



HANDBOOK

## Redbox RB-MA2G

Dual Microphone Amplifier  
with Gain Controls



Manufacturers of audio & video  
products for radio & TV broadcasters

**SONIFEX**

This handbook is for use with the following product:  
Redbox RB-MA2G Dual Microphone Amplifier with Gain  
AW10774A  
Stock Code: 30-329

Revision 1.00, May 2016  
©Sonifex Ltd, 2016  
All Rights Reserved

Sonifex Ltd, 61, Station Road, Irthlingborough,  
Northants, NN9 5QE, England.  
Tel: +44 (0)1933 650 700  
Fax: +44 (0)1933 650 726  
Email: [sales@sonifex.co.uk](mailto:sales@sonifex.co.uk)  
Website: <http://www.sonifex.co.uk>

Information in this document is subject to change without notice and does not represent a commitment on the part of the vendor. Sonifex Ltd shall not be liable for any loss or damage whatsoever arising from the use of information or any error contained in this manual.

No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, information storage and retrieval systems, for any purpose other than the purchaser's personal use, without the express written permission of Sonifex Ltd. Unless otherwise noted, all names of companies, products and persons contained herein are part of a completely fictitious adaptation and are designed solely to document the use of Sonifex product.

Made in the UK by **SONIFEX**

# Contents

## Product Warranty - 2 Year Extended

### Sonifex Warranty & Liability Terms & Conditions

1. Definitions
2. Warranty

### Unpacking Your Product

### Repairs & Returns

## CE Conformity

## Safety & Installation of Mains Operated Equipment

### Voltage Setting Checks

### Fuse Rating

### Power Cable & Connection

### WEEE Directive

### Atmosphere/Environment

### Fitting Redboxes

## RB-MA2G Dual Microphone Amplifier with Gain

### Introduction

#### System Block Diagram

### Rear Panel Connections and Operation

### Front Panel Controls

### Technical Specifications RB-MA2G

# Figures

Fig 1-1: RB-MA2G Front Panel	1
Fig 1-2: RB-MA2G System Block Diagram	2
Fig 1-3: RB-MA2G Rear Panel	2
Fig 1-4: Switch to Control LF Filter and Phantom Power	3

# SONIFEX

## Register Online for an Extended 2 Year Warranty

As standard, Sonifex products are supplied with a 1 year back to base warranty.

If you register the product online, you can increase your product warranty to 2 years and we can also keep you informed of any product design improvements or modifications.

Product: \_\_\_\_\_

\_\_\_\_\_

Serial No: \_\_\_\_\_

To register your product, please go online to  
[www.sonifex.co.uk/register](http://www.sonifex.co.uk/register)

## Product Warranty - 2 Year Extended

As standard, Sonifex products are supplied with a 1 year back to base warranty. In order to register the date of purchase and so that we can keep you informed of any product design improvements or modifications, it is important to complete the warranty registration online. Additionally, if you register the product on the Sonifex website, you can increase your product warranty to 2 years. Go to the Sonifex website at: <http://www.sonifex.co.uk/technical/register/index.asp> to apply for your 2 year warranty.

**Note:** For your own records the product serial number is recorded on the CE certification page of this handbook.

## Sonifex Warranty & Liability Terms & Conditions

### 1. Definitions

‘the Company’ means Sonifex Ltd and where relevant includes companies within the same group of companies as Sonifex Limited.

‘the Goods’ means the goods or any part thereof supplied by the Company and where relevant includes: work carried out by the Company on items supplied by the Purchaser; services supplied by the Company; and software supplied by the Company.

‘the Purchaser’ means the person or organisation who buys or has agreed to buy the Goods.

‘the Price’ means the Price of the Goods and any other charges incurred by the Company in the supply of the Goods.

‘the Warranty Term’ is the length of the product warranty which is usually 12 months from the date of despatch; except when the product has been registered at the Sonifex website when the Warranty Term is 24 months from the date of despatch.

‘the Contract’ means the quotation, these Conditions of Sale and any other document incorporated in a contract between the Company and the Purchaser.

This is the entire Contract between the parties relating to the subject matter hereof and may not be changed or terminated except in writing in accordance with the provisions of this Contract. A reference to the consent, acknowledgement, authority or agreement of the Company means in writing and only by a director of the Company.

