

# K&F PASSIO and K&F PASSIO W



## User's Manual

Translation of the original instructions

Version 3.2

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

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## Table of contents

<b>1</b>	<b>Introduction</b>	<b>5</b>
1.1	Icons Used	5
1.2	About this Manual	5
<b>2</b>	<b>Product Description</b>	<b>6</b>
2.1	Items Included	6
2.2	Components	6
2.3	Required Tools	6
<b>3</b>	<b>Safety Instructions</b>	<b>7</b>
3.1	Mounting the Speakers / Wall and Ceiling Installation	7
3.2	Instructions for Speaker Placement	7
3.3	Preventing Hearing Damage	7
3.4	Protecting the Speakers, Reliability	7
<b>4</b>	<b>Arrayed Speaker (Cluster)</b>	<b>9</b>
<b>5</b>	<b>Wiring Instructions</b>	<b>10</b>
<b>6</b>	<b>Initial Operation</b>	<b>10</b>
<b>7</b>	<b>Setups and Connection Diagrams</b>	<b>11</b>
7.1	Use with Controller CD 44	11
7.1.1	Controller Mode 'Full-Range'	11
7.1.2	Operations with Controller and Subwoofer	12
7.1.3	Controller Mode with Subwoofer in Overlap Mode	13
7.1.4	Controller Mode with Subwoofer in 1-Channel Mode	13
7.2	Passive Mode (without Controller)	14
<b>8</b>	<b>Dimensions</b>	<b>15</b>
<b>9</b>	<b>Measuring Diagrams</b>	<b>16</b>
9.1	Measuring Diagrams K&F PASSIO	16
9.1.1	Frequency range K&F PASSIO	16
9.1.2	Coverage K&F PASSIO	17
9.2	Measuring Diagrams K&F PASSIO W	18
9.2.1	Frequency range K&F PASSIO W	18
9.2.2	Coverage K&F PASSIO W	19
<b>10</b>	<b>Technical Specifications</b>	<b>20</b>
<b>11</b>	<b>EC Declaration of Conformity</b>	<b>21</b>
<b>12</b>	<b>Accessories</b>	<b>22</b>
<b>13</b>	<b>Care and Maintenance</b>	<b>25</b>
13.1	Inspection Regulations	25
13.2	Replacing the Front Foam	25

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<b>14</b>	<b>Transportation and Storage</b>	<b>26</b>
<b>15</b>	<b>Disposal</b>	<b>26</b>
<b>15.1</b>	<b>Germany</b>	<b>26</b>
<b>15.2</b>	<b>EU, Norway, Iceland, and Liechtenstein</b>	<b>26</b>
<b>15.3</b>	<b>All Other Countries</b>	<b>27</b>

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## 1. Introduction

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

### 1.1 Icons Used



Warning



Caution



Tip

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 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 from our website: [www.kling-freitag.de](http://www.kling-freitag.de).

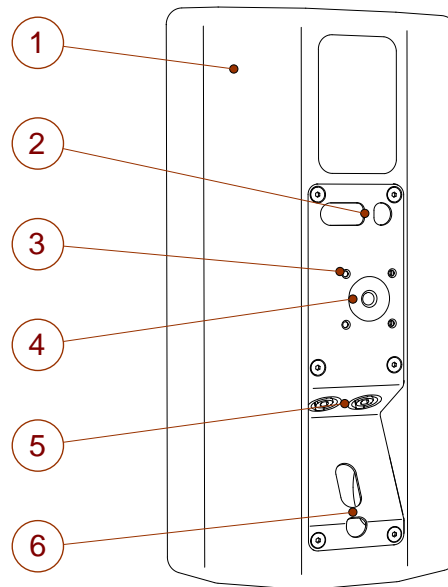
Contact Us: [info@kling-freitag.de](mailto:info@kling-freitag.de)  
KLING & FREITAG GMBH, Junkersstr. 14, D-30179 Hannover  
Phone +49 511 96 99 70, fax +49 511 67 37 94 (other countries)

## 2. Product Description

### 2.1 Items Included

- Speaker with integrated mount for optional fastener with Pin-Joint Adapter or Adjustable Speaker Mount.
- (1x) User manual

### 2.2 Components



1. **Loudspeaker enclosure**, hightech moulding material (flame retardant class V0 according to UL94) with textured paint finish
2. **1st safety bar** for 5 mm chain quick link (quick link not included in purchased parts package).
3. **Locking hole** for aligning the optional accessory 'Adjustable Speaker Mount PASSIO' and 'Pin-Joint Adapter PASSIO' in 90° intervals.
4. **Mounting point K&F VariPoint** for mounting the optional accessory 'Adjustable Speaker Mount PASSIO' or 'Pin-Joint Adapter PASSIO' - uses M10 bolt or the quick connector K&F 'Fixing Pin'.
5. **(2x) Speakon connector** 4-pin NLT4MP (parallel)
6. **2nd safety bar** for 5 mm chain quick link (quick link not included in purchased parts package).

### 2.3 Required Tools

For front foam replacement: 2.5 mm Allen key

### 3. Safety Instructions

#### 3.1 Mounting the Speakers / Wall and Ceiling Installation



**Warning**

Suspended loads pose a safety risk.

Only qualified technicians are permitted to perform the installation steps. Be sure to use personal protective equipment at all times.

The technicians installing the speaker on site are responsible for and guarantee safe setup and use.

Never use signal cables or power cords for suspending, aligning, or securing the systems.

Before installing, check the stability, strength, and materials of walls, ceilings, and boarding. For example, use suitable rawlplugs for wall panels and make sure the strength is sufficient.

Note that the suspension points on the hall ceiling (i.e. shackles, attachment points, or chain hoists) must comply with the DGUV regulations 17 or similar locally applicable accident-control standards. The maximum load must have been certified by an authorized expert.

Be sure to tighten all bolts and screws to the specified torque.

Unless otherwise stated, use only KLING & FREITAG original parts for mounting the speakers. Never use other parts (in particular, parts not made by KLING & FREITAG).

Make sure all fittings used are suitable for the task at hand and meet all relevant safety requirements.

Ensure that all connections are secured against coming loose and that only authorized, statically tested and correctly sized supports, mounting equipment, wire ropes and chains are used.

Be sure to always visually inspect all safety-related speaker and accessory components before use. If there are signs of wear, cracks, or deformation, etc., replace the affected parts immediately. Visual inspection also includes checking all screwed connections of supporting components.

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

#### 3.2 Instructions for Speaker Placement



**Warning**

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.

