



musikelectronic geithain

RL903BK



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

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3 System description

The loudspeaker of the type RL903BK is a main control room loudspeaker with cardioid radiation characteristic within the range of 35Hz to 250Hz which can be applied universally in broadcast vans of medium and large size. Through this radiation characteristic reflections at the backside wall behind the loudspeaker are minimized. The coaxial mid- and high-frequency unit is combined with a powerful long-throw bass driver unit. By construction of the loudspeaker in coaxial technology we can reach excellent localization behaviour and optimum imaging of phantom sources. Additionally, by means of various constructive methods the loudspeaker produces extreme low non-linear distortions. With the special geometric arrangement of the mid- and high-frequency driver unit as well as with the relatively small asymmetric designed front the result gives excellent tone colour neutrality, i.e. sound coloration at a minimum level. In spite of compact dimensions of the box a lower frequency of 35Hz could be reached.

The 3-way MOSFET-amplifier with active crossover is integrated into the back of the cabinet and is hinged for service purposes. An intermittent LED indicates sound pressure levels within the overload margin of 3dB and warns of clipping. Beyond this limit the output level of the high- and mid-frequency drivers get damped by 20dB to protect the speaker's components.

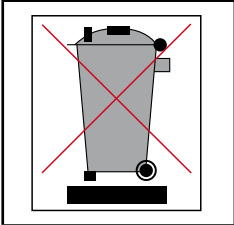
Optionally, the mid- and high-frequency unit can be supplied revolved by 90 degrees, that way the speaker can be installed either in vertical or horizontal position. For matching the monitor to the room-acoustical situation within the listening room and its position, the frequency response can be corrected at higher and lower frequencies.

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 RL 903BK
- ◀ Amplifier enclosure
- ◀ Speakon cable
- ◀ 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

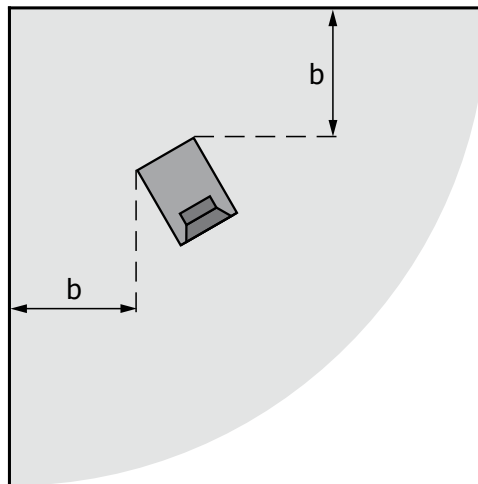
Opening the device by unauthorized personnel leads to all claims under guarantee expire. In case of destruction by overload, misuse or outside influences there are no claims under guarantee.

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.