### 2. Warranty

- a. The Company agrees to repair or (at its discretion) replace Goods which are found to be defective (fair wear and tear excepted) and which are returned to the Company within the Warranty Term provided that each of the following are satisfied:
  - i. notification of any defect is given to the Company immediately upon its becoming apparent to the Purchaser;
  - ii. the Goods have only been operated under normal operating conditions and have only been subject to normal use (and in particular the Goods must have been correctly connected and must not have been subject to high voltage or to ionising radiation and must not have been used contrary to the Company’s technical recommendations);
  - iii. the Goods are returned to the Company’s premises at the Purchaser’s expense;
  - iv. any Goods or parts of Goods replaced shall become the property of the Company;
  - v. no work whatsoever (other than normal and proper maintenance) has been carried out to the Goods or any part of the Goods without the Company’s prior written consent;

- vi. the defect has not arisen from a design made, furnished or specified by the Purchaser;
  - vii. the Goods have been assembled or incorporated into other goods only in accordance with any instructions issued by the Company;
  - viii. the defect has not arisen from a design modified by the Purchaser;
  - ix. the defect has not arisen from an item manufactured by a person other than the Company. In respect of any item manufactured by a person other than the Company, the Purchaser shall only be entitled to the benefit of any warranty or guarantee provided by such manufacturer to the Company.
- b. In respect of computer software supplied by the Company the Company does not warrant that the use of the software will be uninterrupted or error free.
- c. The Company accepts liability:
- (i) for death or personal injury to the extent that it results from the negligence of the Company, its employees (whilst in the course of their employment) or its agents (in the course of the agency);
  - (ii) for any breach by the Company of any statutory undertaking as to title, quiet possession and freedom from encumbrance.
- d. Subject to conditions (a) and (c) from the time of despatch of the Goods from the Company's premises the Purchaser shall be responsible for any defect in the Goods or loss, damage, nuisance or interference whatsoever consequential economic or otherwise or wastage of material resulting from or caused by or to the Goods. In particular the Company shall not be liable for any loss of profits or other economic losses. The Company accordingly excludes all liability for the same.
- e. At the request and expense of the Purchaser the Company will test the Goods to ascertain performance levels and provide a report of the results of that test. The report will be accurate at the time of the test, to the best of the belief and knowledge of the Company, and the Company accepts no liability in respect of its accuracy beyond that set out in Condition (a).
- f. Subject to Condition (e) no representation, condition, warranty or other term, express or implied (by statute or otherwise) is given by the Company that the Goods are of any particular quality or standard or will enable the Purchaser to attain any particular performance or result, or will be suitable for any particular purpose or use under specific conditions or will provide any particular capacity, notwithstanding that the requirement for such performance, result or capacity or that such particular purpose or conditions may have been known (or ought to have been known) to the Company, its employees or agents.
- g. (i) To the extent that the Company is held legally liable to the Purchaser for any single breach of contract, tort, representation or other act or default, the Company's liability for the same shall not exceed the price of the Goods.
- (ii) The restriction of liability in Condition (g)(i) shall not apply to any liability accepted by the Seller in Condition (c).
- h. Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (Restrictions on Statements) Order 1976) the statutory rights of the Purchaser are not affected by these Conditions of Sale.

## Unpacking Your Product

Each product is shipped in protective packaging and should be inspected for damage before use. If there is any transit damage take pictures of the product packaging and notify the carrier immediately with all the relevant

details of the shipment. Packing materials should be kept for inspection and also for if the product needs to be returned.

The product is shipped with the following equipment so please check to ensure that you have all of the items below. If anything is missing, please contact the supplier of your equipment immediately.

Item	Quantity
Product unit	1
IEC mains lead fitted with moulded mains plug	1
Handbook and warranty card	1
GSM stubby antenna	1

If you require a different power lead, please let us know when ordering the product.

## Repairs & Returns

Please contact Sonifex or your supplier if you have any problems with your Sonifex product. Email [technical.support@sonifex.co.uk](mailto:technical.support@sonifex.co.uk) for the repair/upgrade/returns procedure, or for support & questions regarding the product operation.

## CE Conformity

The products in this manual comply with the essential requirements of the relevant European health, safety and environmental protection legislation.

The technical justification file for this product is available at Sonifex Ltd.

