $60^\circ \times 30^\circ$. Vertically, it radiates asymmetrically with $+25^\circ / -5^\circ$ **uptilt**.

The K&F SPECTRA 212 is factory-preset to the 'line source' mode. If desired, the K&F SPECTRA 212 can also be delivered in point source mode.

4.1.1 Operating mode: LineSource

Use the **line source** mode whenever you want to configure multiple K&F SPECTRA 212 as an array. How many K&F SPECTRA 212 you intend to interconnect or whether you will use subwoofers or not is not relevant.

Terminal, K&F SPECTRA 212:



Switch set to the right
Horizontal beamwidth: 30°
Vertical beamwidth: 60°

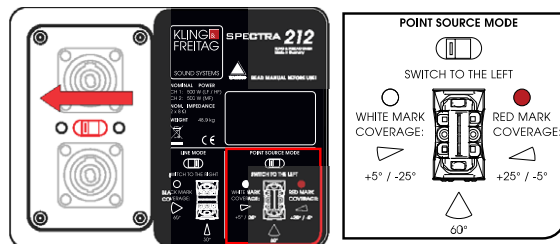
4.1.2 Operating mode: Point source

Use the **point source** mode whenever you want to use the K&F SPECTRA 212 as a single top. This is regardless of whether or not you use a subwoofer.

For single use, you need to rotate the K&F VariQ unit as appropriate (see chapter "Rotating the VariQ Unit" on page 14) and to set the switch on the operating panel to the left.

With applications where the audience area is higher than the speaker, you can flip the coverage angle without rotating the speaker by 180°. In that case, the speaker covers an angle of +25° and -5° at a 10° upwards pre-tilt.

Terminal, K&F SPECTRA 212:



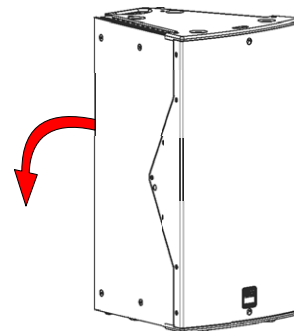
Switch set to the left
Horizontal beamwidth: 60°
Vertical beamwidth:
30° (-25° to +5°) or
30° (-5° bis +25°)

4.2 Rotating the K&F VariQ Unit

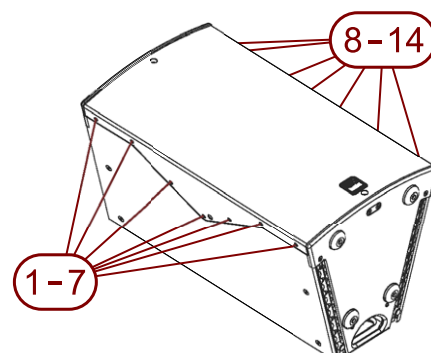
Before changing the configuration, use the side opening to confirm the current coverage mode of the K&F VariQ unit.

By rotating the VariQ unit by 90°, you effectively swap the vertical and horizontal coverage angles.

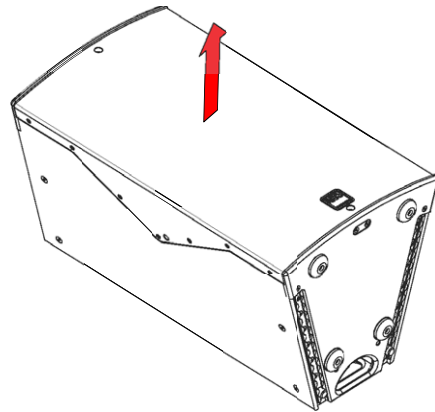
- 1) Remove all cabling as necessary and carefully place the K&F SPECTRA 212 speaker on its backside.



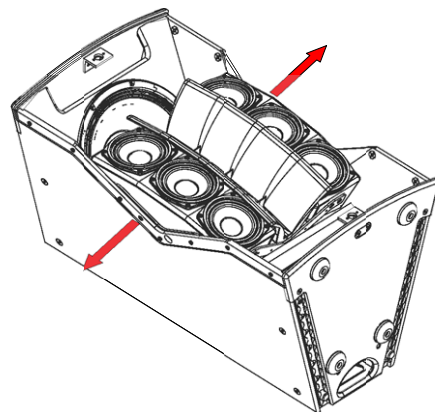
- 2) Unscrew and remove the seven grille screws from both long sides of the speaker.



- 3) Remove the grille.

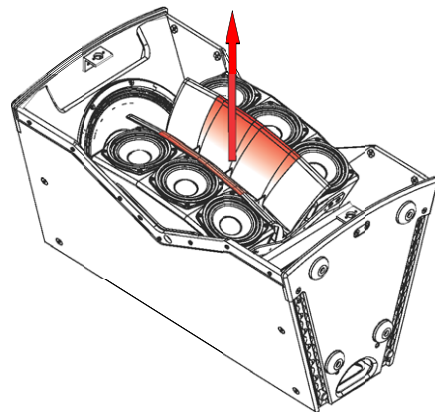


- 4) On both sides of the speaker, unscrew and remove the screw holding the K&F VariQ unit.

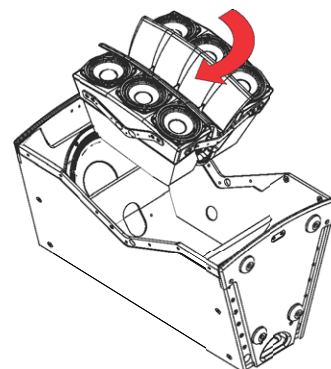
**Notice**

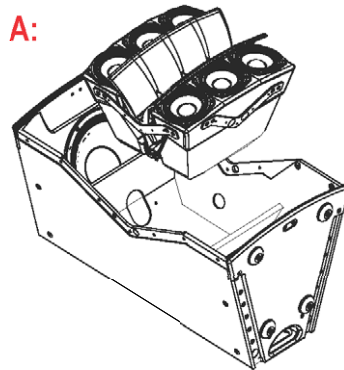
- 5) If you have to lay down the K&F VariQ unit during the speaker conversion, turn it 180° downwards and place it exclusively on its front side, i.e. on its waveformer.

Take the waveformer of the K&F VariQ unit with both hands and slowly and carefully pull the unit vertically from the chassis.