Run the cables in a way that nobody can trip over them.

#### 3.3 Preventing Hearing Damage



**Caution**

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**

Never feed audio at excessive levels to the speaker. Mixing consoles, equalizers, effect units, etc. can produce clipping; excessive levels are normally visible on meters and through indicators. We, therefore, recommend turning up the power amplifiers all the way and adjusting the level before the power amplifier in order to avoid overloading the input circuit. In any case, be sure to lower the signal level once it sounds distorted.

**Operations without K&F SystemRack:**

- To protect the speakers from being destroyed and to avoid fire hazard, they should only be operated with professional power amplifiers with a maximum rated output power of 600 W @ 8 Ohm.
- If power amplifiers have power ratings lower than 300 W @ 8 Ohm, then it is imperative that the amplifiers have clipping limiters. Alternately, you can also insert a clipping limiter before the amplifier.
- Power amplifiers can also be overloaded at the input circuit without the amplifier signalling the clipping, i.e. when there is not sufficient headroom in the input circuit.
- To protect the loudspeaker from mechanical damage when high SPL is required a highpassfilter of 24 dB/oct. at 60 Hz has to be inserted into the signal chain.

**Operations with K&F SystemRack:**

- For optimal performance and operating safety of the K&F PASSIO/K&F PASSIO W speakers we recommend using the K&F SystemRack.
- Clipping at the power-amp output is typically shown by a red clipping indicator.

**For damage caused by**

- overloading the speakers or
  - using power amplifiers with other than the recommended maximum output power
- we do not assume warranty and excludes liability for possible consequential damage.

**Signals that may damage the speakers include the following:**

- clipping power amplifiers
- 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.

**Avoid damage caused by the speakers' magnetic fields**

Even when not connected, loudspeakers continuously produce a magnetic field. Therefore, during transport and placement of the speakers, it is important to ensure that there is a sufficient distance between the speakers and magnetic data media and computer/video monitors (except flat panels).



## 4. Arrayed Speaker (Cluster)

If the loudspeakers are operated through K&F system controller, we recommend to use the switchable filter 'cluster' for this operation. So you can optimize the frequency response for this application.

When operating the systems without any K&F system controller, you should decrease the frequencies below 300 Hz for 3-4 dB.


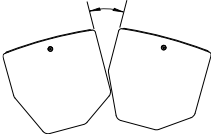
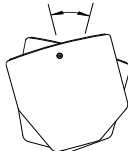

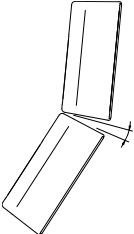


**Caution**

Mount the speakers securely. To avoid injury or damage, always be sure to mount the speakers securely so that they do not fall. Speakers, which are stacked, must be secured. When laying the connecting cables, make sure that nobody can trip.



Take note of the enclosure angles of each 6° at the top and bottom.

	 standing speakers 	 	 A smaller angle 3 results in a smaller vertical coverage angle but increases the sound power level.
<b>Combination</b>	<b>Angle 1</b>	<b>Angle 2</b>	<b>Angle 3</b>
PASSIO with PASSIO	35°	45°	20° - 30°
Setup:	Increasing the horizontal coverage angle, e.g. for wide audience areas	Increasing the horizontal coverage angle and sound pressure level for larger distances	Increasing the vertical angle, e.g. for covering balconies

## 5. Wiring Instructions

### Notice

- Before connecting your K&F PASSIO/K&F PASSIO W 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.
- 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. When using amplifiers by different manufacturers, make sure the pinout is correct. If necessary, consider modifying the amplifier or connector pinouts as required.
- 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.  $1/R_1 + 1/R_2 + 1/R_3 + \dots = 1/R_{total}$

## 6. Initial Operation

### Notice

- Switch off all devices and turn down all volume controls on the mixing console and the amplifiers.
- Wire your K&F PASSIO/K&F PASSIO W 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. Failing to do so may result in switch-on noise that may damage your 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 whether the audio is properly routed to the appropriate speakers. Make sure no noise is heard through those speakers.  
**Controller operation:** The SIGNAL indicators of the CD 44 controller will light when the output level exceeds -45 dB. Your system is now ready for operation.
- 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.

