



musikelectronic geithain

# RL 934K

# RL 934K1



**Instructions for installation and use**

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## **1 Introduction**

Dear customer,

Thank you for the trust you have put in us by buying these speakers. You decided upon a quality product that in regard to tonal and technical characteristics complies to the utmost expectations.

The usual burn-in period is not required, because the speakers are artificially aged in-house.

**Please read the technical description and manual to take advantage of the capabilities of these speakers and ensure safe operation.**

## **2 Disclaimer**

Technical data and appearances are subject to changes without notice. Errors and omissions excepted. Musikelectronic Geithain GmbH assumes no liability for any loss which may be suffered by any person who relies either wholly or in part upon any description, photograph or statement contained herein. Musikelectronic Geithain GmbH products are sold through authorized fulfillers and resellers only. Fulfillers and resellers are not agents of Musikelectronic Geithain GmbH and have absolutely no authority to bind Musikelectronic Geithain GmbH by any express or implied undertaking or representation. This manual is copyrighted. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system without the prior written permission of Musikelectronic Geithain GmbH.

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### 3 System description

The RL934K is as well as the RL944K designed for short listening distances. It is tonally compatible to the RL944K but offers a lower bass range and higher power rating. Therefore it is the optimal solution in small sound and video studios as well as outside broadcasting vans working on reference standard. Also passionate music listeners with limited placement options will appreciate the RL934K.

By the cardioid radiation characteristics within the frequency range from 30Hz through 250Hz the reflections on the back walls of listening rooms can be minimized. In addition the transfer characteristic can be matched to the acoustical conditions of the reproduction room as well as to the set-up situation by an integrated room matching filter.

The total directivity index of the monitor was optimized for very short listening distances and a base distance between one and 2.6 metres (3'3" and 8'6"). As the bass system a very linear 260 mm (10") long-throw driver in a cardioid cabinet is employed, delivering excellent impulse fidelity. The 100 mm (4") cone is mounted together with the 19 mm (0.75") dome tweeter coaxially in front of the bass system allowing a precise steering of the directivity index. As a result a realistic and steady spatial performance of the sound pattern around the listening position is achieved, with high homogeneity and smallest possible coloration. By the great membrane area the RL934K is in the highest degree level proof while at the same time it has the lowest distortions. Therefore the RL934K is a precision studio tool allowing fatigue free working for hours.

The three-channel MOSFET power amplifier with electronic crossover is integrated into the back of the cabinet and is hinged for service purposes. An intermittent LED lighting signals when the overload limit is reached. After crossing of the maximum level the output level will be reduced by 20dB to avoid any overloading of the components.

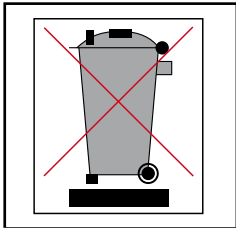
The RL934K1 is a shortened cabinet variant of the RL934K, that is employed when not enough installation depth is available. Be it a video wall or an outside broadcasting van. For maximum flexibility when choosing the mounting position the speaker is also available in a lying variant. As an alternative to the standardly provided MOSFET amplifier in an upright standing enclosure both the 19-inch compatible Class-D amplifiers RL-Amplifier and RL-Amplifier 2 are also available.

A variety of special stands and racks is available as accessories. According fixing elements have been integrated into the loudspeaker cabinet.

## 4 Basic information

### 4.1 Guidelines

This product complies to requirements of current European and national guidelines (2004/108/EG Electromagnetical Compatibility). The conformity is ascertained, corresponding declarations and records are deposited with the manufacturer.



Products built by us belong to B2C-class of the WEEE guidelines and must not be disposed with domestic waste.

### 4.2 Safety instructions

Like using any other electrical device you should observe the following operation guidelines, safety instructions and warning signs to ensure optimum functionality and safety of operation!