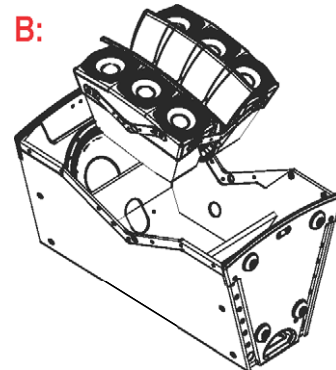
- 6) Note that the connecting cable to the K&F VariQ unit may get disconnected when removing the unit from the chassis. In this case, be sure to reconnect the cable. Rotate the K&F VariQ unit as required:





Orientation of the K&F VariQ unit for line source operation:

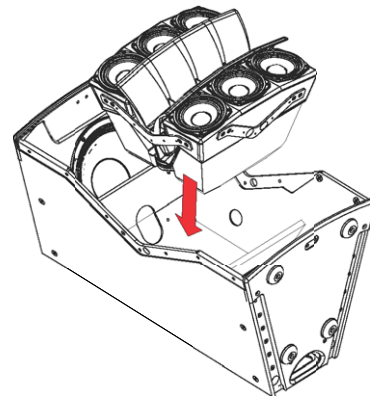
- Horizontal beamwidth: 30°
Vertical beamwidth: 60°
(required for array operation)



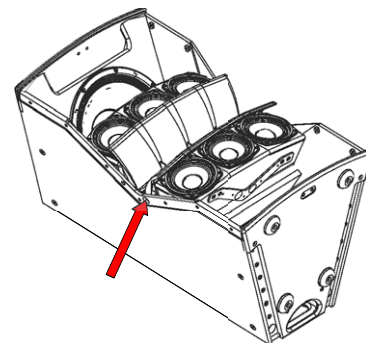
Orientation of the K&F VariQ unit for point source operation:

- Horizontal beamwidth: 60°
Vertical beamwidth: 30° asymmetrical
-10° pre-tilt
- or:
Horizontal beamwidth: 60°
Vertical beamwidth: 30° asymmetrical
10° pre-tilt

- 7) When replacing the K&F VariQ unit, make sure it is not jammed. Re-insert the unit into the chassis slowly and carefully.

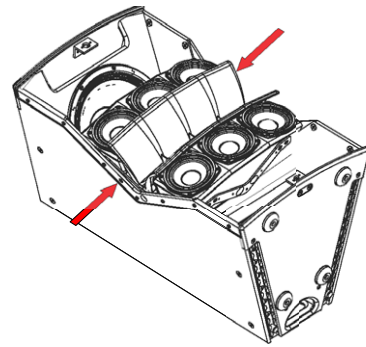


- 8) Check the K&F VariQ unit is positioned in the enclosure as intended in your configuration by looking through the opening in the enclosure. Compare the color you see through the opening in the enclosure with the color list in the chapter 'Line Source, Point Source' starting on page 13 in this manual.

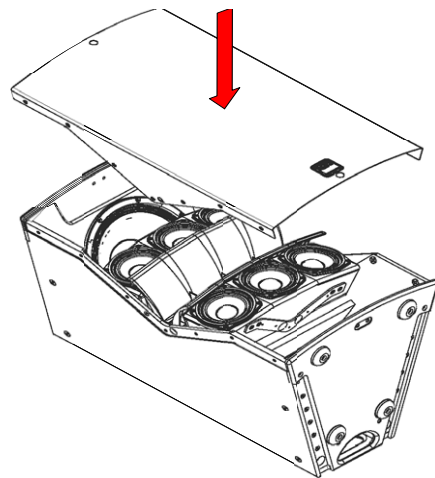




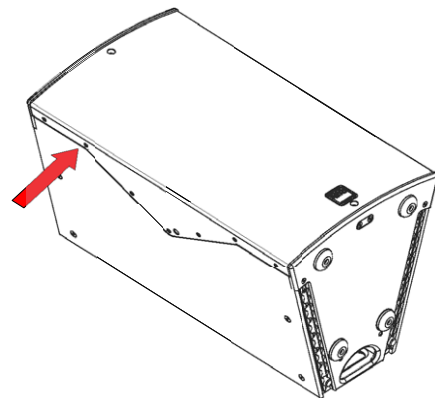
- 9) To prevent damage to the inside threads, confirm that you can see the threads in the K&F VariQunit from outside through the mounting bore.
- If you want to use the K&F SPECTRA 212 as a line source in full-range mode, configure the speaker for the line source mode as described in chapter 'Operating mode: Line source' at page \$\$.
- Replace the previously removed screws to fasten the K&F VariQ unit.
- Tighten the screws lightly by hand.



- 10) When aligning the grille, make sure that the K&F logo is at the bottom. Put the grille into position.



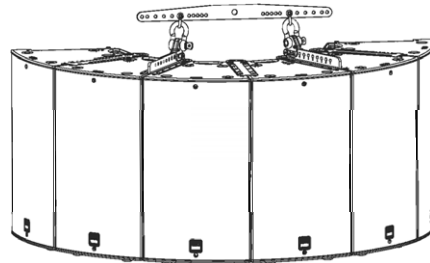
- 11) Risk of thread destruction due to incorrect screw placement!
- Always make sure that the grille edge fully lies on the enclosure surface and be sure to screw the screws in fully vertically to the enclosure side.
- Fully** press the entire grille edge onto the enclosure while screwing in.



5. Horizontal and vertical arrays

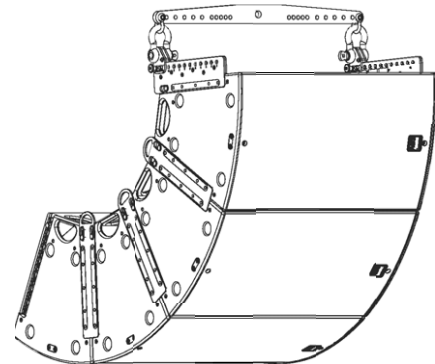
You can fly K&F SPECTRA 212 speakers either separately or as an array. With an array of K&F SPECTRA 212 speakers, you can choose between horizontal (A) and vertical (B) orientation.

A)



Horizontal array: 6 x K&F SPECTRA 212 speakers max.

B)



Vertical array: 4 x K&F SPECTRA 212 speakers max.

Be sure to configure arrays of K&F SPECTRA 212 speakers only using K&F SPECTRA 212 Flybar Connector horizontal or K&F SPECTRA 212 Flybar Connector vertical. For more information, refer to the rigging system manual of the K&F SPECTRA 212 speaker.



Warning

K&F SPECTRA 212 speakers have to be flown by qualified personnel (riggers) only. For instructions for flying speakers, handling arrays, pickpoint tables, and other information, refer to the "K&F SPECTRA 212 Rigging" manual. The manual is available for free download on our website at www.kling-freitag.de.

Never exceed the maximum number of speakers allowed.

The maximum number of speakers allowed in a horizontal array (A) is six (6).

The maximum number of speakers allowed in a vertical array is four (4).

With horizontal arrays, the maximum number of speakers allowed means that the horizontal coverage angle adds to 180° (max.).

With vertical arrays, the maximum number of speakers allowed means that the horizontal coverage angle adds to 120° (max.).