The declaration of conformity can be found at:  
<http://www.sonifex.co.uk/declarations>

## Safety & Installation of Mains Operated Equipment

There are no user serviceable parts inside the equipment. If you should ever need to look inside the unit, always disconnect the mains supply before removing the equipment covers. The cover is connected to earth by means of the fixing screws. It is essential to maintain this earth/ground connection to ensure a safe operating environment and provide electromagnetic shielding.

### Voltage Setting Checks

Ensure that the machine operating voltage is correct for your mains power supply by checking the box in which your product was supplied. The voltage is shown on the box label. The available voltage settings are 115V, or 230V. Please note that all products are either switchable between 115V and 230V, or have a universal power supply.

### Fuse Rating





The product is supplied with a single fuse in the live conducting path of the mains power input. For reasons of safety it is important that the correct rating and type of fuse is used. Incorrectly rated fuses could present a possible fire hazard, under equipment fault conditions. The active fuse is fitted on the outside rear panel of the unit.

### Power Cable & Connection

An IEC power connector is supplied with the product which has a moulded plug attached.

The mains plug or IEC power connector is used as the disconnect device. The mains plug and IEC power connector shall remain readily operable to disconnect the apparatus in case of a fault or emergency.

The mains lead is automatically configured for the country that the product is being sent to, from one of:

Territory	Voltage	IEC Lead Type	Image
UK & Middle East	230V	UK 3 pin to IEC lead	
Europe	230V	European Schuko round 2 pin to IEC lead	
USA, Canada and South America	115V	3 flat pin to IEC lead	
Australia & New Zealand	230V	Australasian 3 flat pin to IEC lead	

Connect the equipment in accordance with the connection details and before applying power to the unit, check that the machine has the correct operating voltage for your mains power supply.

This apparatus is of a class I construction. It must be connected to a mains socket outlet with a protective earthing connection.

**Important note:** If there is an earth/ground terminal on the rear panel of the product then it must be connected to Earth.

### WEEE Directive



The Waste Electrical and Electronic Equipment (WEEE) Directive was agreed on 13 February 2003, along with the related Directive 2002/95/EC on Restrictions of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS). The Waste Electrical and Electronic Equipment Directive (WEEE) aims to minimise the impacts of electrical and electronic equipment on the environment during their life times and when they become waste.

All products manufactured by Sonifex Ltd have the WEEE directive label placed on the case. Sonifex Ltd will be happy to give you information about local organisations that can reprocess the product when it reaches its “end of use”, or alternatively all products that have reached “end of use” can be returned to Sonifex and will be reprocessed correctly free of charge.

### Atmosphere/Environment

This apparatus should be installed in an area that is not subject to excessive temperature variation (<0°C, >50°C), moisture, dust or vibration.

This apparatus shall not be exposed to dripping or splashing, and no objects filled with water, such as vases shall be placed on the apparatus.

### Fitting Redboxes

Redboxes can be fixed to the underside of a desk, or other surfaces using 4.2mm holes in the sides and fixed with 2 x M4 screws or 2 x No. 6 countersink wood screws.

They can also be rack-mounted, with either the front, or rear of the Redbox positioned at the front of the rack (Note: this product is front rack-mounted as standard):

**Front Mounting Redboxes:** For rack mounting smaller (28cm) units the optional **RB-RK1** (Red) or **RB-RK1B** (Black) kit can be used (which include 4 off M6 panel fixing screws).

**Rear Mounting a Redbox:** For rear panel mounting you can use either the **RB-RK2** (in this case), or **RB-RK3**, depending on the size of your Redbox.



The **RB-RK2** kit for fitting an **RB-MA2G**.

# RB-MA2G Dual Microphone Amplifier with Gain

## Introduction

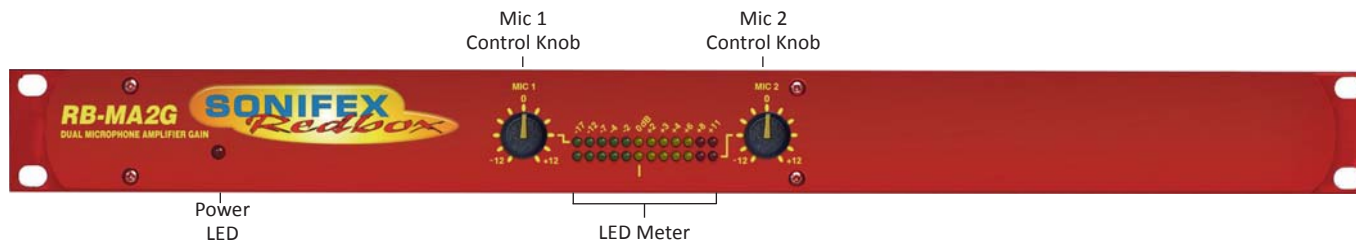


Fig 1-1: RB-MA2G Front Panel

The RB-MA2G consists of two independent low-noise microphone pre-amplifiers for converting microphone level signals to line level, or for driving long lines from microphones to mixing equipment.