- ❖ Read these instructions carefully.
- ❖ Keep these instructions during the life cycle at a safe place. The instructions are an important part of the product.
- ❖ Heed all warnings. Follow all instructions.
- ❖ The product may only be used in accordance with the information provided in the user manual. Before and during the usage of the amplifier please ensure that all recommendations, especially the safety recommendations in the user manual, are adhered to.
- ❖ Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury, and damage to the product.
- ❖ The heat sink must not be blocked or covered. This product should not be installed unless proper ventilation is provided or manufacturer's instructions have been adhered to.
- ❖ Do not install the device near any heat sources.
- ❖ Do not expose the device to direct sun radiation.
- ❖ Do not install the device in rooms with high humidity.
- ❖ Do not try to insert anything into device openings.
- ❖ The device shall not be exposed to dripping or splashing and no objects filled with liquids shall be placed on the device.
- ❖ Clean only with dry or slightly moistened cloth.
- ❖ Protect the power cord from being walked on, pinched or damaged in any other way. Pay particular attention to plugs and the point where they exit the device.

- ⚡ Do not attempt to service this product yourself as opening or removing cover may expose you to dangerous voltage or other hazards.
- ⚡ Refer all servicing to qualified service personnel.

### 4.3 Unboxing

The speakers are shipped in proper condition. Unpack the speaker carefully and check for visible damages. In case of damages report them to your retailer. Keep the packaging, in case the speaker has to be transported in the future.

### 4.4 Delivery contents

- ◀ Speaker RL934K / RL934K1
- ◀ Amplifier enclosure (only RL934K1)
- ◀ Speakon cable (only RL934K1)
- ◀ Mains cable
- ◀ Technical description and user manual

### 4.5 Cleaning

The speaker is made of real wood veneer and needs to be nurtured in the same way as furnishings. We advise quality wax polish to ensure durability of the veneer. Surfaces can also be cleaned with tidy, slightly dampened, fuzz-free, smooth cloth.

### 4.6 Environmental conditions

Ensure the following environmental conditions in your listening room:

- ◀ Operating temperature                    +15 °C ... +35 °C (+59 °F ... +95 °F)
- ◀ Storage temperature range            -25 °C ... +45 °C (-13 °F ... +113 °F)
- ◀ Relative humidity                        45 % ... 75 %

### 4.7 Guarantee acknowledgements

Opening the device by unauthorized personnel leads to all claims under guarantee expire. In case of destruction by overload, misuse or outside influences there are no claims under guarantee.



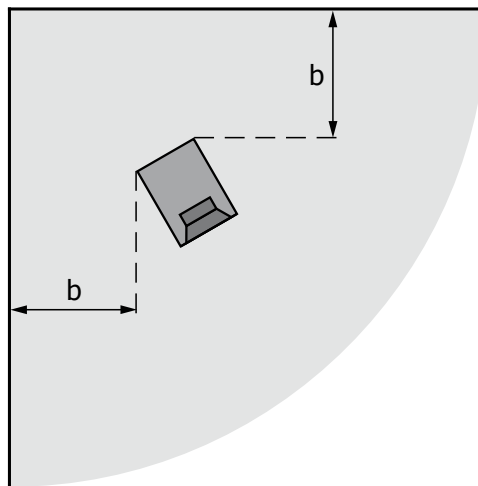
## 5 Positioning

Our speakers do not impose special requirements neither in stereo nor in multichannel set-ups. Nonetheless speaker positioning has influence on listening impression because every room is individually designed and furnished. The following advices are just guidelines that ease proper positioning. In addition we offer a measurement service to take advantage of the capabilities of your listening environment.

### 5.1 Positioning near walls

When speakers are installed near walls sound quality is physically affected. Every customary speaker behaves as a punctual sonic source in the low frequency range, with sonic waves spherical radiated without any constructional measures. Back wall reflections are unavoidable.

The speakers RL934K / RL934K1 however utilize cardioid radiation characteristics with rearward attenuation greater than 10dB. Because of this structural measurement installation near walls is considerably less critical. For optimum listening experience a minimum distance of 20 cm (7.9") to walls and furniture should be ensured. Avoid corner installations because unwanted bass accentuation could arise.