6. Wiring

Notice

- Before connecting your K&F SPECTRA 212 speaker, switch off all devices and turn down all faders and encoders.
- Be sure to use high-end speaker cables with an appropriate wire gauge. Select the wire gauge with regard to the cable length.
Min. Wire Gauge (mm²) = Req. Cable Length (m) / (2xSpeaker Impedance (Ohm))
- To connect the mixing console to the power-amp inputs, use shielded 2-pole balanced microphone cables equipped with quality connectors.
- Avoid creating ground loops.
- Be sure to follow the pinouts shown in this manual.
- Check for correct polarity of the speaker links to the power amplifier.
- Upon completing wiring, ensure that the connected speaker channels are working in phase, for example, using a phase tester. When the connected channels are used simultaneously, you can identify out-of-phase statuses by bass cancellation or mid-frequency signals (e.g. voices) that cannot be located properly.
- When connecting multiple speakers, you can daisy-chain the signal from one speaker to the next. Make sure that the total impedance of all speakers connected to an amplifier does not fall below the minimum impedance specified for the amplifier. **$1/R1 + 1/R2 + 1/R3 + \dots = 1/R_{total}$**



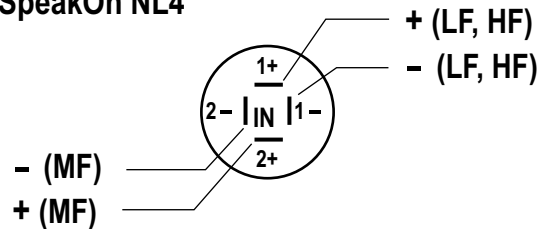
Speaker-signal currents are potentially hazardous to the human body.

When the system is in use, make sure that the connectors are secured against inadvertent touch.

6.1 Terminal assignment

Speakon connector

SpeakOn NL4



7. Initial Operation

Notice

- Switch off all devices and turn down all volume controls on the mixing console and the amplifiers.
- Wire your K&F SPECTRA 212 systems as described in this manual.
- Switch on the devices in the following order: **first** the mixing console, then the controller and finally the power amplifiers! Be sure to observe this power-up sequence at all times. Otherwise switching noises may damage the system.
- If you hear noise, turn off all devices in reverse order, then check all cable connections.
- Turn up all amplifier channels one after another and output a low-volume signal to the system. Check to see if the desired signals are applied to the intended speakers and make sure there is no interference.
- With amplifiers with insufficient input-stage headroom, you may not always be able to prevent distortion by reducing the power-amp volume controls. In this case, the clipping indicator may not light when clipping actually occurs! To prevent damage to the speakers, we recommend fully turning up the power-amp volume controls, then carefully turn up the volume on the mixing console or controller or reduce the limiter threshold of the controller as appropriate in order not to overload the amplifiers.
- When turning off the system, first turn down the amplifier input controls. Next, power down the amplifiers, then turn off the remaining devices.

8. Setups and Connection Diagrams

The K&F SPECTRA 212 speaker system is designed and constructed as a top. When using it as a main sound-reinforcement system, we recommend using an additional K&F subwoofer.

Our recommendation is using K&F subwoofers from the K&F NOMOS range.

Example configurations:

- (1x) K&F SPECTRA 212
(1x) K&F NOMOS LS2
(1x) K&F NOMOS LT
- 3 x SPECTRA 212
(3x) K&F NOMOS XLT

All setups depend on their intended use, the required beamwidth, and the on-site conditions.

8.1 Setup 1: 1x K&F Spectra 212 point source in full-range mode

If you want to use the K&F SPECTRA 212 as a point source in full-range mode, configure the speaker for the point source mode as described in chapter 'Operating mode: Point source' at page 14. Select the appropriate preset on the K&F SystemAmp or K&F SystemRack. When wiring your system, be sure to assign the channels correctly (see page 19).

Presets:

K&F SystemAmp:	SPECTRA 212 PS FR
K&F SystemRack:	Spec212 PS FR

8.2 Setup 2: 1× K&F SPECTRA 212 point source with additional subwoofer

If you want to use the K&F SPECTRA 212 as a line source in combination with a subwoofer, be sure to configure the VariQ unit properly. Select the appropriate preset on the K&F SystemAmp or K&F System-Rack. When wiring your system, be sure to assign the channels correctly (see page 19).

Presets:

K&F SystemAmp:

SPECTRA 212 PS LCut

To ensure optimum load distribution on the K&F SystemAmp, we recommend using channels 3 and 4 for the K&F SPECTRA 212 and channels 1 and 2 for the subwoofers.

K&F SystemRack:

Spec212 PS LC

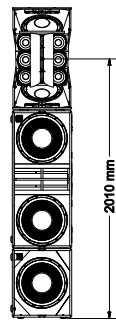
By default, the crossover frequency between the subwoofer and the top is 100 Hz. If you prefer a lower frequency (for example, the subwoofer and the top will be located relatively far apart from each other), you might want to select the full-range mode for the K&F SPECTRA 212 while feeding the subwoofers in 60-Hz mode.

Suggested configurations include:

(1x)
K&F SPECTRA 212
(Point Source)

(1x)
K&F NOMOS LT

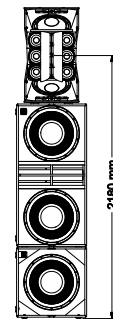
(1x)
K&F NOMOS LS2



(1x)
K&F SPECTRA 212
(Point Source)

(1x)
K&F NOMOS XLT

(1x)
K&F NOMOS XLS



8.3 Setup 3: 2× K&F SPECTRA 212 line source in full range mode

Presets:

K&F SystemAmp:

SPECTRA 212 LS FR

With a cluster of 2 setup, enable the switchable Cluster of 2 filter in the Input EQ of the K&F SystemAmp.

K&F SystemRack:

2xSpec212 LS FR

8.4 Setup 4: 3x SPECTRA 212 line source with additional subwoofer

If you want to use the K&F SPECTRA 212 as a line source in full-range mode, configure the speaker for the line source mode as described in chapter 'Operating mode: Line source' at page 13. Select the appropriate preset on the K&F SystemAmp or K&F SystemRack. When wiring your system, be sure to assign the channels correctly (see page 19). You can link up to three K&F SPECTRA 212 in parallel. The resulting overall load impedance is 2.7 Ohm per channel.

Presets:

K&F SystemAmp:

SPECTRA 212 LS LCut

With a cluster of 3 setup, enable the switchable Cluster of 3 filter in the Input EQ of the K&F SystemAmp.

K&F SystemRack:

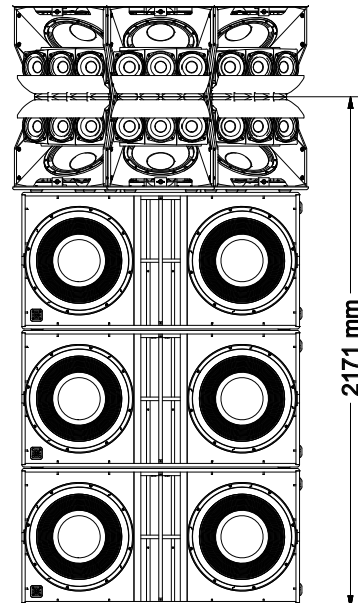
3xSpec212 LS LCut

By default, the crossover frequency between the subwoofer and the top is 100 Hz. If you prefer a lower frequency (for example, the subwoofer and the top will be located relatively far apart from each other), you might want to select the full-range mode for the K&F SPECTRA 212 while feeding the subwoofers in 60-Hz mode.