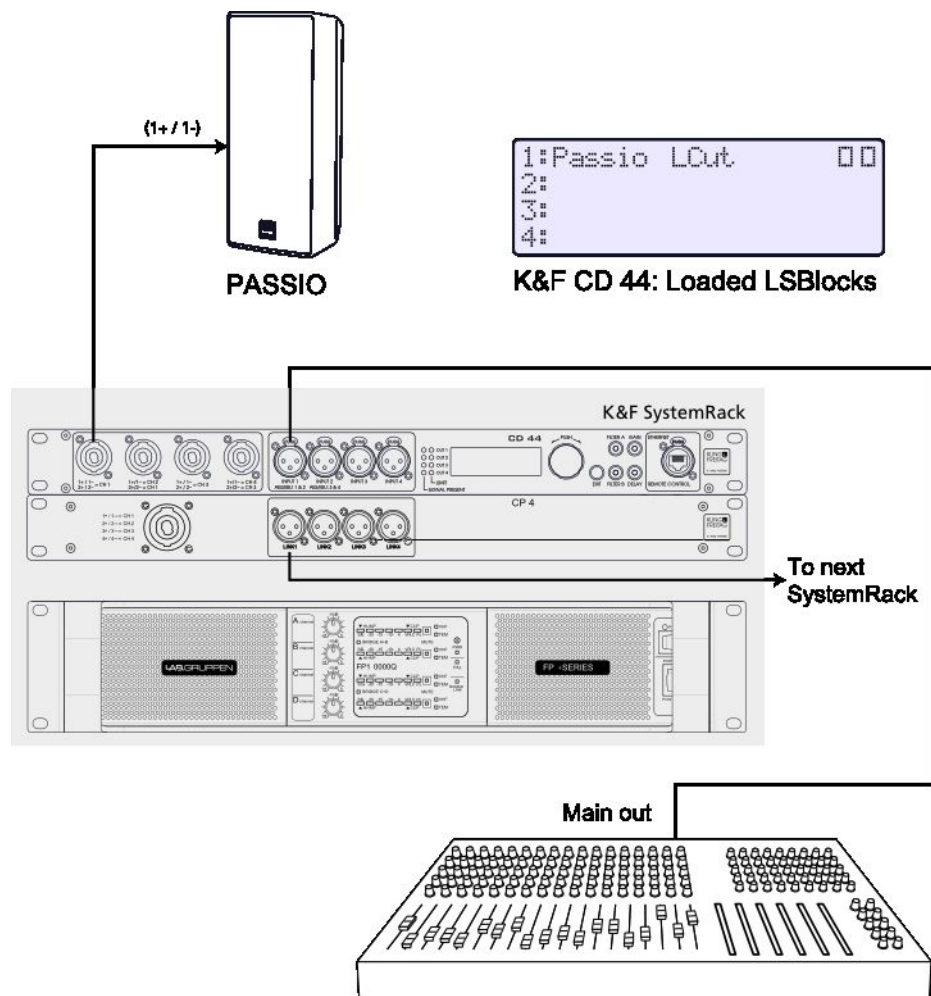
## 7. Setups and Connection Diagrams

### 7.1 Use with Controller CD 44

When operating the loudspeaker with amplifiers without clipping limiter and nominal amplifier power less than 300 W @ 8 Ohm requires to set a Limit Reduction of 3 dB for the K&F CD 44 controller. You can find more detailed information about this option in the K&F CD 44 hardware user's manual.

#### 7.1.1 Controller Mode 'Full-Range'

If you want to operate the speaker in fullrange mode, then select the LSBlock NOMOS LT in the CD 44.



Activate the filter Cluster for the top speakers via Filter B if you wish to operate several tops next to one another.



FILTER B

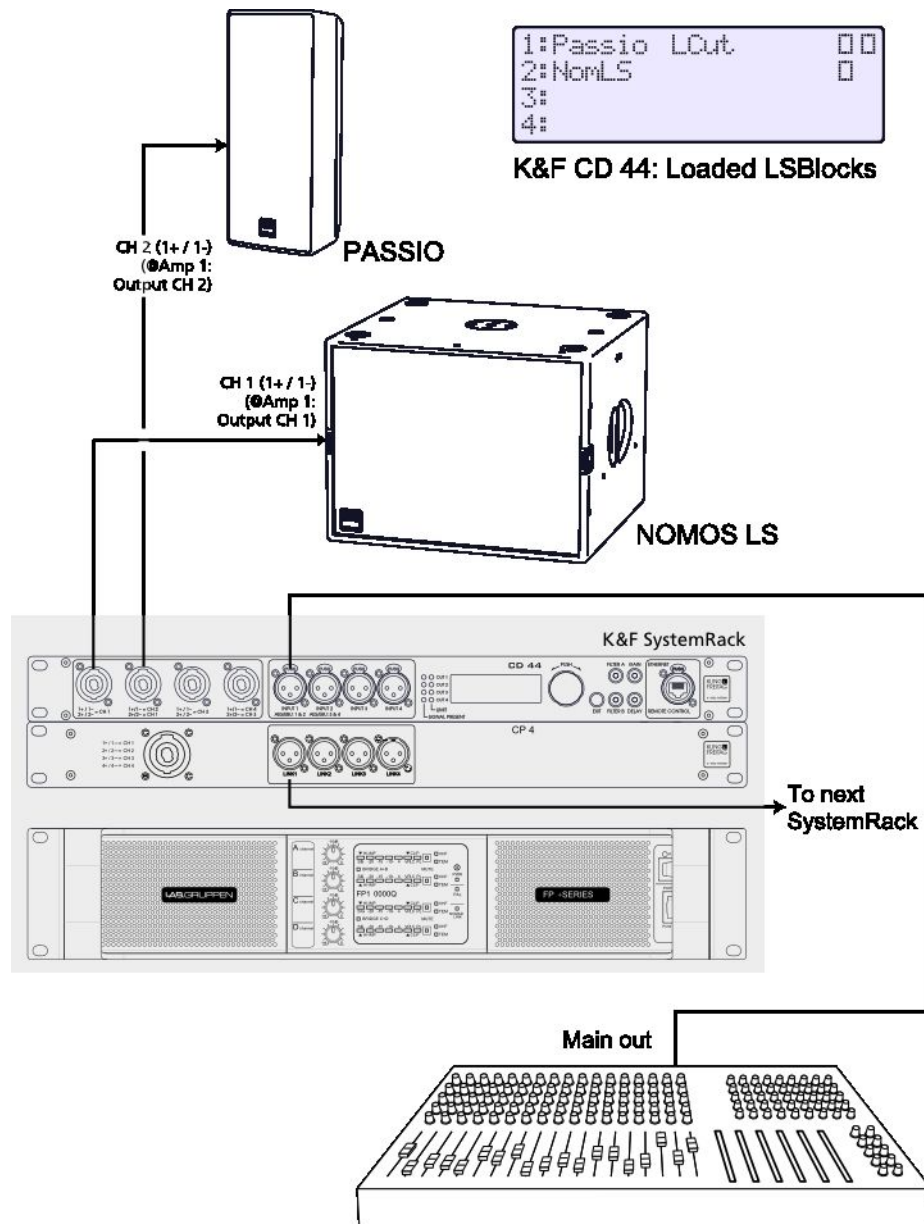
If you need a higher bass level, activate the filter BassBoost via Filter B for the top speakers. BassBoost



FILTER B

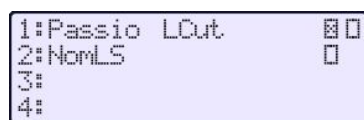
### 7.1.2 Operations with Controller and Subwoofer

If you want to operate the PASSIO/K&F PASSIO W with an additional K&F subwoofer, then select the LSBlock NOMOS LT in the CD 44.



Activate the filter Cluster for the top speakers via Filter B if you wish to operate several tops next to one another.

If you need a boost in the high frequency range (e.g. for compensating the high frequency attenuation for larger distances), activate the filter LoMidBoost via Filter B for the top speakers.



FILTER B



FILTER B

If necessary, adjust the correct level balance with the output gain of the subwoofer on the K&F systemamp or systemrack.

### 7.1.3 Controller Mode with Subwoofer in Overlap Mode

In full-range mode, the speaker K&F PASSIO/K&F PASSIO W is compatible with all K&F subwoofers that are run in the 100 Hz mode.

This so-called 'overlap mode' can make sense for surround uses when the tops should transmit the complete frequency spectrum and the subwoofer is used as an 'effect bass'.

In the overlap mode, the bass boost must not be switched on.