All connections are on the rear panel. The microphone input is XLR-3 type and is electronically balanced. The input gains can be adjusted individually by recessed pre-set potentiometers.

Two front panel potentiometers give  $\pm 12$ dB level adjustment and a 12 segment LED meter shows the audio level for each channel.

The XLR-3 line output is electronically balanced and can be wired unbalanced by grounding the non-phase signal, allowing you to feed both balanced and unbalanced equipment.

For each channel there are independent switches to control a high pass filter (low frequency roll-off at 125Hz) and to provide phantom power at +48V to the connected microphone. An LED power indicator on the front panel displays the power supply connection.

### System Block Diagram

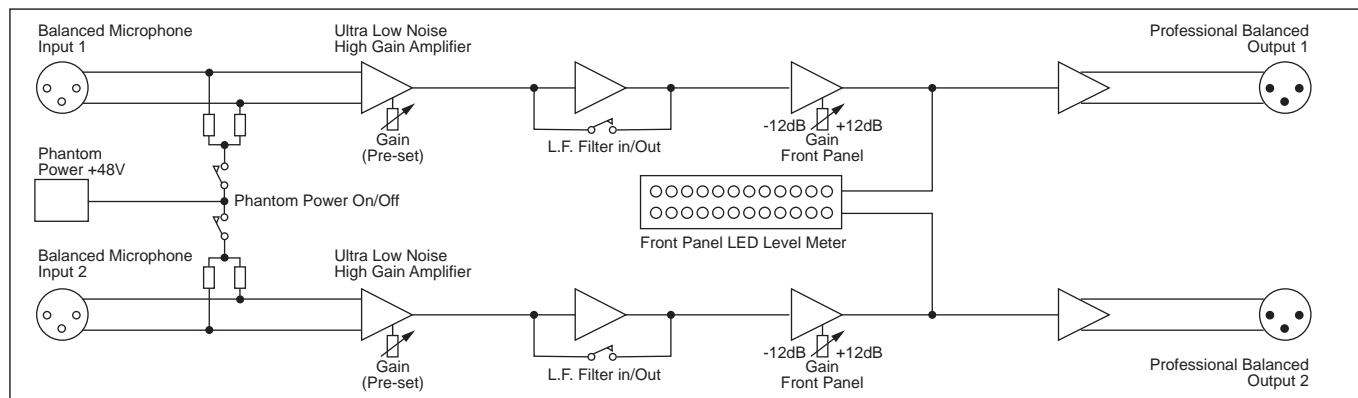


Fig 1-2: RB-MA2G System Block Diagram

### Rear Panel Connections and Operation

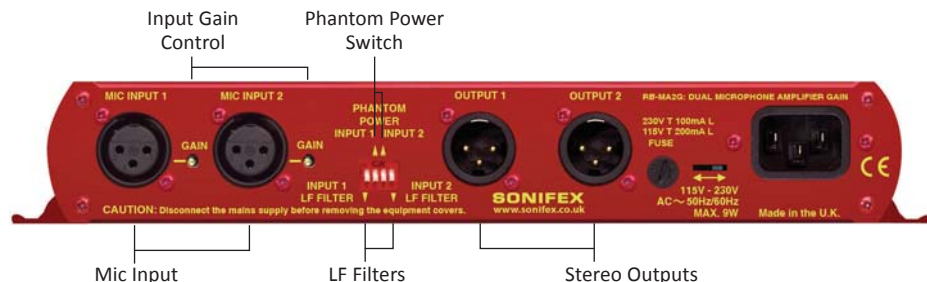


Fig 1-3: RB-MA2G Rear Panel

#### Mic Inputs

The XLR 3 pin sockets used for the microphone are electronically balanced. They have the following connections:

Pin 1: Screen

Pin 2: Phase

Pin 3: Non-phase

#### Input Gain

Recessed pre-set potentiometers allow for adjustment of the gain of the microphone inputs. This provides a gain range of 24dB to 68dB which enables the use of dynamic and powered microphones. Connect the mic input and adjust the gain until the line output is at the level that you need.