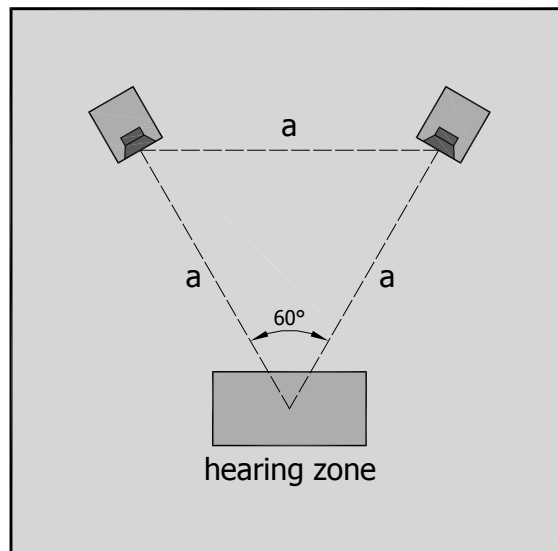


◀ Minimum distance to wall

$b \geq 20 \text{ cm (7.9")}$

## 5.2 Stereo operation

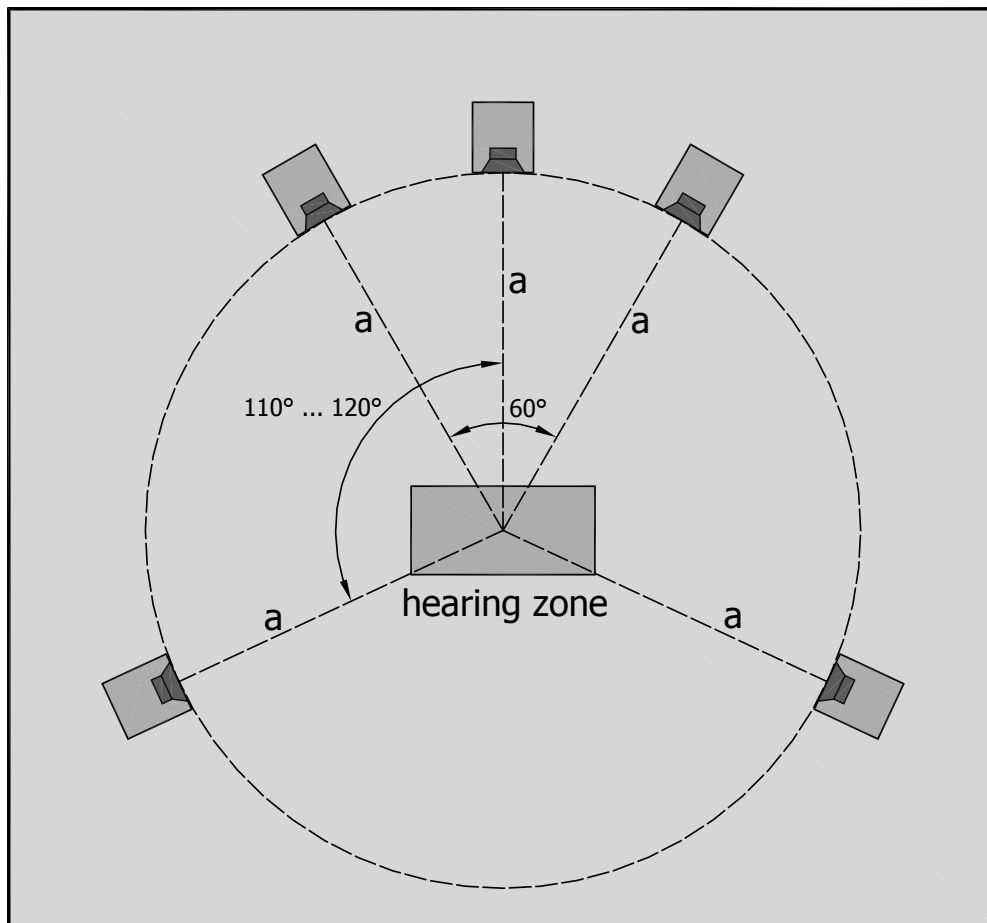
The optimum position of the speakers in your listening environment is the so-called stereo triangle (see figure). The base distance between the speakers and the distance to the hearing zone form an equilateral triangle (stereo triangle). A distance less than 1 m (3'3") or more than 2.6 m (8'6") should be avoided. For precise, spacial reproduction turn the speakers inside, directed to the hearing zone.



- ◀ Distance between speakers and your listening position  $a = 1\text{ m} \dots 2.6\text{ m}$  (3'3" ... 8'6")
- ◀ Adjust the speaker horizontally to the height of the ear at the listening position

### 5.3 Surround operation

In surround operation the stereo triangle (see Stereo operation) is extended to a circle. The hearing zone is the centre of this circle. Position all speakers in the same distance to the hearing zone. The centre speaker is positioned in the middle between both front speakers. Pay attention to positioning the front and rear speakers horizontally along one plane. The angle between centre and rear speakers should be about  $110^{\circ}$ – $120^{\circ}$ .