Tip

### 7.1.4 Controller Mode with Subwoofer in 1-Channel Mode

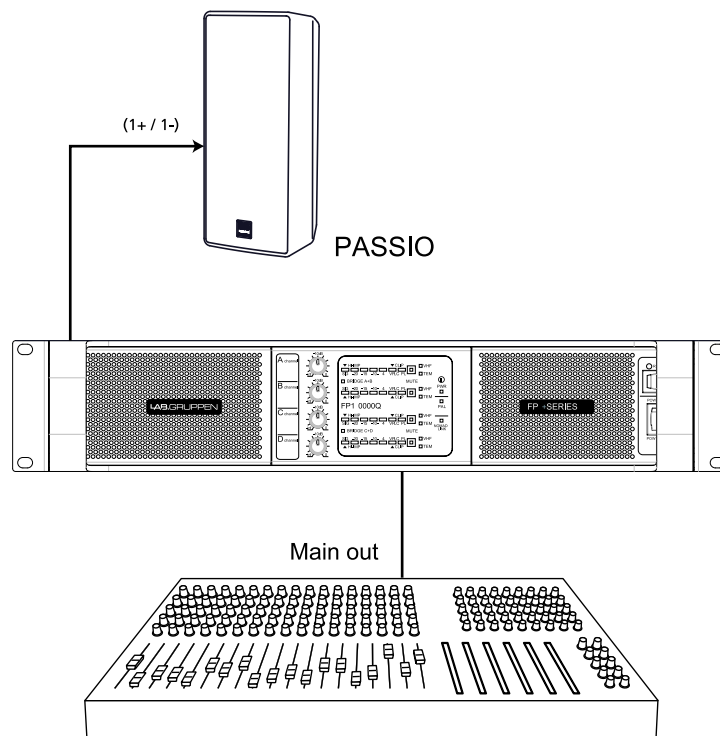
You can operate the speaker K&F PASSIO/K&F PASSIO W together with several K&F subwoofers on a single controller channel. To do so, load the matching LSBlock for the speaker combination into the controller. For further information see the user's manual of the subwoofers that are suitable for 1-channel mode, e.g. PASSIO SUB 12/15.

## 7.2 Passive Mode (without Controller)

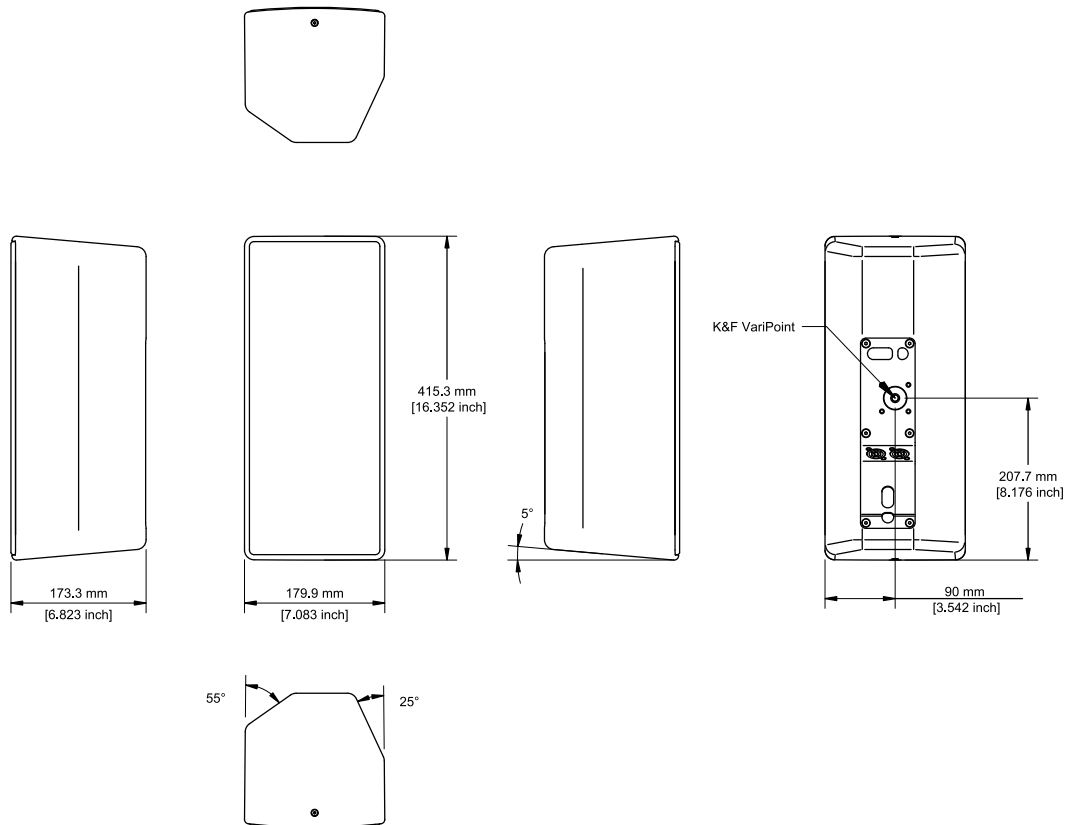
The K&F PASSIO/K&F PASSIO W system is designed so that it can be operated passively without a controller directly on a power amplifier. Follow the instructions in chapter "Protecting the Speakers, Reliability" beginning on page 7.

### Notice

- For safe operation, they must only be operated with professional power amplifiers with a maximum rated output power of 600 W @ 8 Ohm (equiv. 1200 W @ 4 Ohm).
- If power amplifiers have power ratings lower than 300 W @ 8 Ohm, then it is imperative that the amplifiers have clipping limiters. Alternately, you can also insert a clipping limiter before the amplifier.
- To protect the loudspeaker from mechanical damage when high SPL is required a highpassfilter of 24 dB/oct. at 60 Hz has to be inserted into the signal chain.



