

# K&F SONA 6



## User's Manual

Translation of the original instructions

Version 5.9

Released: 16.07.2018



**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 SONA 6 system to achieve its full potential, please read this manual carefully before use. You will find that your SONA 6 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, Wohlenbergstr. 5, D-30179 Hannover

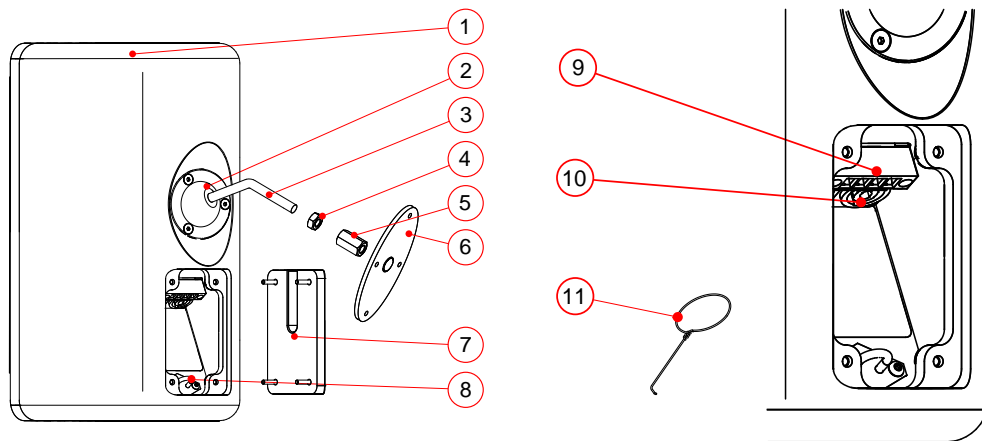
Phone +49 511 96 99 70, fax +49 511 67 37 94 (other countries)

## 2. Product Description

### 2.1 Items Included

- Loudspeaker with integrated ball joint swivel arm for wall, ceiling or stand mountings
- User's Manual
- 4-pin Phoenix connector for the Phoenix socket on the speaker
- Grill dismantling tool

### 2.2 Components



1. **Speaker enclosure**, frame-reinforced birch plywood with structured finish
2. **Clamp collar**
3. **Swivel arm with ball joint**
4. **Hexagon nut M10**, 17 mm spanner
5. **Long nut**, hexagon, M10, black version: 16 mm spanner, white version: 17 mm spanner
6. **Mounting plate with M10 bolt**
7. **Connection terminal cover** with outlet for cable and safety wire
8. **Safety eyelet** for 5 mm quick link (quick link not included but available as accessory)
9. **Phoenix connector**
10. **SpeakOn connectors**
11. **Grill dismantling tool**

### 3. Safety Instructions

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



**Warning**

Have all installation works including suspension as well as wall or ceiling mount performed by qualified event technicians or appropriately trained persons.

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.

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.

##### **Fixed installations (stationary):**

- For fixed installations without a safety element, secure the long nut and the M10 nut from loosening. You can do this by using threadlocking adhesives or sealants.

##### **Mobile installations (non-stationary):**

- Always secure the speaker with a second independent safety device to prevent falling.
- To do so, use an approved safety rope with a 5 mm quick link on the safety eyebolt of the speaker enclosure. You can get an appropriate quick link available as an accessory from KLING & FREITAG.

#### 3.2 Instructions for Speaker Placement



**Caution**

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.

The stability of stacked systems (also valid for the use of stands and distance rods!) is contingent upon the following stability requirement:

**Stacked systems may not fall over even if they are inclined by 10° 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.**

**Caution**

### 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

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. When a power amplifier is overloaded at the output (clipping), then the amplifier should activate a clipping warning signal. 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. 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 CD 44 Controller:

- 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 200 W @ 8 Ohm.
- If power amplifiers have power ratings lower than 100 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.