- ◀ Distance between speakers and your listening position  $a = 1\text{ m} \dots 2.6\text{ m} (3'3'' \dots 8'6'')$

In case installation in the prescribed way is not possible in your listening room most decoding devices allow adjustments of single speakers.

## 6 Set-up the speakers

In this chapter we inform you how to connect your speakers to mains and your signal source. Ensure that the mains switch on the backside is in position "OFF". Only when your speaker is completely connected (see chapters 6.1, 6.2, and 6.3) you can take the device into operation by use of the mains switch.

The speaker can be connected to every common pre-amplifier ( $U_a = 1\text{ V} \dots 5\text{ V}$ ;  $R_i < 600\ \Omega$ ).

### 6.1 Connecting the RL934K

Connect your signal source with the amplifier through the XLR socket. Check the mains voltage stated on the backside of the device. If your local mains voltage does not match the specification of the speaker, please refer to your retailer or direct distribution. When the stated and your local mains voltage comply connect the mains connector of the speaker to the socket with the included mains cable.

### 6.2 Connecting the RL934K1

The amplifier of the RL934K1 is housed in a separate enclosure. Every amplifier is paired to exactly one speaker by the same serial number. Ensure installation in pairs.

Ensure sufficient convection at the heatsink. Therefore the amplifier should be used standing upright. For a horizontal installation we recommend to use the RL-Amplifier / RL-Amplifier 2.

To connect the Speaker to the amplifier use only the shielded Speakon cable that is part of the delivery contents!

Ensure that the latch snaps audibly in place in the sockets of the speaker and the amplifier by turning the plug clockwise. Connect your signal source with the amplifier through the XLR socket.

To release the connector cable from the speaker and the amplifier, slide the latch on top of the connector back and turn the connector anticlockwise.

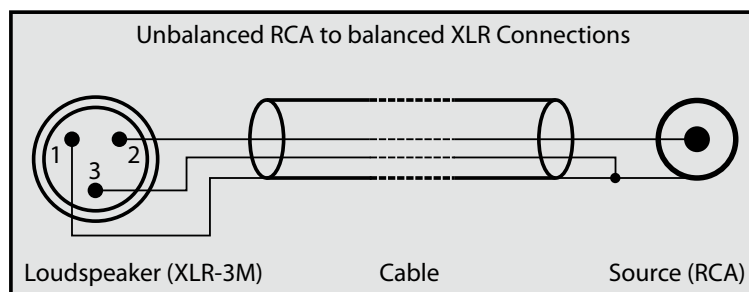
Before start-up check the mains voltage state on the backside of the amplifier. If your local mains voltage does not match the specification of the device, please refer to your retailer or direct distribution. When the stated and your local mains voltage comply connect the mains connector of the amplifier to the socket with the included mains cable.

### 6.3 Cable connection

The input of the integrated amplifier is electrically balanced. When your signal source also utilizes balanced connectors, please use a cable wired as stated in the table:

	Balanced connector (amplifier)	Balanced connector (signal source)	Unbalanced connector (signal source)
	<b>XLR</b>	<b>XLR</b>	<b>RCA</b>
Earth	Pin 1	Pin 1	Ring
Signal +	Pin 2	Pin 2	Tip
Signal -	Pin 3	Pin 3	Ring

When using a signal source with unbalanced outputs (RCA) you need to balance the connecting cables. This avoids hum and other noise interferences. The table and the following figure show the wiring.



### 6.4 Adjustment controller

The "Level" controller is used for level adjustment over the full frequency range.

### 6.5 Status indication

The two-coloured LED at the front of the speaker is used as status indicator of the device.