Suggested configurations include:

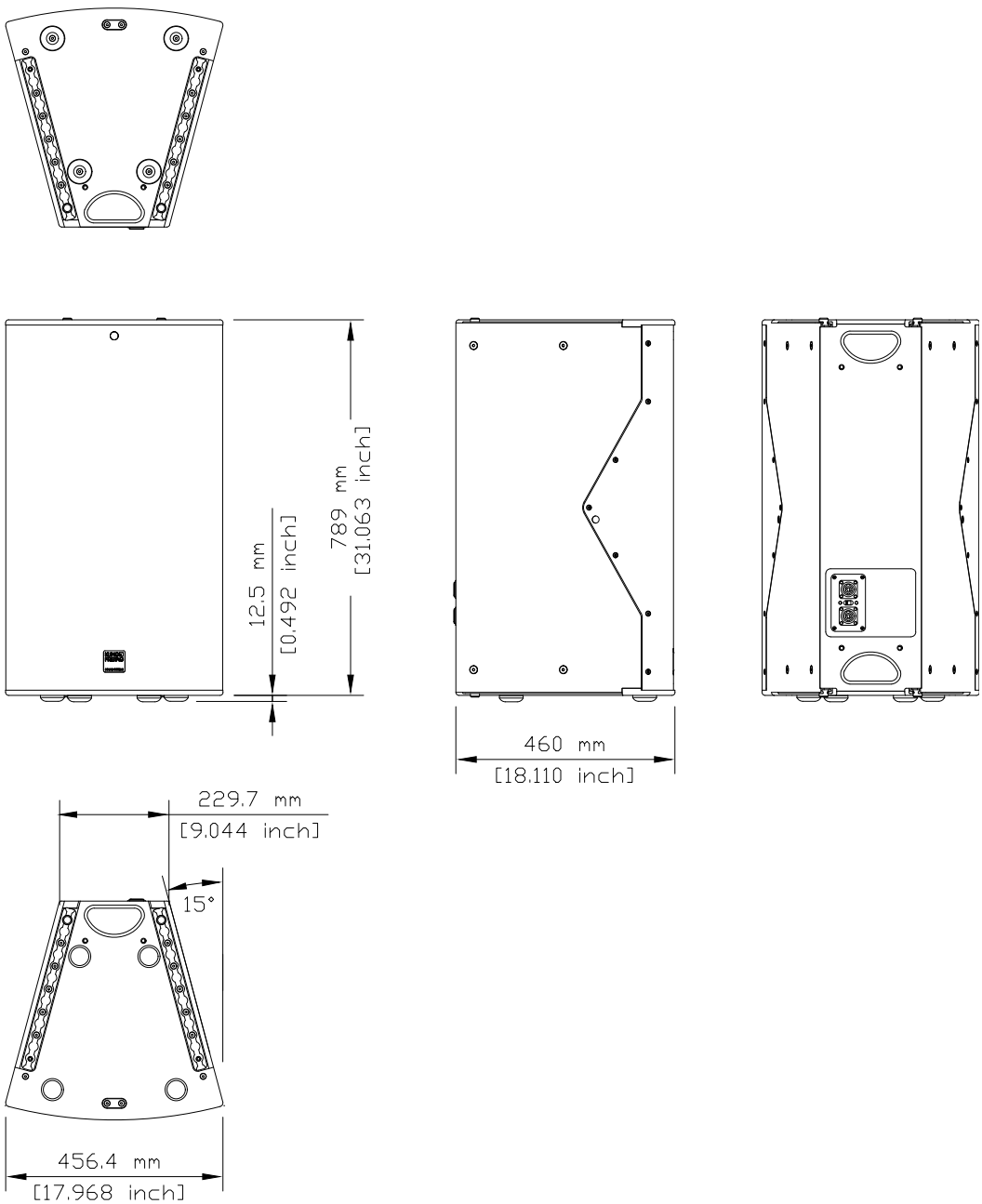
(3x)
K&F SPECTRA 212
(Line Source)