#### Operations with CD 44 Controller:

- For optimal performance and operating safety of the SONA 6 speakers we recommend using the system controller K&F CD 44.
- When operating the loudspeaker with amplifiers without clipping limiter and nominal amplifier power less than 100 W 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.
- The destruction of speakers and the risk of fire as a result of a very rare power amplifier or speaker defect may not be avoided by the controller in any case.

#### 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. Wall and Ceiling Installation

### 4.1 Required Tools

- T25 Torx key
- 16 mm spanner (only black version)
- 17 mm spanner (2 x for white version)
- Mounting accessories for installation on walls or ceilings

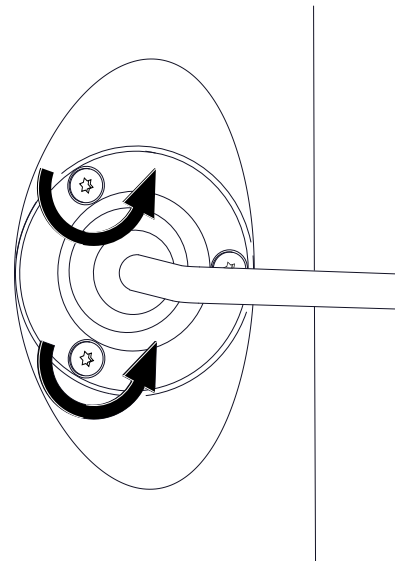
### 4.2 Temporary alignment of the speakers



Tip

Loosen one or two of the three Torx screws **only**. This way you can avoid having to tighten a screw that got covered by the Mounting Arm while you aligned the speaker.

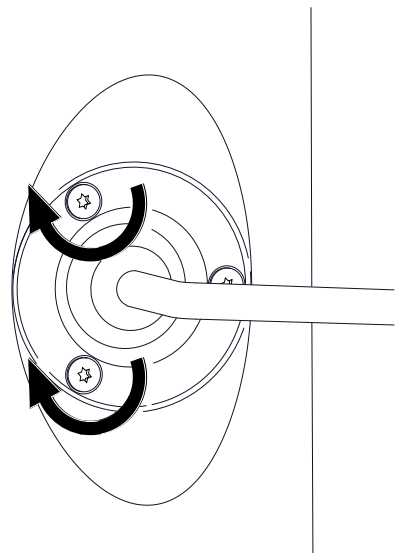
Loosen this screw(s) just enough so that you can move the Mounting Arm with some resistance. This will simplify the final alignment of the speaker. This will simplify the final alignment of the speaker.



Align the loudspeaker arm as desired, and then retighten the Torx screws that you previously loosened.

Tighten the screws enough so that the speaker reliably keeps its position. Using excessive force to tighten the screws can result in irreparable destruction of the threads!

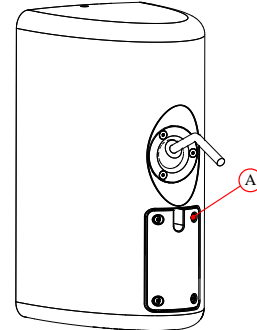
Notice



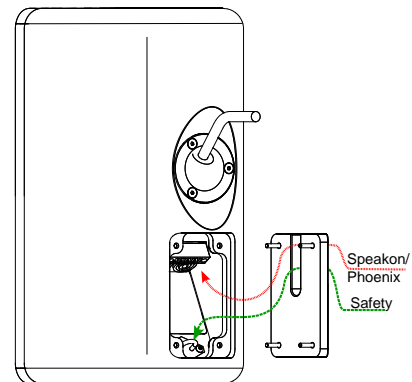
### 4.3 Outlet for Cable and Safety elements

To connect the speaker and attach a safety element, you must open the cover on the rear side of the speaker.