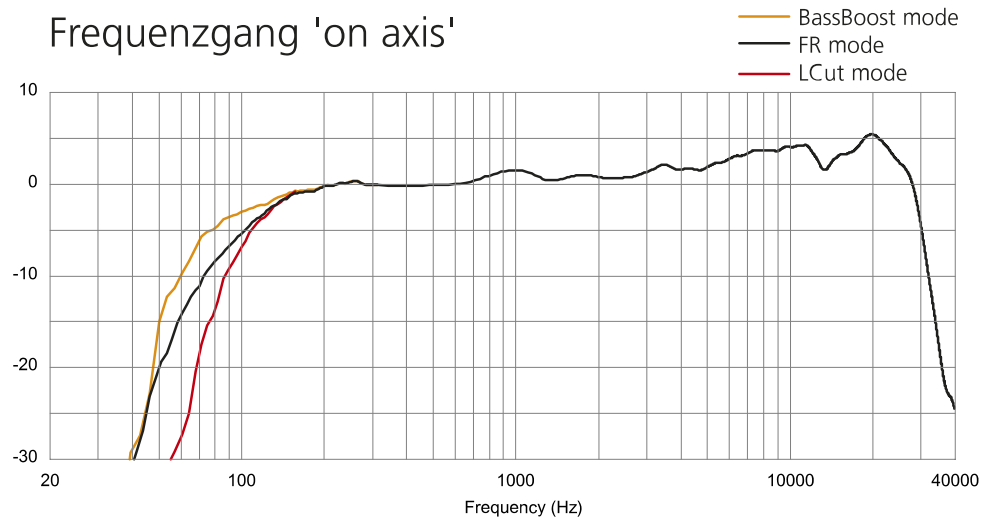
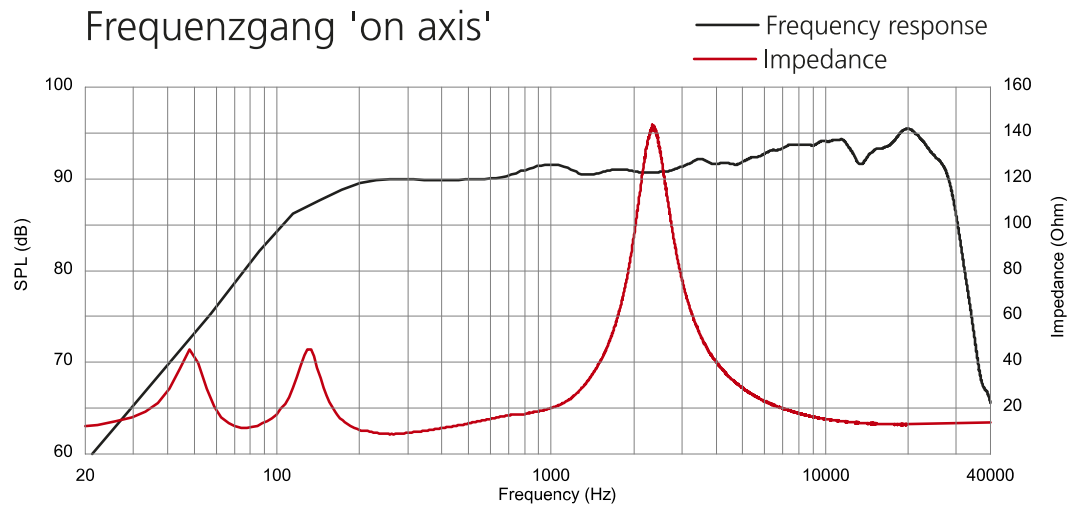
## 8. Dimensions