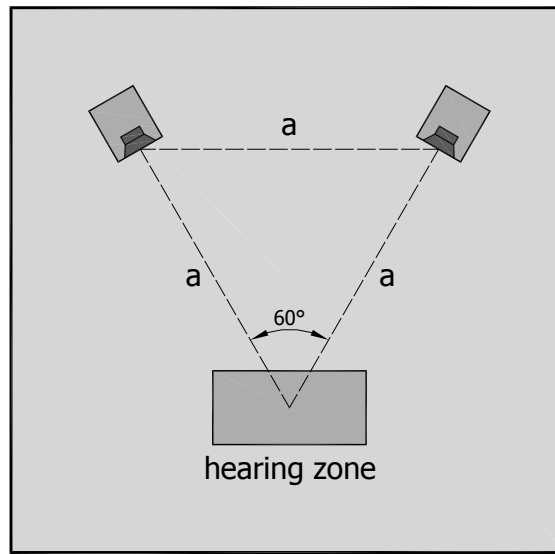


◀ Minimum distance to wall

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

5.2 Stereo operation

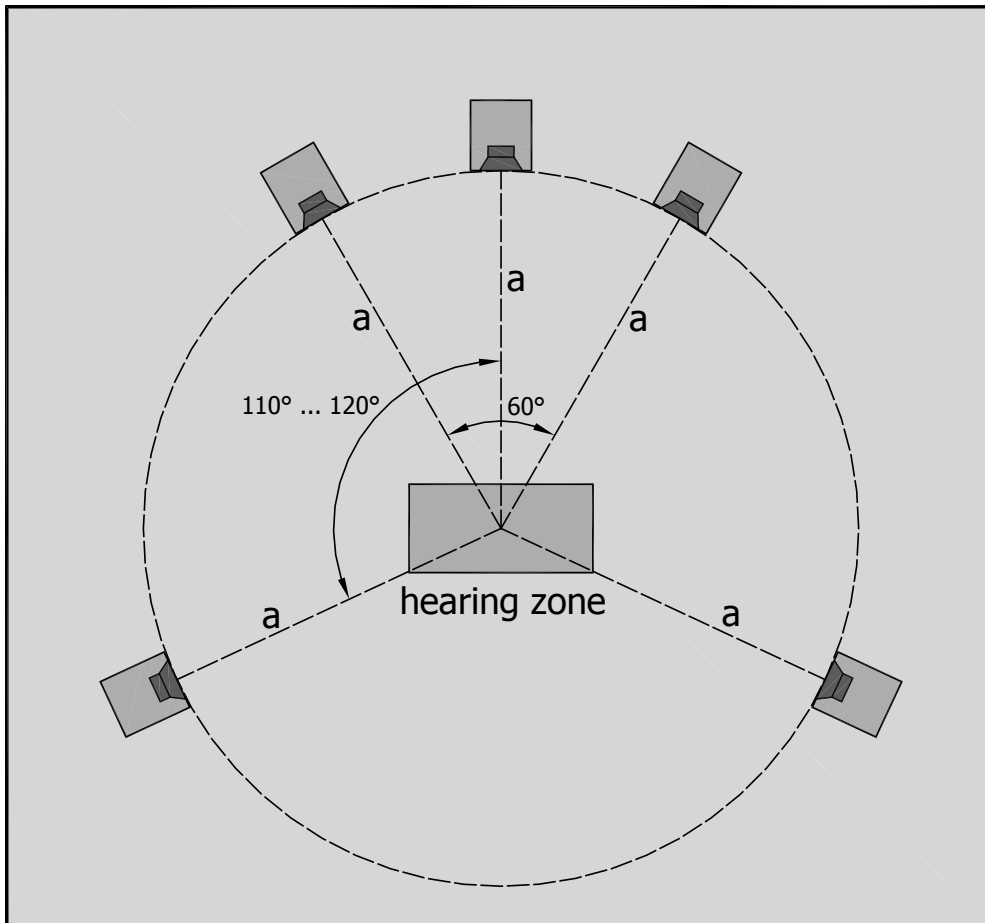
The optimum position of the speakers in your listening environment is the so-called stereo triangle (see figure). The base distance between the speakers and the distance to the hearing zone form an equilateral triangle (stereo triangle). A distance less than 1.5 m (4'11") or more than 3 m (9'10") should be avoided. For precise, spacial reproduction turn the speakers inside, directed to the hearing zone.



- ◀ Distance between speakers and your listening position $a = 1.5\text{ m} \dots 3\text{ m}$ (4'11" ... 9'10")
- ◀ 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° – 120° .



- ◀ Distance between speakers and your listening position $a = 1.5\text{m} \dots 3\text{m}$ (4'11" ... 9'10")

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 and 6.2) you can take the device into operation by use of the mains switch.

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

6.1 Connecting the RL903BK

The amplifier of the RL903BK 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 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.