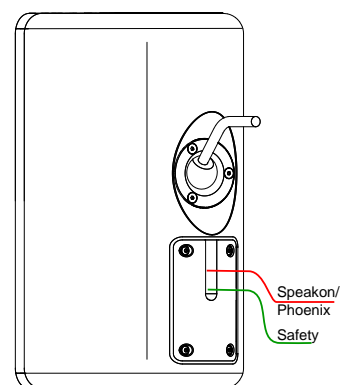
1. Loosen the screws on the cover on the rear side of the speaker with a T25 Torx key.  
Remove the cover.



2. Connect the safety element to the safety eye in the speaker using the chain quick link.  
Connect the speaker via the Speakon plug or the Phoenix connector.  
First lay the safety element and then the speaker cable in the feedthrough slot on the cover.



3. Place the cover back onto the rear of the speaker.  
Mount the cover onto the rear side of the speaker.  
The speaker is now prepared for wall, ceiling or stand mounting.



#### 4.4 Wall Mounting of the Speaker



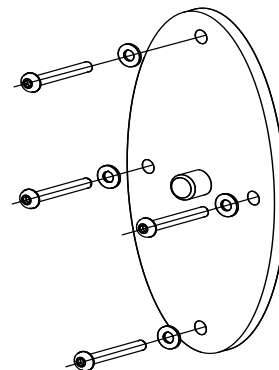
**Warning**

If people can move freely under the hung speaker, you must secure the speaker with a safety element. The BGV (government safety organisation) C1 can only be fulfilled when using such a safety device. Only when this regulation has been adhered to may the speaker be hung over people and operated.

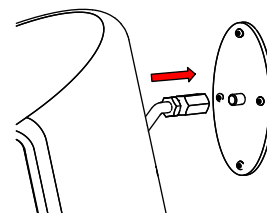
Without this securing, the safety level corresponds to DIN 18800.

1. As an alternative to the mounting plate, you can also mount the Mounting Arm with other suitable 10 mm bolts. Make sure that you do not extend the lever arm of the wall mount.

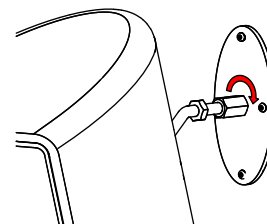
Screw the mounting plate onto the wall or ceiling using all four mounting holes. Choose fasteners that are suitable for the wall or ceiling material. After installation, the mounting plate incl. speaker must be capable of carrying the 6-fold of its own weight. Take suitable measures to prevent the screw connection from loosening itself.



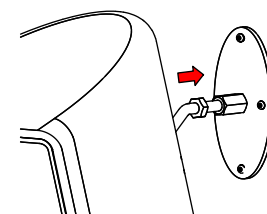
2. Attach the speaker so that the ends of the threaded rods come in contact.



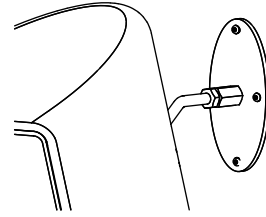
3. Turn the long nut onto the bolt of the mounting plate by hand until it touches the wall plate. Tighten it slightly using a 16 mm spanner.



4. Screw in the counter nut M10 with a 17 mm spanner against the long nut while holding the long nut tight with a 16 mm spanner.



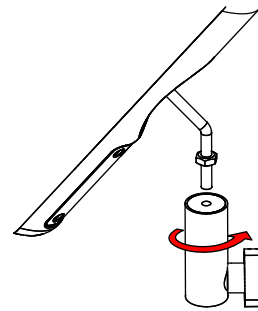
5. The speaker is now completely mounted and connected tightly to the wall.
- Now adjust the speaker.
- To do so, loosen the screws at the ball joint arm, as described on page 9.



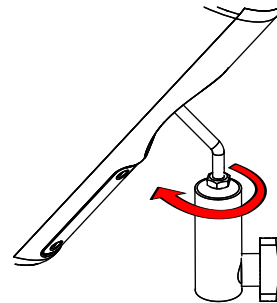
## 5. Stand Installation

To mount a SONA 6 speaker on a stand, you need the accessory Stand socket M10.