## 9. Measuring Diagrams

### 9.1 Measuring Diagrams K&F PASSIO

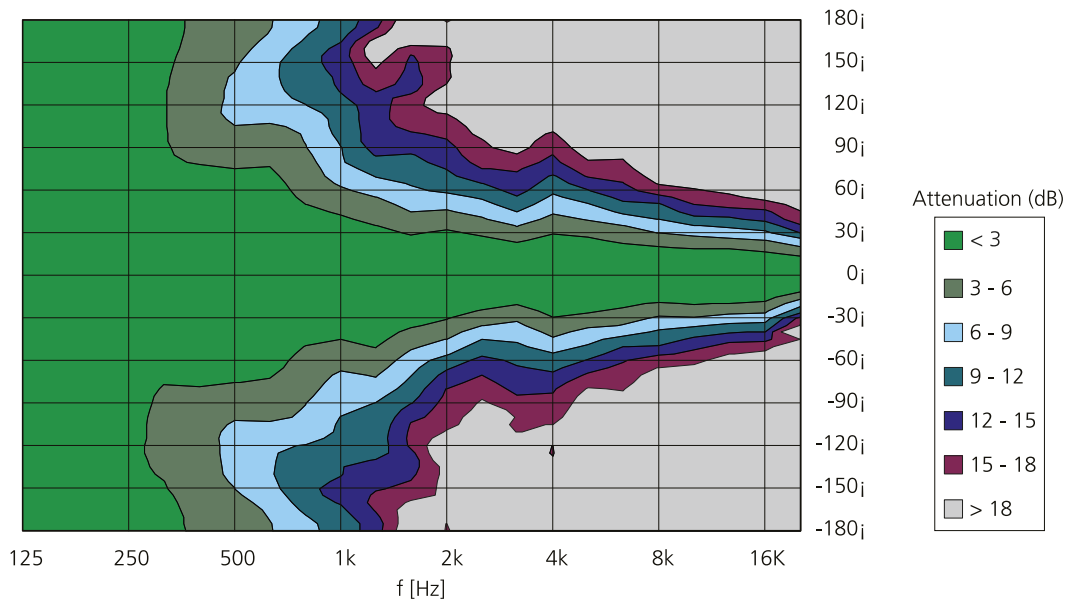
#### 9.1.1 Frequency range K&F PASSIO



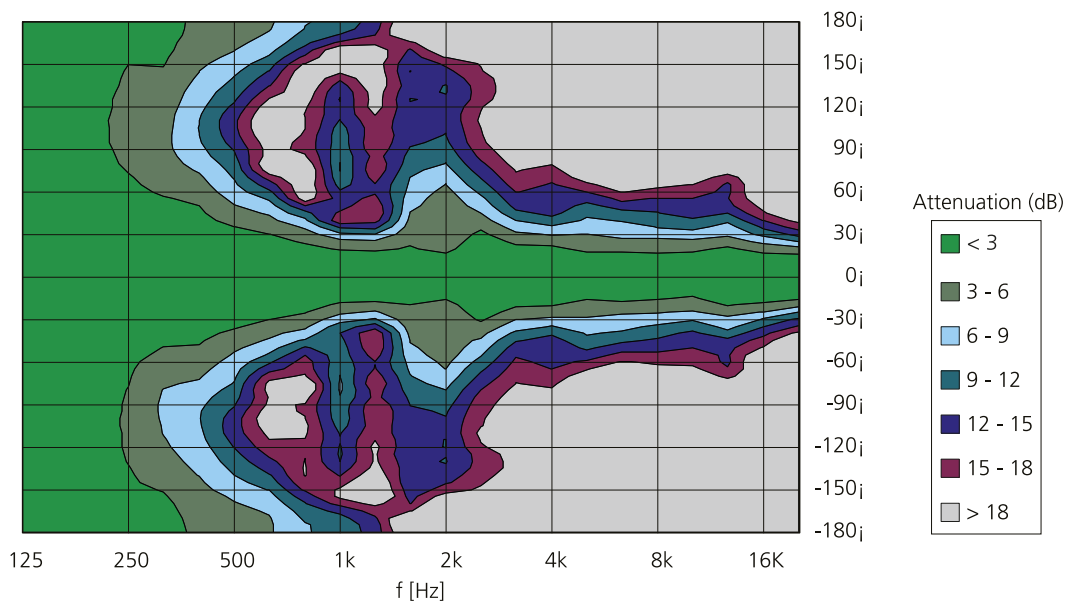


### 9.1.2 Coverage K&F PASSIO

#### Horizontal



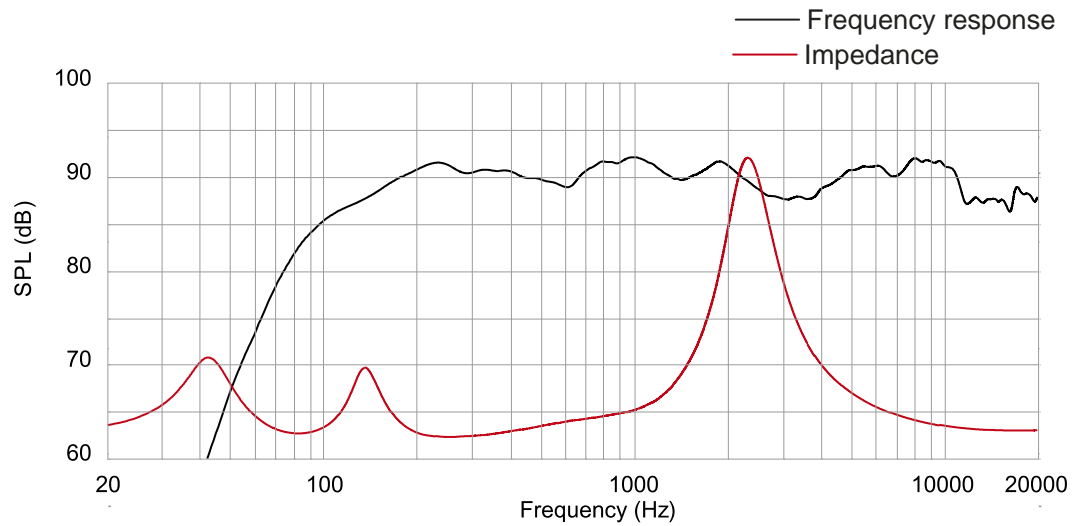
#### Vertical



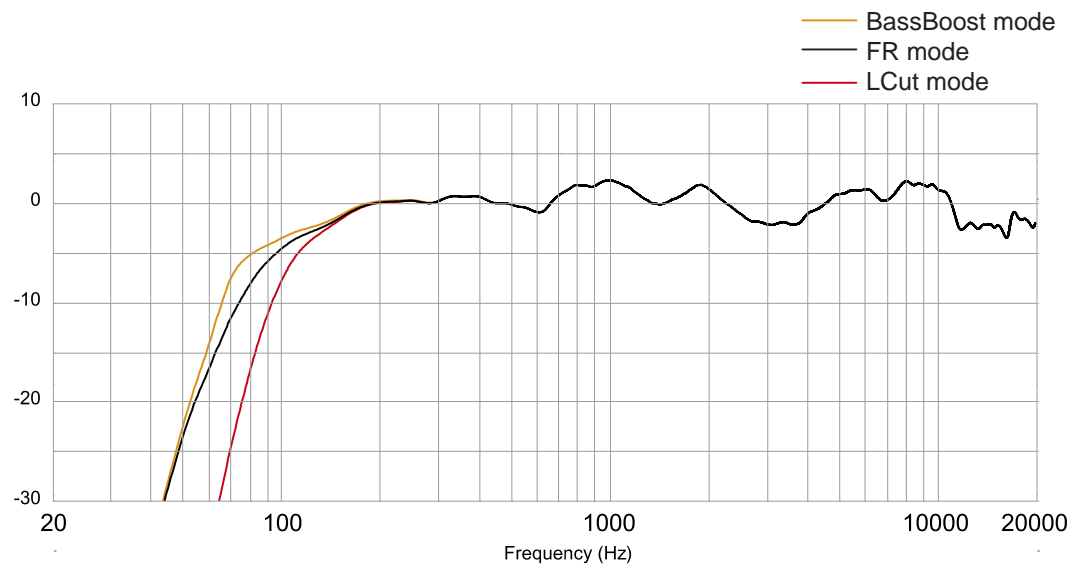
## 9.2 Measuring Diagrams K&F PASSIO W

### 9.2.1 Frequency range K&F PASSIO W

Frequenzgang 'on axis' PASSIO W

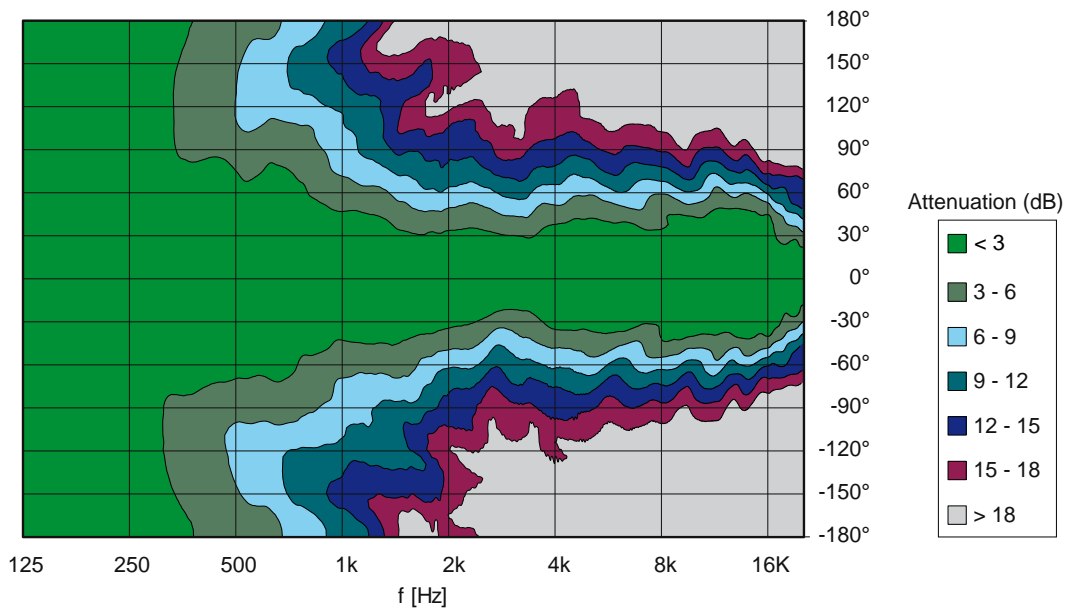


Frequenzgang 'on axis'