Once the input gain is set to suit the microphone to be used, the front panel level adjustment can be used to trim the level up or down for quiet or loud microphone users.

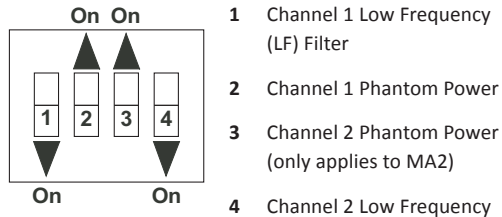


Fig 1-4: Switch to Control LF Filter and Phantom Power

### Using Phantom Powered Microphones

For the input channel there are independent switches to provide phantom power at +48V

to the connected microphones. With phantom power selected, a voltage of +48V is applied to pins 2 and 3 of the XLR connector to power the microphone, supplied through 6k8 resistors giving a current of 14mA. Phantom power is used when the switch is pointing towards the arrow.

### Using the LF Filter

A switch also provides control for a high pass filter with low frequency roll off at 125Hz. The filter is in when the switch is in the down position (towards the arrow).

### Analogue Line Level Outputs

The XLR 3 pin plug analogue line output connector is electronically balanced and can be wired unbalanced by grounding the non-phase signal, allowing you to feed balanced and unbalanced equipment. It has the following connections:

Pin 1: Screen

Pin 2: Phase

Pin 3: Non-phase

The connector provides a line level output with an impedance of <50Ω and a maximum output level of +28dBu.

## Front Panel Controls

### Level Adjustment Potentiometers

Two front panel potentiometers provides ±12dB of level adjustment, useful for changing the audio gain for different users (i.e. less gain when a loud user is using the microphone, more gain when the user is quiet). In conjunction with the rear panel preset, this gives the RB-MA2G a 12dB to 80dB gain range.

### Level Meter

A 12 segment LED meter is provided to indicate the output level of both channels. This is useful in helping to set the front panel level adjust for a specific microphone user. Professional audio levels should be at 0dBu with peaks at approximately +4dBu.

## Technical Specifications RB-MA2G

### Audio Specifications

Maximum Input Level:	+4dBu
Maximum Output Level:	+28dBu
Input Impedance:	2k $\Omega$ Nominal balanced
Output Impedance:	<50 $\Omega$ Balanced
Low Frequency Roll-Off:	125Hz @ 6dB/octave
Gain Range:	Adjustable 12dB to 80dB gain
E.I.N:	-128dBu, 20kHz BW, max gain, Rs=200 $\Omega$
Distortion:	<0.01%, +8dBu, 20Hz – 20kHz, 40dB gain, 20kHz bandwidth
Common Mode Rejection:	>66dB @ 1kHz
Phantom Power:	48V
Frequency Response:	20Hz to 20kHz +0/-0.2dB

### Connections

Input:	2 x XLR 3 pin female (Balanced)
Output:	2 x XLR 3 pin male (Balanced, can be unbalanced)
Mains Input:	Filtered IEC, 110V-120V, or 220-240V switchable, fused, 9W maximum
Fuse Rating:	Anti-surge fuse 100mA 20 x 5mm (230VAC) Anti-surge fuse 250mA 20 x 5mm (115VAC)

### Equipment Type

RB-MA2G:	Dual microphone amplifier with gain
----------	-------------------------------------

### Physical Specifications

Dimensions (Raw):	48cm (W) x 10.8cm (D) x 4.2cm (H) (1U) 19" (W) x 4.3" (D) x 1.7" (H) (1U)
Dimensions (Boxed):	58.5cm (W) x 22.5cm (D) x 7cm (H) 23" (W) x 8.9" (D) x 2.8" (H)
Weight:	Nett: 1.35kg    Gross: 2.0kg Nett: 3.0lbs    Gross: 4.4lbs









**SONIFEX**

[www.sonifex.co.uk](http://www.sonifex.co.uk)

t:+44 (0)1933 650 700

f:+44 (0)1933 650 726

[sales@sonifex.co.uk](mailto:sales@sonifex.co.uk)