- ◀ LED green: indicates normal operation of the device
- ◀ LED red: indicates the operation of the overload protection circuit;  
Output power limitation to protect the components from overloading

## 7 Specifications

General	Active 3-way coaxial loudspeaker for listening distances between 1 m (3'3") and 2.6 m (8'6")
Maximum SPL from 100 Hz ... 6 kHz	112 dB ... 121 dB / $r = 1 \text{ m (3'3")}$ ( $4\pi$ )
Bandwidth	30 Hz ... 20 kHz $\pm 3 \text{ dB}$
Calibration:	
Acoustic output level / $P_E = -14 \text{ dBu}$	89 dB / $r = 1 \text{ m (3'3")}$
Directivity index from 100 Hz ... 10 kHz	increasing from 3 dB to 10 dB
Inherent noise sound level	$\leq 7 \text{ dB(A)}$ / $r = 1 \text{ m (3'3")}$
Total harmonic distortion measured at $96 \text{ dB}_{\text{SPL}}$ / $r = 1 \text{ m (3'3")}$ from 100 Hz ... 10 kHz	$\leq -40 \text{ dB}$
Nominal input level	+6 dBu (adjustable)
Input impedance	$\geq 10 \text{ k}\Omega$ RC balanced
Electronic crossover frequencies	750 Hz and 3.8 kHz
Nominal output power of the amplifier	
LF	180 W / $4 \Omega$
MF	100 W / $4 \Omega$
HF	100 W / $4 \Omega$
Input connector	XLR 3F
Drive units	
Woofer	1 $\times$ 260 mm (10") cone
Mid-range unit	1 $\times$ 100 mm (4") cone
Tweeter	1 $\times$ 19 mm ( $\frac{3}{4}$ ") dome
Operation and clipping indicator	LED on front
Power requirements	230 V $\sim \pm 10 \%$ , 50 Hz ... 60 Hz 115 V $\sim \pm 10 \%$ , 50 Hz ... 60 Hz (optional) 100 V $\sim \pm 10 \%$ , 50 Hz ... 60 Hz (optional)
Power consumption	35 VA when idle max. 300 VA at full load
Mains connection	IEC power connector
Environmental conditions	
for use	+15 °C ... +35 °C (+59 °F ... +95 °F)
for storage	-25 °C ... +45 °C (-13 °F ... +113 °F)
humidity	45 % ... 75 %
<b>RL934K (Amplifier in loudspeaker cabinet)</b>	
Dimensions (H $\times$ W $\times$ D)	475 mm $\times$ 325 mm $\times$ 330 mm (18.8" $\times$ 12.8" $\times$ 13")
Weight	28.5 kg (62.9 lbs)
Design of the cabinet	MDF wood in ash black veneered; different veneers and colours on request
Lateral mounting	with lateral mounting; without lateral mounting on request
Handles	with handles; without handles on request