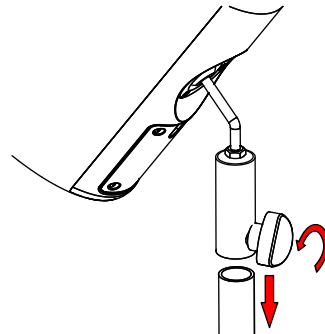
1. For stand mounting, you do not need the provided long nuts. Unscrew them from the mounting arm and keep them for possible later use.
2. Turn the counter nut entirely onto the thread of the mounting arm.
- Place the stand adapter M10 on the mounting arm and turn it just before the counter nut.



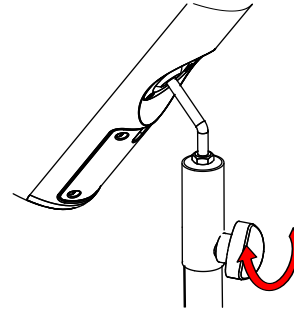
3. Screw in the counter nut M10 against the [...] using a 17 mm spanner.



4. Loosen the clamp screw on the stand adapter and place the speaker with the stand adapter onto the top end of the stand.



5. Make sure that the stand pole in the stand adapter reaches up to behind the clamp screw.
- Tighten the clamping screw.
- The speaker is now securely connected to the stand. Now adjust the speaker.



## 6. Proper Alignment of the Loudspeakers

Note that precisely targeted speaker systems can significantly improve the acoustic result. It is not possible to make generalities about the alignment of specific systems because the room has a substantial influence on the signal and the audible result.

As a rule, the mid- and high-transducers of loudspeakers should be mounted above the audience's face value, so that the sound distribution cannot be shadowed.

In many cases it is advisable to mount a loudspeaker higher, so that the sound will be distributed throughout the room more evenly. Low standing systems result in a greater difference in volume between front and back seats than higher standing systems.

To simulate the correct alignment of the speakers beforehand, there are various programs such as 'EASE' or 'Ulysses'. On the homepage [www.kling-freitag.de](http://www.kling-freitag.de), KLING & FREITAG provides the simulation data for the speakers to be downloaded.

## 7. Wiring



### Warning

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

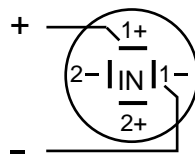
When the system is in use, make sure that the connectors are secured against inadvertent touch.

Always fully insert bared wire ends into the push connector or the Phoenix plug such that bared parts of wire can not be touched.

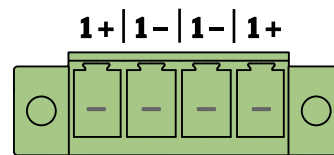
For speakers with Phoenix connector the bared wire ends have to be accurately screwed into the plugs.

### 7.1 Terminal assignment

Speakon connector



Phoenix connector



Pin 1 is parallel at all connections.

### 7.2 Connection diagrams

You will find all necessary pin diagrams for operations with the CD 44 Controller in the user's manual of the CD 44! This applies for use with and without the K&F Subwoofer.

### 7.3 Wiring Instructions

#### Notice

- Before connecting your K&F SONA 6 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.  $1/R1 + 1/R2 + 1/R3 + \dots = 1/R_{total}$

## 8. Initial Operation

**Notice**

- Switch off all devices and turn down all volume controls on the mixing console and the amplifiers.
- Wire the SONA 6 systems.
- 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.