(3x)
K&F NOMOS XLT



9. Dimensions and Weight

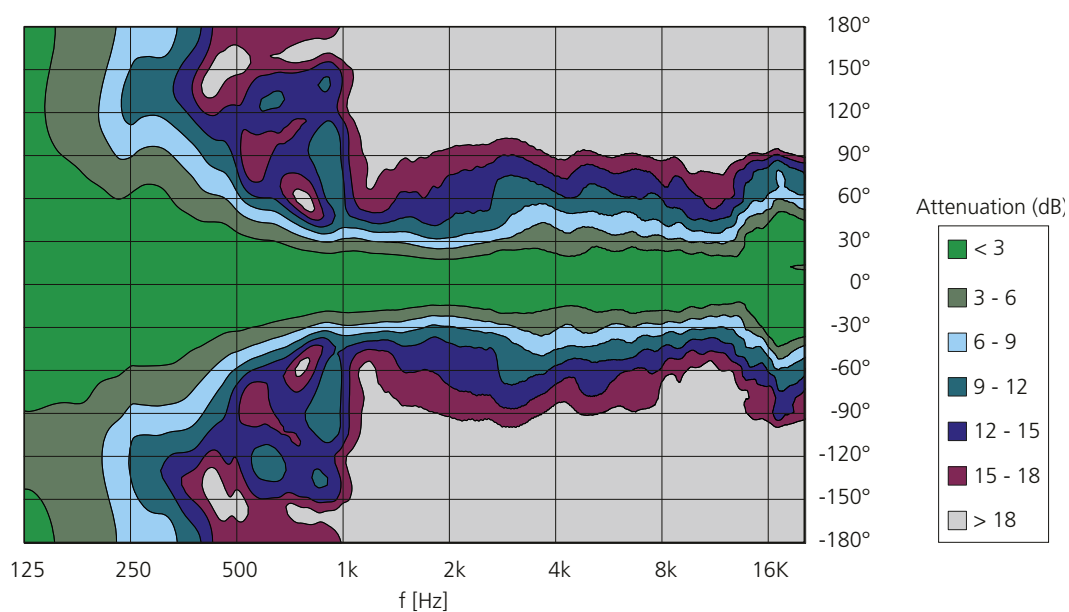
Weight: 48 kg



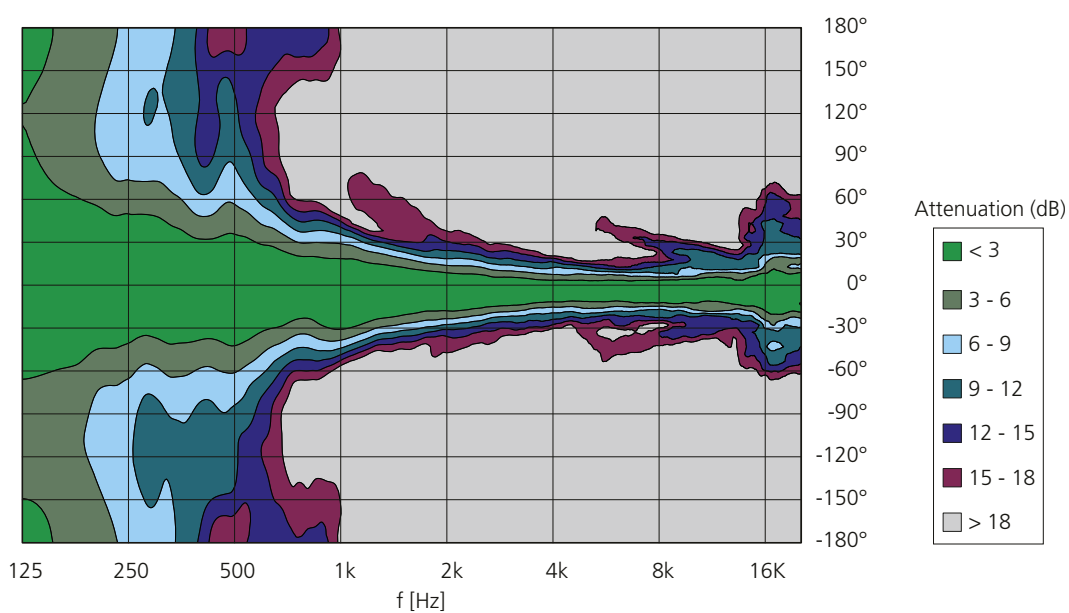
10. Measuring Diagrams

10.1 Point Source Mode

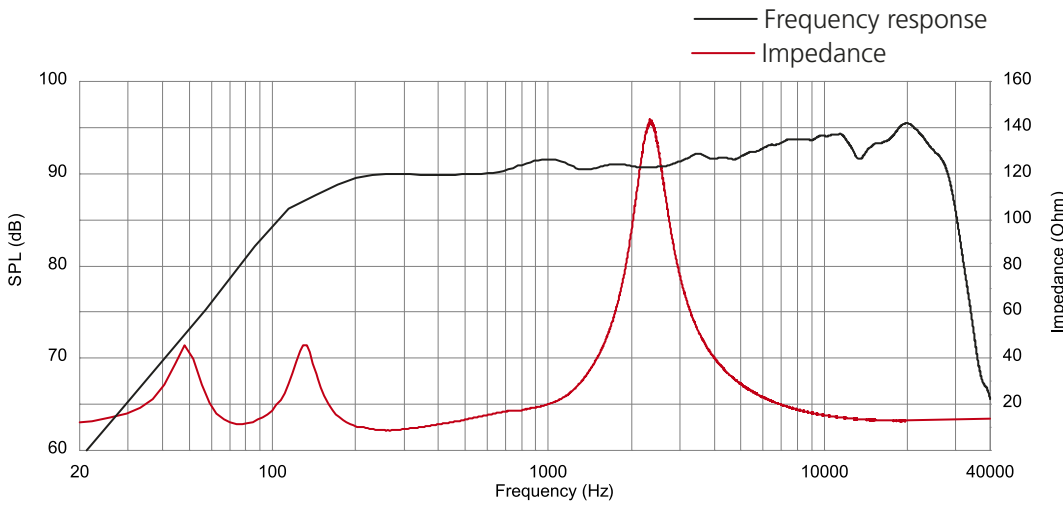
10.1.1 Point Source Mode, horizontal coverage



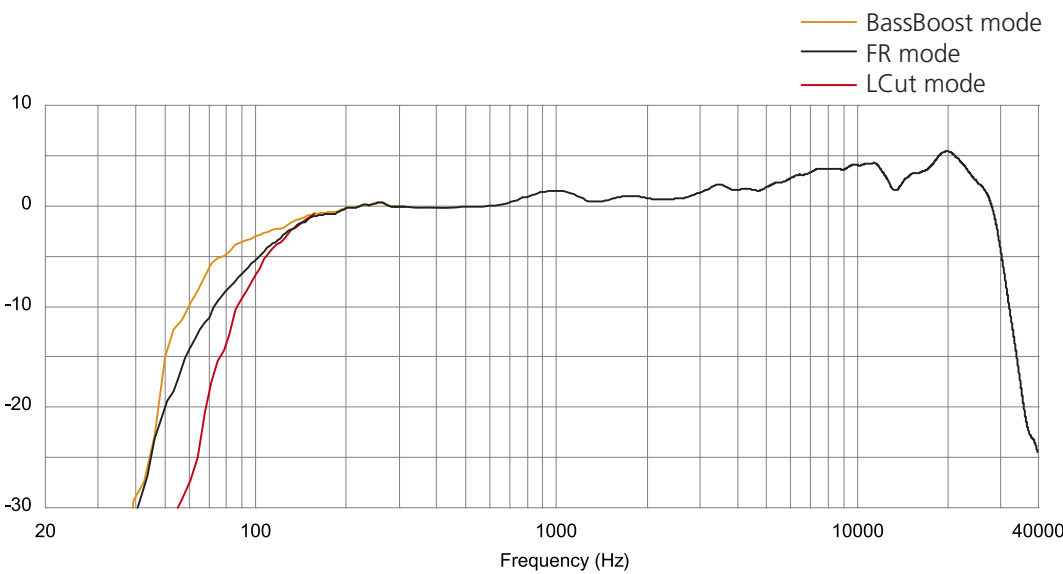
10.1.2 Point Source Mode, vertical coverage