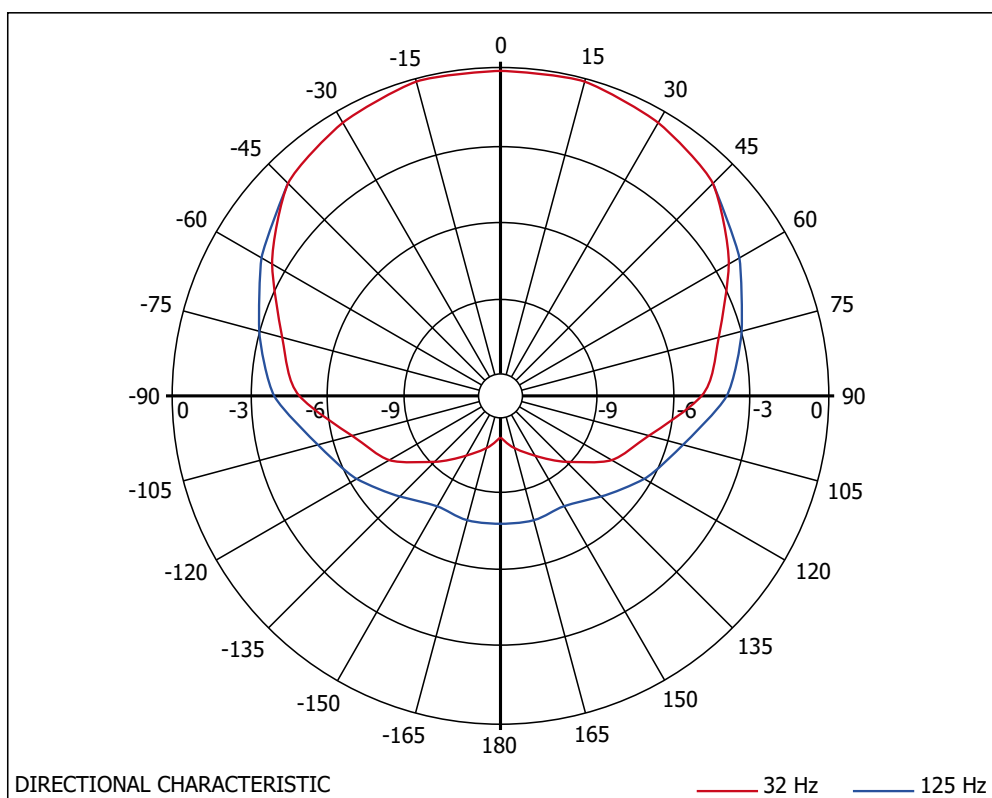
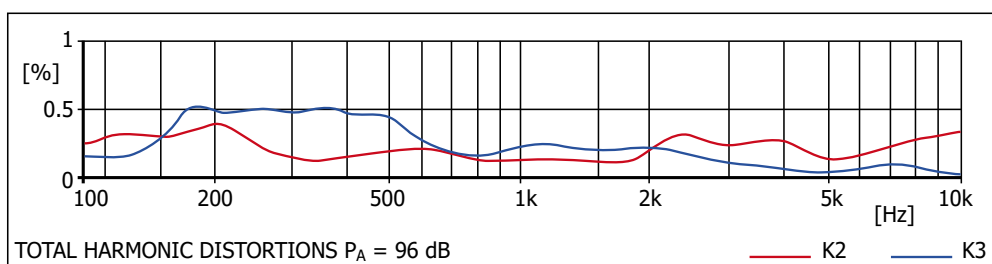
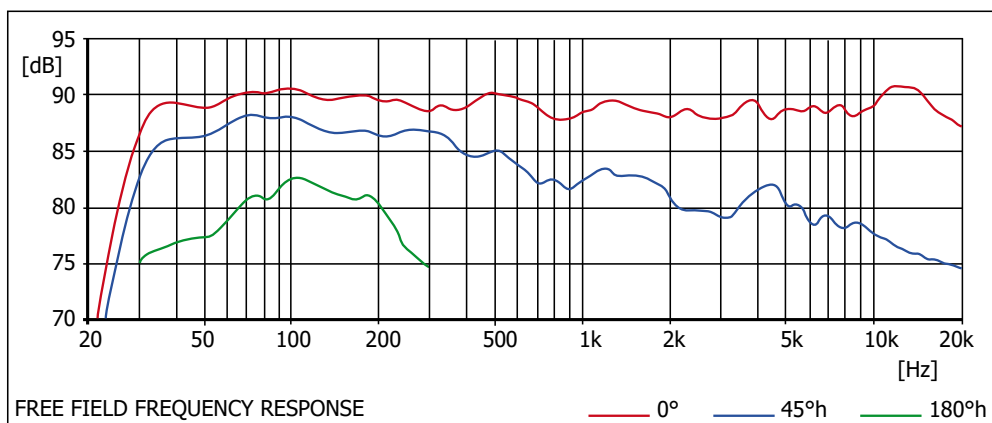
**RL934K1 (Amplifier in separate enclosure)**

Connection cable	Speakon NL8; shielded cable
Loudspeaker – amplifier enclosure	Standard length 3 m (9'10"); other lengths on request
Dimensions (H × W × D)	
Loudspeaker	475 mm × 325 mm × 250 mm (18.8" × 12.8" × 9.9")
Standard amplifier enclosure	475 mm × 279 mm × 120 mm (18.8" × 11" × 4.8") without base plate
High-end amplifier enclosure	495 mm × 320 mm × 260 mm (19.5" × 12.6" × 10.3") with base plate
Weight	
Loudspeaker	15.5 kg (34.2 lbs)
Standard amplifier enclosure	11 kg (24.3 lbs)
High-end amplifier enclosure	12 kg (26.5 lbs)
Design of the cabinet	
Loudspeaker	MDF wood in ash black veneered; different veneers and colours on request with lateral mounting; without lateral mounting on request
Standard amplifier enclosure	MDF wood with scratch proof structure coating black RAL9005; other colours on request
High-end amplifier enclosure	MDF wood in ash black veneered; different veneers and colours on request

As an alternative to the standardly provided MOSFET amplifier in an upright standing enclosure the 19-inch compatible Class D amplifier RL-Amplifier is also available. More information is available in the RL-Amplifier brochure.

## 8 Acoustic measurements

All acoustic measurements are carried out under anechoic conditions with 1 m (3'3") distance.





## 9 Notes





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