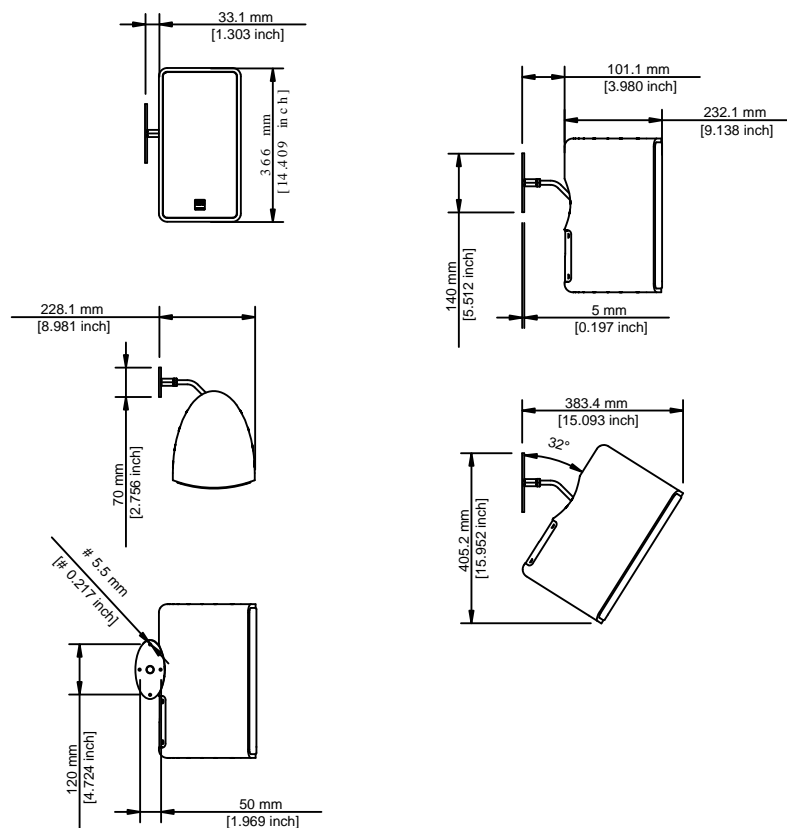
## 9. Directions for the 100 volt connection.

KLING & FREITAG speakers with '100 V' option are fitted with high-quality transformers. This serves to minimize loss of sound. Highly professional sound reinforcement results can be achieved using '100 Volt' KLING & FREITAG speakers.

### Reasons for choosing Speakers with 100 Volt Transformers:

- Reduction in conduction loss.
- Easy installation of a loudspeaker network due to simple parallel wiring. The sum of the output power of the individual speakers (stated as  $VA = W$ ) must not exceed the output power of the 100 Volt amplifier.
- Speakers are galvanically isolated.
- Speakers can be integrated into existing 100 Volt systems.