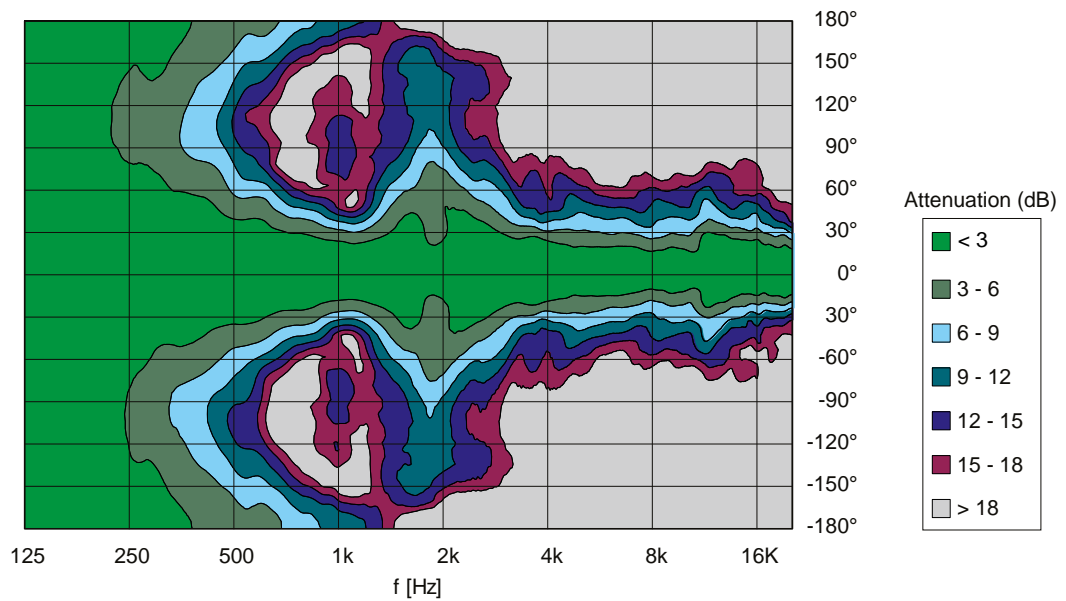


## 9.2.2 Coverage K&F PASSIO W

### Horizontal



### Vertical



## 10. Technical Specifications

K&F PASSIO and K&F PASSIO W	
Concept	2-way passive bass-reflex system
Supported amplifiers	K&F PLM+ Serie, K&F D-Serie, Lab.Gruppen IPD 2400, K&F SystemRack, K&F TOPAS, passiv at linear Amps
Frequency range @-10 dB	75 Hz – 31 kHz
Frequency range @±3 dB	110 Hz – 28 kHz
Coverage angle (nominal)	K&F PASSIO: 70° x 60° (hor. x vert.) K&F PASSIO W: 100° x 60° (hor. x vert.)
Power rating	200 watts
Program load	400 watts
Peak load	800 watts
SPL (1 m, max.)	K&F PASSIO: 121,5 dB SPL K&F PASSIO W: 120 dB SPL
Nominal impedance	12 Ohm
Speakers / channels	see matrix
Components	1" tweeter with waveguide 2 x 5" woofer
Connection	2 x Speakon 4-pol NL4MP (+1/-1), IN parallel to OUT
Enclosure	
	Hard integral foam enclosure (flame retardant V0 according to UL94) with 25° and 55° monitor angle, 5° angle on top and bottom for inconspicuous design, 1 K&F VariPoint to fasten hardware, sunk-in and to the bottom faced Speakon connectors, ball-proof steel grille with black acoustic foam
Dimensions (H x W x D)	180 x 415 x 173 mm
Weight	5.6 kg
Color	RAL 9005 (black) oder RAL 9010 (white)
Option	'special finish in RAL colours'

## 11. EC Declaration of Conformity

**Manufacturer:**

Kling & Freitag GmbH  
Junkersstraße 15  
30179 Hannover  
Germany

**Representative authorized for compiling  
the technical documentation:**

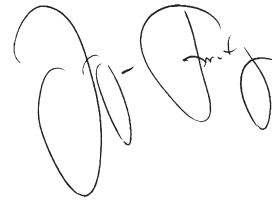
Kling & Freitag GmbH  
Abt. Entwicklung  
+49 511 96997-50  
Deutschland

**Product:**

**Speaker system  
K&F PASSIO and K&F PASSIO W**

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

- 2004/108/EG, Electromagnetic Compatibility (EMC) Directive
- 2014/55/EU, Low Voltage Directive
- VDE 0042-12/2013-02 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances



Hannover, 09 November 2017

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Jürgen Freitag  
(Managing Director / CEO)

## 12. Accessories

### Adjustable Speaker Mount PASSIO - pin fixing

with 'Fixing Pin' and clamp lever

For quick connections using the K&F VariPoint with the undetachable fixing pin. Can be mounted in a vertical or horizontal position without additional accessories.

Colour: black or white

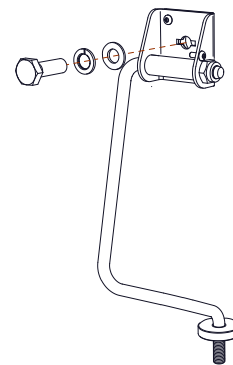


### Adjustable Speaker Mount PASSIO - screw fixing

with screw and nut M10

For use with the K&F VariPoint using a screw M10. Can be mounted in a vertical or horizontal position.

Colour: black or white

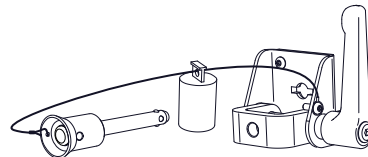


### Pin-Joint Adapter PASSIO - pin fixing

with 'Fixing Pin' and clamp lever

For quick mounting of the PASSIO on i.e. a Super Clamp or a TV-Spigot using the Fixing Pin.

Colour: black



### Pin-Joint Adapter PASSIO - screw fixing

with screw and nut M10

For direct mounting of the PASSIO to i.e. a Super Clamp or a TV-Spigot with a threaded bolt M10

Colour: black



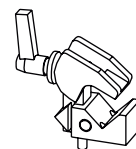
### Super Clamp

with threaded pin M10

for pipes or plates from 13 to 50 mm, for loads up to 15 kg

For use with the Adjustable Speaker Mount PASSIO the additional accessory Mini TV-Spigot is required.