10.1.3 Point Source Mode, frequency coverage, linear

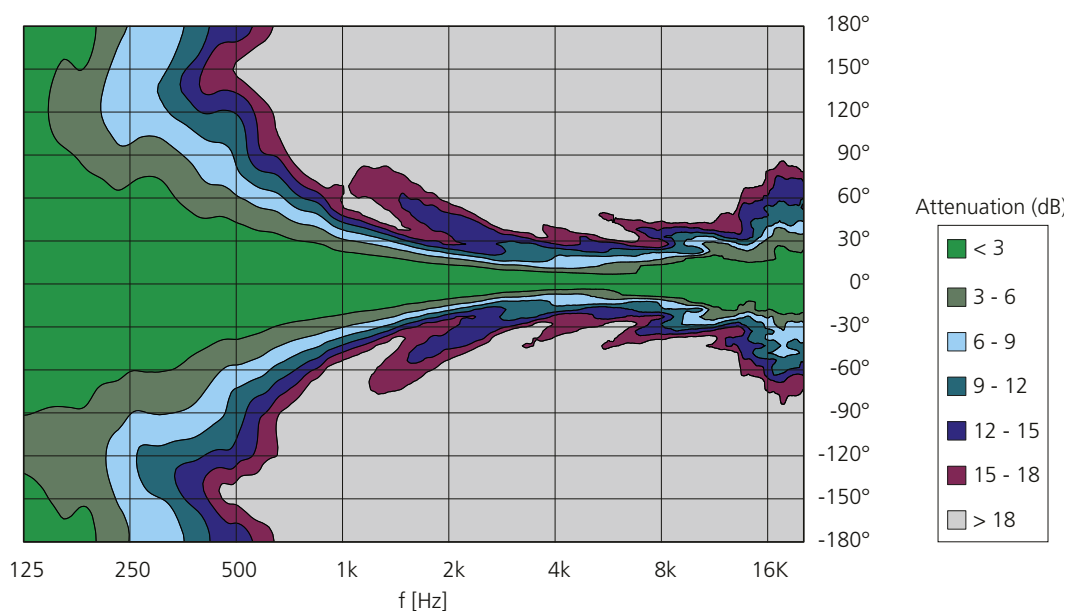


10.1.4 Point Source Mode, frequency coverage, SystemAmp

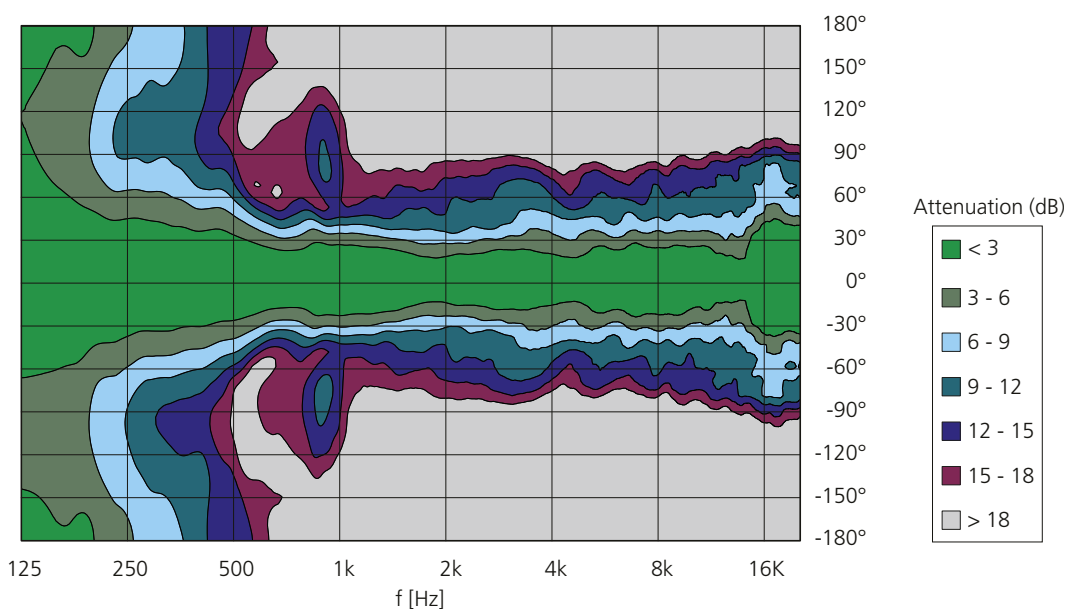


10.2 Line Source Mode

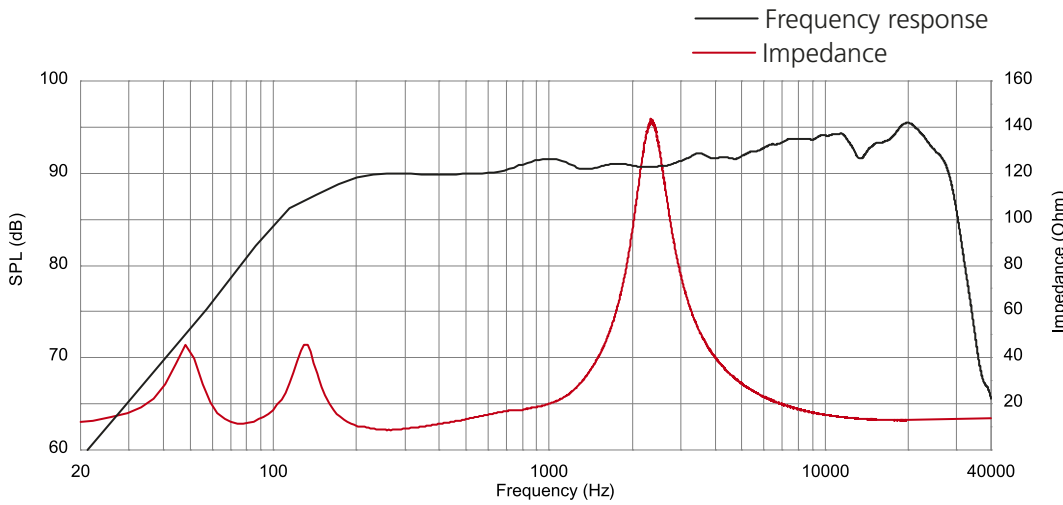
10.2.1 Line Source Mode, horizontal coverage



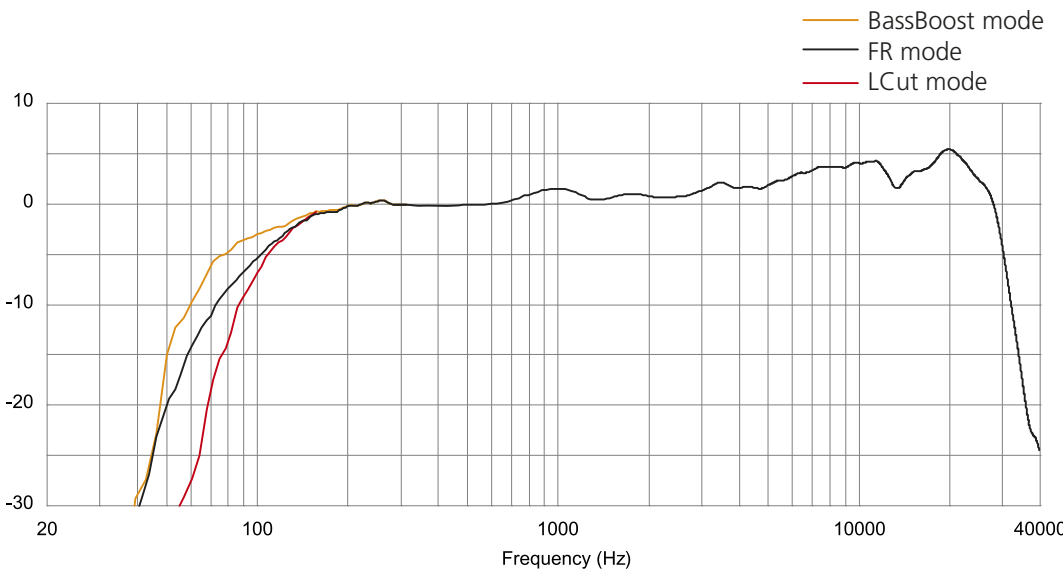
10.2.2 Line Source Mode, vertical coverage