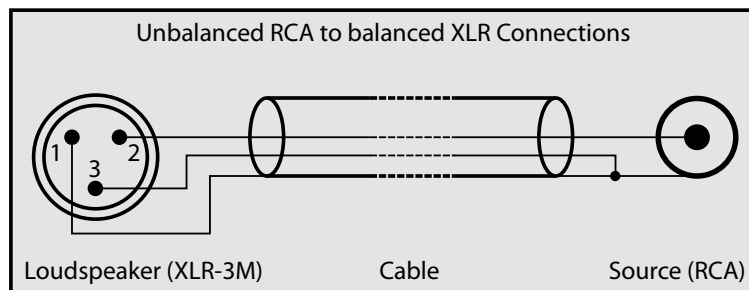
Before start-up check the mains voltage state on the backside of the amplifier. If your local mains voltage does not match the specification of the device, please refer to your retailer or direct distribution. When the stated and your local mains voltage comply connect the mains connector of the amplifier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

6.2 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)
	XLR	XLR	RCA
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. **Adjustment controller**



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

6.3 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 reference monitor for use in middle and large mobile broadcast vans 1.5m (4'11") and 3m (9'10")
Maximum SPL from 100 Hz ... 6 kHz	110 dB ... 115 dB / r = 1 m (3'3") (4π)
Bandwidth	35 Hz ... 20 kHz ±3 dB
Calibration:	
Acoustic output level / $P_E = -14$ dBu	89 dB / r = 1 m (3'3")
Directivity index from 200 Hz ... 10 kHz	increasing from 2 dB to 11 dB
Inherent noise sound level	≤ 7 dB(A) / r = 1 m (3'3")
Total harmonic distortion measured at 96 dB _{SPL} / r = 1 m (3'3") from 100 Hz ... 10 kHz	≤ -45 dB
Nominal input level	+6 dBu (adjustable)
Input impedance	≥ 10 kΩ RC balanced
Electronic crossover frequencies	250 Hz and 2.6 kHz
Nominal output power of the amplifier	
LF	180 W / 4 Ω
MF	100 W / 4 Ω
HF	100 W / 4 Ω
Input connector	XLR 3F
Drive units	
Woofer	1 × 200 mm (8") cone
Mid-range unit	1 × 130 mm (5") cone
Tweeter	1 × 25 mm (1") dome
Operation and clipping indicator	LED on front
Power requirements	230 V ~ ±10%, 50 Hz ... 60 Hz 115 V ~ ±10%, 50 Hz ... 60 Hz (optional) 100 V ~ ±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 %
Connection cable	Speakon NL8
Loudspeaker – amplifier enclosure	Standard length 3 m (9'10"); other lengths on request
Dimensions (H × W × D)	
Loudspeaker	415 mm × 254 mm × 275 mm (16.4" × 10" × 10.9")
Standard amplifier enclosure	475 mm × 279 mm × 120 mm (18.8" × 11" × 4.8")
Weight	
Loudspeaker	15 kg (33.1 lbs)
Standard amplifier enclosure	11 kg (24.3 lbs)