## 10. Dimensions (with Mounting Arm)

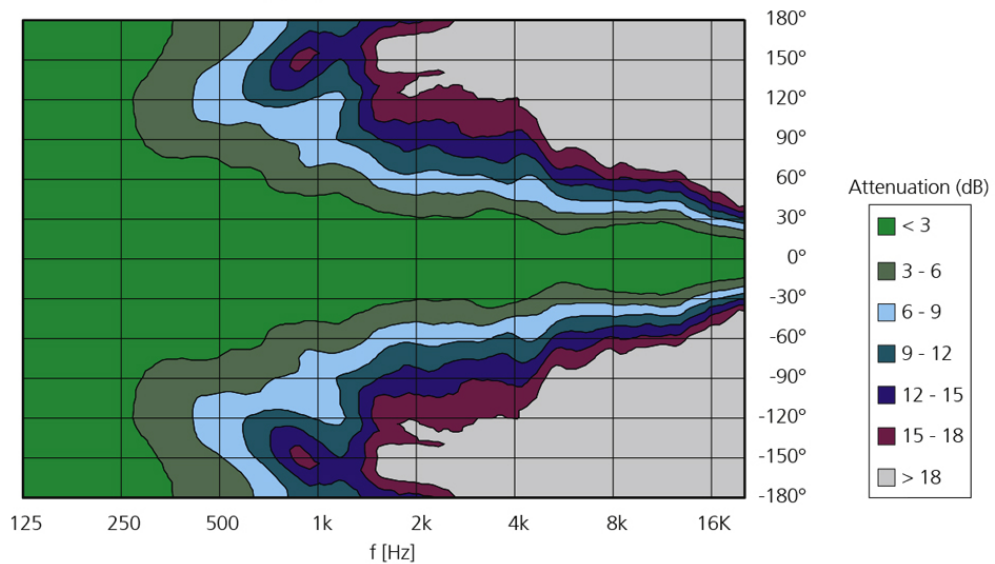




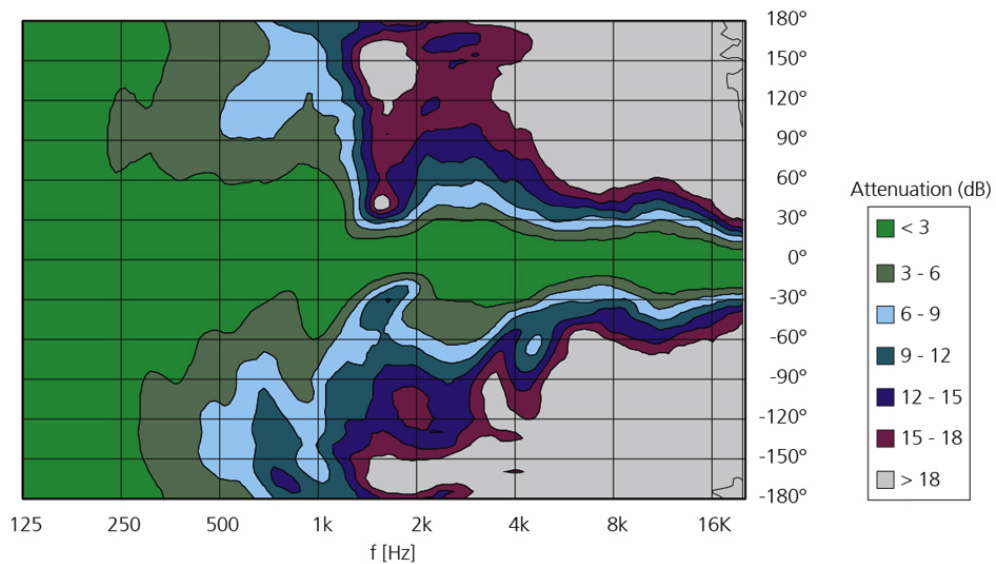
## 11. Measuring Diagrams

### 11.1 Coverage SONA 6

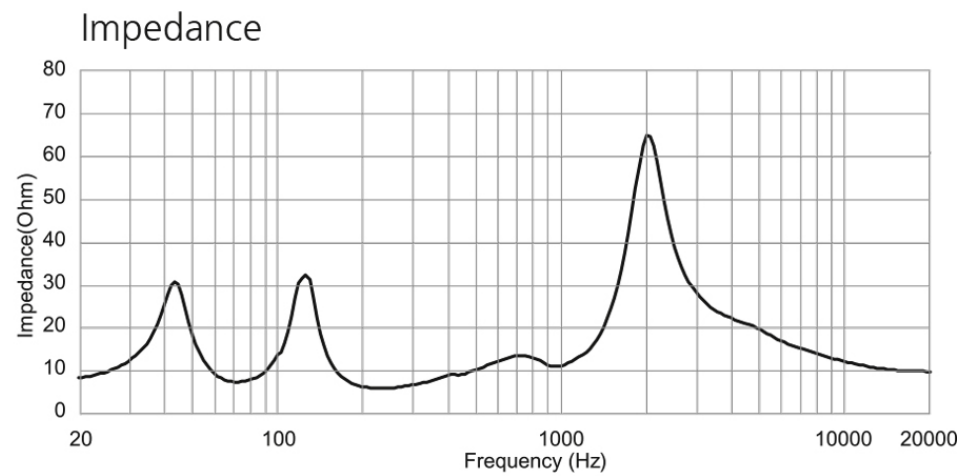
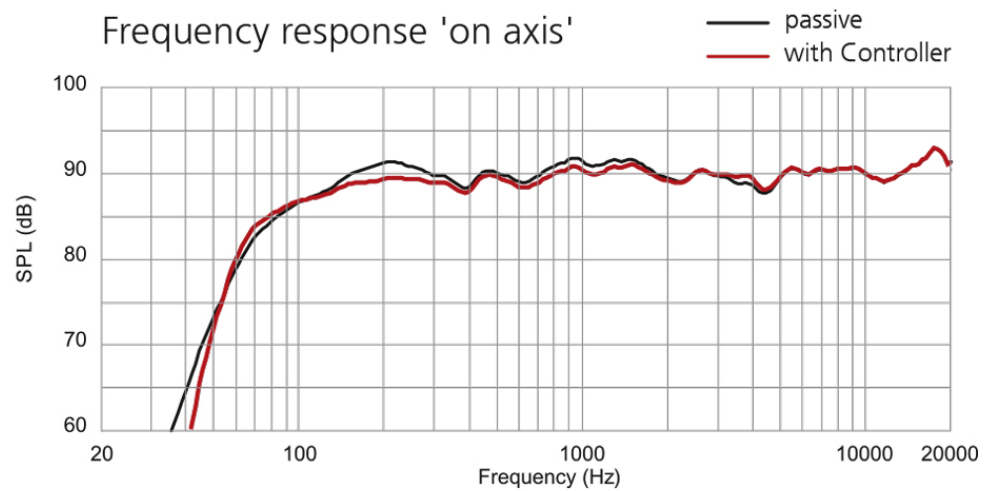
Horizontal coverage patter



Vertical coverage patter



## 11.2 Frequency range SONA 6



## 12. Technical Specifications

SONA 6	
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	65 Hz – 26 kHz (passiv) 86 Hz – 26 kHz (LCut mode) 60 Hz – 25 kHz (FR mode)
Frequency range -3 dB	80 Hz – 20 kHz (passiv) 106 Hz – 20 kHz (LCut mode) 65 Hz – 20 kHz (FR mode)
Coverage angle (nominal)	90° x 60° (hor. x vert.), rotatable CD-Horn
Power rating	100 watts
Program load	200 watts
Peak load	400 watts
SPL (1 m, max.)	118 dB (SPL Peak/1 m)
Nominal impedance	8 Ohm
Speakers / channels	see matrix
Components	8" low-mid chassis, 1" compression driver with 45 mm Titanium diaphragm
Connection	2 x Speakon 4-pol. NL4MP (1+/1-), 1 x Phoenixbuchse (parallel)
Enclosure	
	Design enclosure out of Multiplex, highly resistant structure paint (PU) in black or white, safety eyelet for quick chain link, ball joint mounting arm (104 mm) with mounting plate, sunk-in, to the bottom faced and concealed connectors, exchangeable front grille, rotatable logo
Dimensions (H x W x D)	195 x 366 x 232 mm
Weight	6.8 kg
Color	RAL 9005 (black) oder RAL 9010 (white)
Optional	'100 Volt' with 10/20/40 VA toroidal transformer (13.9 kg), 'special finish in RAL colours'

### 13. EC Declaration of Conformity

**Manufacturer:**

Kling & Freitag GmbH  
Junkersstraße 14  
30179 Hannover  
Germany

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

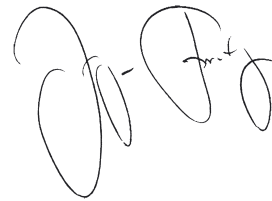
Kling & Freitag GmbH  
Abt. Entwicklung  
+49 511 96997-50  
Deutschland

**Product:**

**K&F SONA 6 speaker system**

**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
- 2006/95/ECC, 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)

## 14. Accessories

- 5 mm chain quick link, stamped. For use with the safety eye on the speaker.
- K&F Stand Adapter, M10

## 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.

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