10.2.3 Line Source Mode, frequency coverage, linear



10.2.4 Line Source mode, frequency coverage, SystemAmp



11. Technical Specifications

K&F SPECTRA 212

Concept	Passive 3-way system, 2-way active equalized, LF bass reflex, MF Closed, HF waveformer horn loaded
Supported amplifiers	K&F PLM+ Serie, K&F D-Serie (recommended) K&F SystemRack (supported)
Frequency range @-10 dB	70 Hz – 20 kHz
Frequency range @±3 dB	86 Hz – 18 kHz
Coverage angles nominal (hor. x vert.)	Line Source: 30° x 60° Point Source: 60° x +5°/-25° Convertible trough rotation of the K&F VariQ unit
Power handling	500 watts
Program load	1,000 watts
Peak load	2,000 watts
SPL (1 m, max.)	Point Source: 141 dB SPL (1x) Line Source (30°): 143 dB SPL (2x) Line Source (60°): 145 dB SPL (3x) Line Source (90°): 146 dB SPL (4x) Line Source (120°): 147 dB SPL
Impedance (nominal)	2 x 8 Ohm
Speakers / channels	2 per channel recommended, max. 3 per channel
Components	(2x) 12" LF, (6x) 5" MF, (4x) 1" HF
Connection	SpeakOn NL4 (1+/- LF+HF, 2+/- MF)
Enclosure	
	Frame-reinforced 15 mm Multiplex enclosure with 30° angle for ideal cluster setups with highly resistant Polyurea synthetic coating in black, convertible between line source and point source through rotation of integrated VariQ unit, integrated flying track system, ergonomic handles on top and bottom for horizontal and vertical transport, sunk-in connector panel, 4 non-abrasive plastic sliding feet on bottom, ball proof steel grille with black acoustic foam behind the grille.
Dimensions (W x H x D):	497 mm x 299 mm x 469 mm
Weight	48.0 kg
Color	black
Options	'special finish in RAL colours'

12. EC Declaration of Conformity

EG-Konformitätserklärung

(Declaration of EG-Conformity)



Hersteller:

(Manufacturer)

Kling & Freitag GmbH
Junkersstraße 14
30179 Hannover
Deutschland

**Bevollmächtigter
für die Zusammenstellung der
technischen Unterlagen:**

(Authorized representative
for the compilation of technical
documents)

Kling & Freitag GmbH
Abt. Entwicklung
+49 (0)511 / 96997-50
Deutschland

Produkt:

(Product)

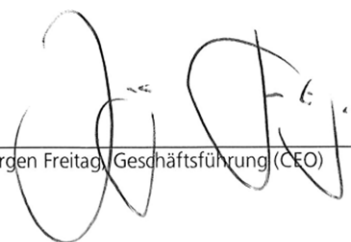
**Lautsprechersystem
K&F SPECTRA 212**

**Wir erklären, dass das genannte Produkt den aufgeführten Schutzanforderungen der
folgenden EG-Richtlinien entspricht:**

(We declare that the designated product is in conformity with the protection requirements imposed by the following EU directives:)

- 2014/35/EU, Niederspannungsrichtlinie (Low Voltage Directive)
- RoHS II 2011/65/EU, Richtlinie zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment)

Hannover, 26.7.2018



Jürgen Freitag, Geschäftsführung (CEO)

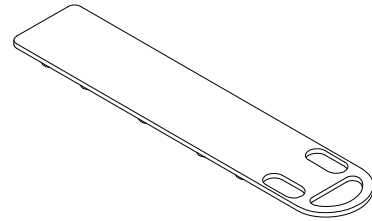
13. Accessories

K&F SPECTRA 212 Connector

Connecting element between two K&F SPECTRA 212

Allows for creating a horizontal array from several K&F SPECTRA 212.

Weight: 1.3 kg

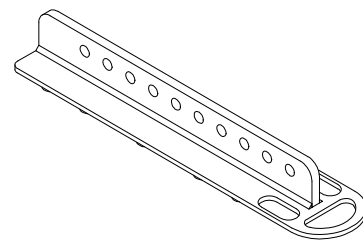


K&F SPECTRA 212 Flybar Connector horizontal

Connecting element between two K&F SPECTRA 212 with fixture for K&F SPECTRA 212 flybar and K&F VIDA L load adapter

Allows for creating a horizontal array from several K&F SPECTRA 212.

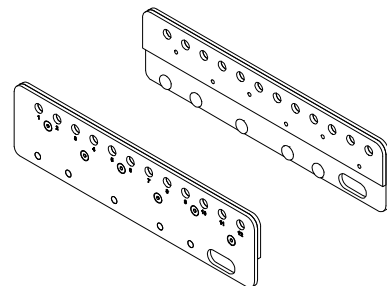
Weight: 2.6 kg



K&F SPECTRA 212 Flybar Connector vertical

For installation at the top K&F SPECTRA 212 speaker to adapt the K&F SPECTRA 212 flybar for a vertical array.

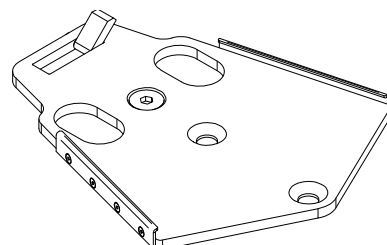
Weight: 4.5 kg



K&F SPECTRA 212 Subdapter

For mounting a K&F SPECTRA 212 onto a K&F subwoofer

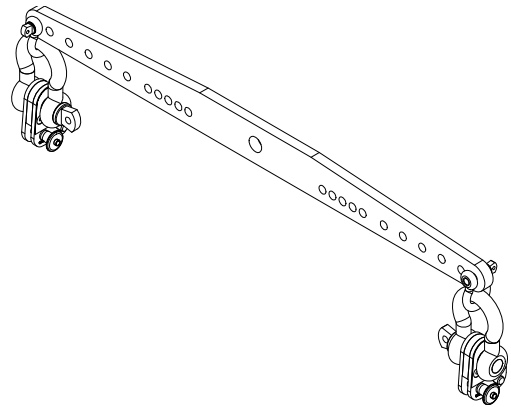
Weight: 3.1 kg



K&F SPECTRA 212 Flybar

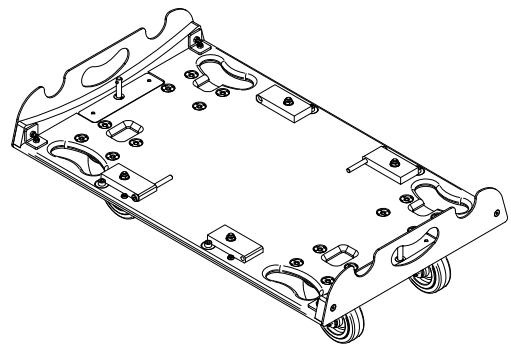
Connector for a single strand suspension of a K&F SPECTRA 212 array, in conjunction with 'K&F SPECTRA 212 Flybar Connector horizontally' or with 'K&F SPECTRA 212 Flybar Connector' vertically.