Design of the cabinet

Loudspeaker

MDF wood in ash black veneered; different veneers and colours on request

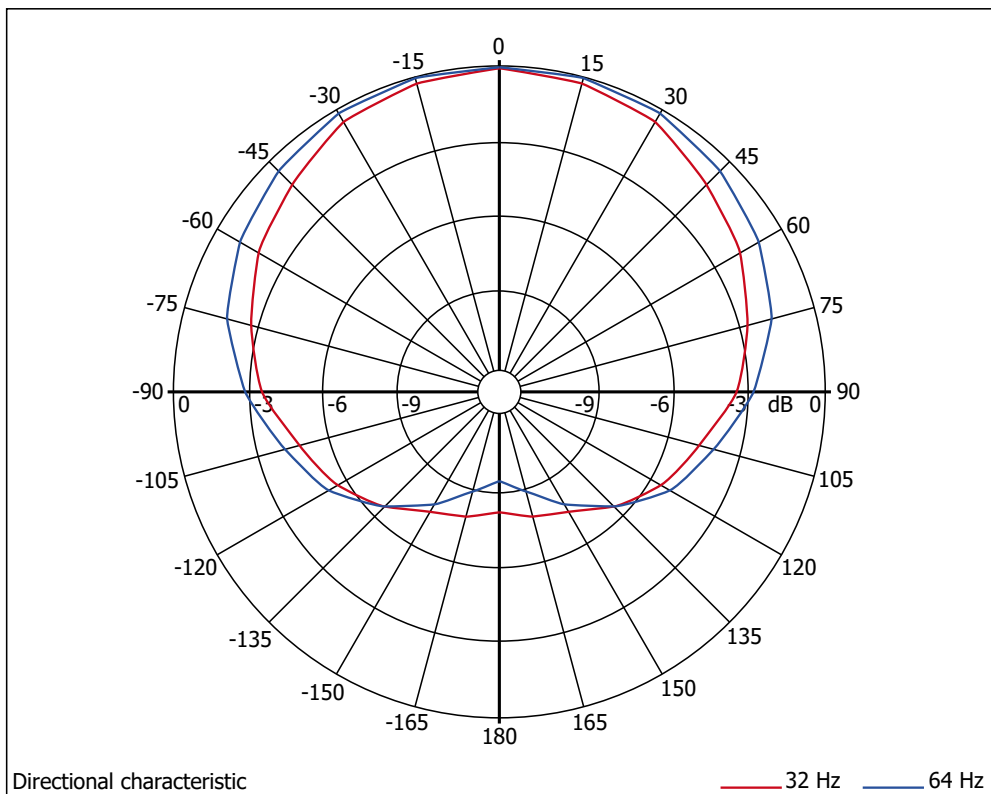
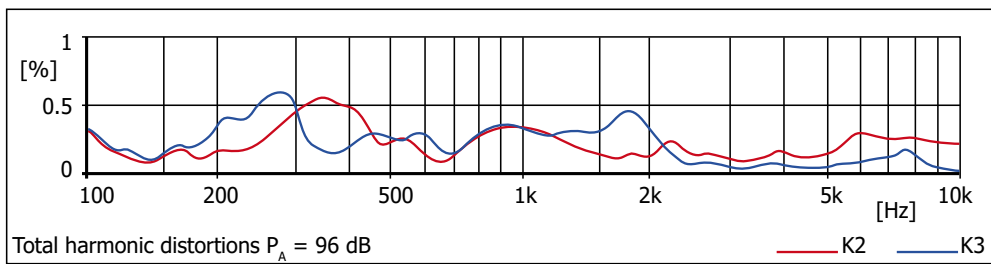
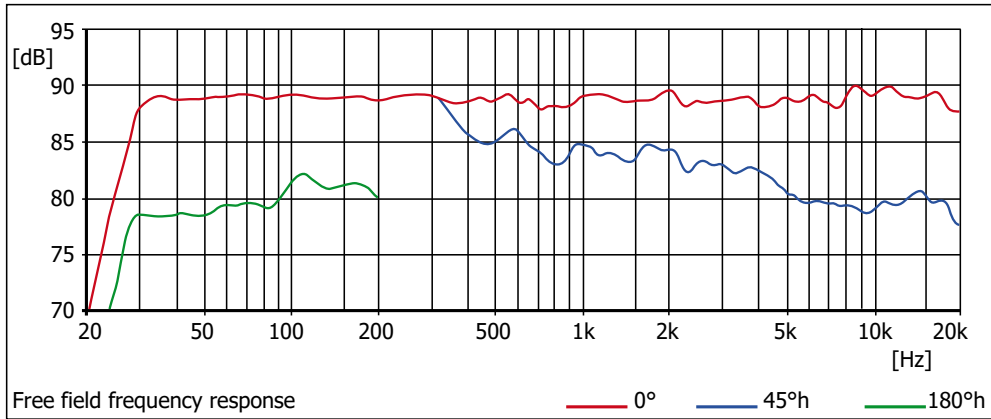
with lateral mounting; without lateral mounting on request

Standard amplifier enclosure

MDF wood with scratch proof structure coating black RAL9005; other colours on request

8 Acoustic measurements

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



9 Notes

BDA_RL903BK_15.06.2018_ENV18



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