Colour: black



**Mini TV spigot with internal M10 thread.  
Necessary for suspending the Adjustable  
Speaker Mount with a Super Clamp!**

for use with the accessory Adjustable  
Speaker Mount PASSIO with a 'Super  
Clamp'

Colour: black



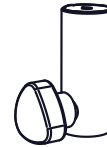
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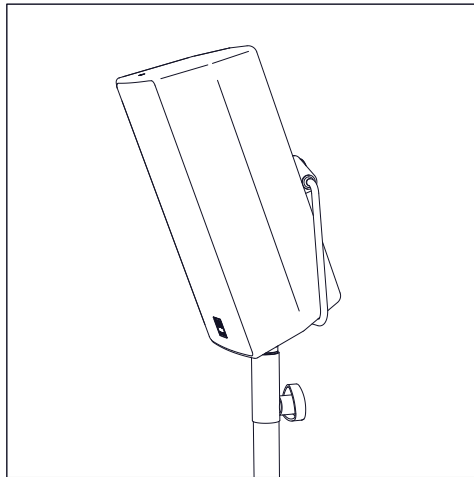
**Stand socket M10**

for use with the Adjustable Speaker  
Mount PASSIO on a stand

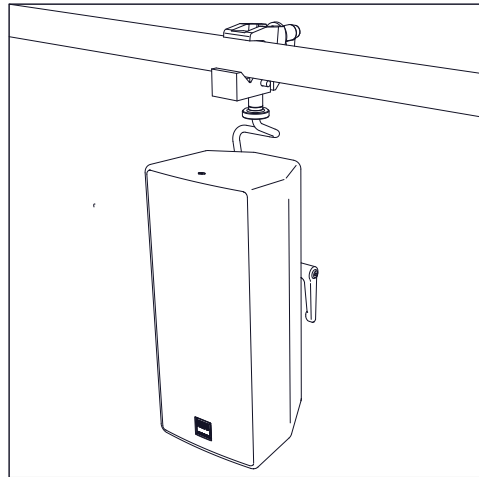
for use with other adjustable speaker  
mounts a fixing screw M10 x 25, a washer  
and a lock washer in black are included.

Colour: black

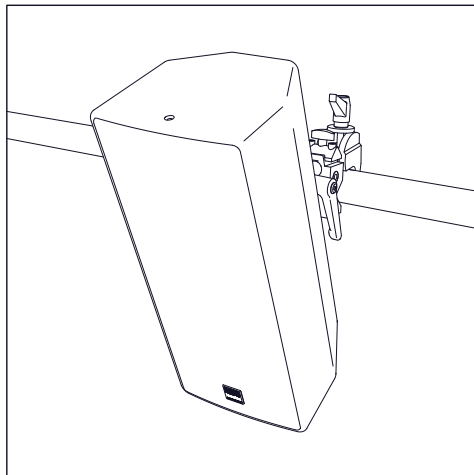


**Examples of use:**

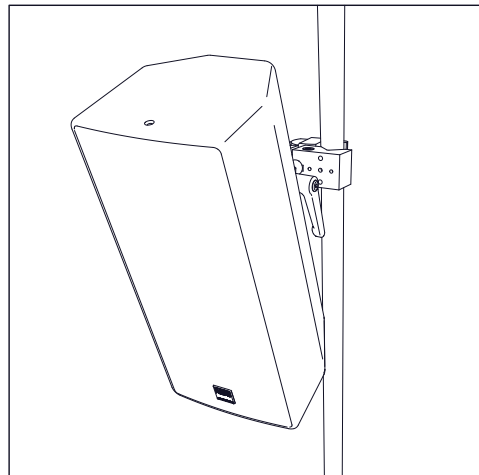
Application example Adjustable Speaker Mount PASSIO with stand adapter M10



Application example Adjustable Speaker Mount PASSIO with 'Mini TV Spigot' and 'Super Clamp' on a horizontal pipe



Application example Pin-Joint Adapter PASSIO with 'Super Clamp' on a horizontal pipe



Application example Pin-Joint Adapter PASSIO with 'Super Clamp' on a vertical pipe



## 13. Care and Maintenance

### 13.1 Inspection Regulations



Warning

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

Note that the mains cable is supplied with either a connector appropriate for the place of delivery (see item number) or with open terminals (on the mains side).

The K&F PASSIO/K&F PASSIO W 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; when in doubt, contact the 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. The log should also document maintenance measures and inspection intervals and contain parts lists.

### 13.2 Replacing the Front Foam

The front foam behind the front grille is held in place by an elastic band. This makes it possible for you to easily replace the damaged or soiled foam yourself.

1. Remove the grille attachment screws with a 2.5 mm Allen key.
2. Remove the grille from the speaker.
3. Remove the old filter foam behind the elastic band.
4. Pull the new or cleaned filter foam behind the elastic band.
5. Fasten the grille back onto the speaker using the attachment screws.



Tip

In doing so, make sure that the clamping nuts on the grille mounting flaps are aligned with the drill holes in the enclosure. You can set the clamping nuts into the proper position using the Allen key before applying the screws.

## 14. Transportation and Storage

The K&F PASSIO/K&F PASSIO W 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 PASSIO/K&F PASSIO W 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. PASSIO/K&F PASSIO W

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

## 15. Disposal

Please recycle the packaging material of the device.

### 15.1 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). The WEEE registration number is: DE64110372.

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

### 15.2 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.

Unfortunately, the European WEEE directive was implemented in different national legislation in the EU member states, making it impossible to offer a consistent disposal solution throughout Europe.

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).

### **15.3 All Other Countries**

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

## INDEX

• Accessories.....	22
• Care.....	25
• Cluster.....	9
• Components.....	6
• Connection diagrams.....	11
• Coverage.....	17,19
• Dimensions.....	15
• Disposal.....	26
• EC Declaration of Conformity.....	21
• Frequency range.....	16,18
• Front foam.....	25
• Initial Operation.....	10
• Inspection Regulations.....	25
• Items Included.....	6
• Maintenance.....	25
• Measuring diagram.....	16
• Passive Mode.....	14
• Product Description.....	6
• Protecting the Speakers.....	7
• Safety Instructions.....	7
• Setups.....	11
• Storage.....	26
• Technical Specifications.....	20
• Tool.....	6
• Transportation.....	26
• Wiring.....	10