Weight: 7.4 kg

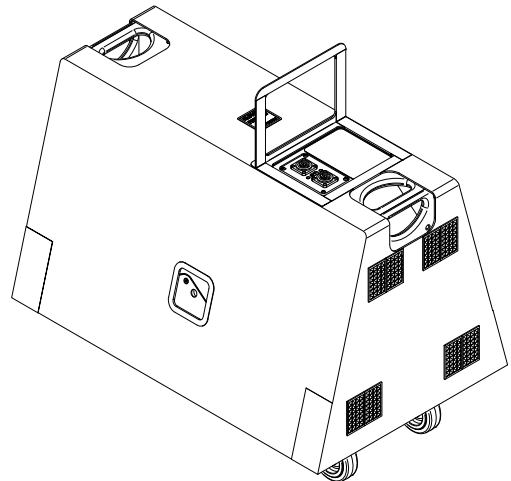
**K&F SPECTRA 212 Transport Cover**

Transport with castors for the safe transport of a K&F SPECTRA 212 loudspeaker and for a more comfortable setup of a vertical K&F array.

Weight: 11.3 kg

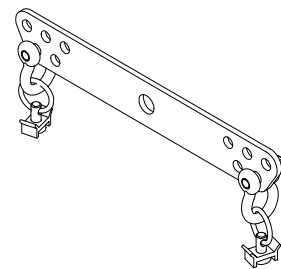
**K&F SPECTRA 212 Protective Cover**

Weatherproof protective cover for the transport of a K&F SPECTRA 212 loudspeaker.

**K&F SPECTRA 212 Single Bar (1 item)**

Connector for a single strand suspension of a single K&F SPECTRA 212 loudspeaker.

Weight: 1.0 kg



K&F Single Stud Fitting

Used for fastening to the fly track for a **two-strand** suspension of a single speaker. (2 pieces per single speaker necessary!)

**K&F Rotation Clamp 450**

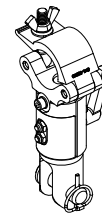
With 50-mm clamp for mounting to a truss or pipe (diameter: 48 – 51 mm)

A 60-mm version of the K&F 450 swivel clamp is also available.

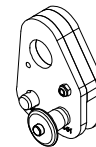
Weight:

50 mm type: **2,9 kg**,

60 mm type: **3,1 kg**

**K&F VIDA L Load Adapter**

Used for mounting on a 'K&F SPECTRA 212 Flybar Connector Horizontal' or 'K&F SPECTRA 212 Flybar Connector vertikal'.



14. Care and Maintenance



For the owner and user, it is mandatory to be aware of the safety relevance of speakers that can be flown. The K&F SPECTRA 212 system can exhibit signs of wear over the years, for example, from mechanical strain, transport damage, corrosion, or improper handling. Remember that flying speakers always impose a high safety risk.

Be sure to always perform a visual inspection of the speaker and all accessories before and after installation. In stationary installations, check the speaker and accessories for signs of wear at regular intervals.

When performing those checks, particularly look for deformations, cracks, dents, damage to threads, and corrosion. Also check slings and lifts (e.g. shackles, chains, and steel ropes) carefully for wear and deformation.

If as a result of these checks any uncertainty should arise with regard to safety or defects are found, don't use the speaker any longer.

Inspection regulations may vary depending on application and country of use. Observe all applicable regulations; If in doubt, contact local authorities.

Many countries require regular inspection of mounting components and accessories. An additional annual inspection is typically required to be performed by a technical expert. Moreover, a legally certified or official authority must perform a detailed inspection every four years.

Therefore, be sure to maintain an inspection log. Enter the values determined for each speaker and accessory during the periodic checks into this log. This way, relevant data are always at hand in case of inspection. This inspection log book shall be updated with the inspection steps, test intervals and parts lists.

The polyurea coating utilized by KLING & FREITAG is shock-resistant and highly resilient. We recommend using protective coverings or transport cases to help avoid damaging the paint in case of continuous mobile use, etc.

To have the acoustic foam replaced, send the grille including the foam layer to KLING & FREITAG GMBH. We will then replace the foam layer with a new one at a fixed charge and return your grille.

15. Transportation and Storage

The K&F SPECTRA 212 system is protected against the effects of unfavorable temporary weather conditions, etc.; despite, be sure to store, transport, and use the accessories in dry environments only. The K&F SPECTRA 212 is not designed for prolonged use in corrosive environments.

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

In order to prevent damage, please make sure to avoid mechanical strains.

To protect the speaker from the above impacts, we recommend using the optional soft cover and suitable transport and storage cases.

16. Disposal

Please recycle the packaging material of the device.

16.1 Germany

Don't dispose of waste electrical equipment through household waste.

Don't deliver it to official recycling points either.

All KLING & FREITAG products are plain business-to-business (B2B) products. Therefore, KLING & FREITAG GmbH is exclusively responsible for disposing of all KLING & FREITAG waste equipment marked with a crossed-out garbage-can icon. Please call the below phone number when you have a KLING & FREITAG product (marked with the crossed-out garbage-can icon) for disposal. We will offer you a straightforward and professional disposal at no cost.



KLING & FREITAG equipment with no such icon was distributed before 24 March 2006; in that case, the owner is legally responsible for disposal. We will, however, gladly assist you by naming appropriate ways of disposal.

For further disposal information of KLING & FREITAG waste products, call +49 511 -96 99 7 -0

Explanation: The Electrical and Electronic Equipment and Appliances Act (ElektroG) is the German implementation of the European (EU) Waste Electrical and Electronic Equipment Directive (WEEE, 2002/96/EC).

Therefore, starting on 24 March 2006, KLING & FREITAG GmbH has marked all products subject to the WEEE that are distributed in Germany with an icon showing a crossed-out garbage can with a white bar below it. The icon indicates that the equipment was distributed on or after 24 March 2006 and must not be disposed of through household waste.

KLING & FREITAG GmbH is legally registered as a manufacturer with the German waste-equipment registration authority (EAR). Unsere WEEE-Reg.Nr. lautet: DE64110372.

We substantiated towards the EAR that our products are for B2B trade only.

16.2 EU, Norway, Iceland, and Liechtenstein

Don't dispose of waste electrical equipment through household waste.

Starting on 13 August 2005, KLING & FREITAG GMBH has marked all products subject to the WEEE directive that are distributed in any member state of the European Union (except Germany), Norway, Iceland, or Liechtenstein with an icon showing a crossed-out garbage can with a white bar below it.



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.

The local distributor (sales partner) in the respective country is responsible for complying with the applicable legislation.

Contact your retailer or the local authorities for information on the regulations applicable in any EU member state (except Germany).

16.3 All Other Countries

Contact your retailer or the local authorities for information on the regulations applicable in any country not listed above.

Translated version of the original SPECTRA 212
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Junkersstrasse 14
D-30179 Hannover
Germany
www.kling-freitag.de
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