



EMS-115/115C quasi-bandpass compact subwoofer User Manual – v1.0



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EMS-115 User Manual

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INTRODUCTION

Thank you

Thank you for purchasing a product from the acclaimed EMS Series from EM Acoustics. The EMS Series products have been carefully designed and rigorously tested to ensure years of flawless operation and unprecedented sonic quality. Flexibility is the key factor with EMS products, and consequently they are at home within a wide variety of applications from live and portable applications, through to cafes, bars, nightclubs, theatres and conference centres.

Please ensure that you read this manual carefully before use, and that you keep it to hand should you need it for further reference. Furthermore, should you have any difficulties please do not hesitate in contacting your EM Acoustics dealer, or email info@emacoustics.co.uk for further assistance.

Unpacking

Every EM Acoustics product is built to the highest standard and thoroughly tested before it leaves our factory. After unpacking your loudspeaker, please inspect it carefully for any signs of transit damage. If such damage is found, please notify the carrier at once to instigate a claim. It is suggested that you retain all packaging for future re-shipment.

DECLARATION OF CONFORMITY



The products contained within this manual conform to the requirements of the EMC Directive 89/336/EEC, amended by 92/31/EEC and to the requirements of the Low Voltage Directive 73/23/EEC amended by 93/68/EEC.

Standards Applied:	EMC	Emission	EN55103-1:1996
		Immunity	EN55103-2:1996
		Electrical Safety	EN60065:1993

RECYCLING



This product and its packaging constitute the applicable product according to the WEEE directive. Please ensure that at the end of the working life of this product, it is disposed of sensibly in accordance with local and national recycling regulations. The packaging supplied with this product is recyclable. Please retain all packaging, however if disposing of this packaging please ensure that you comply with local recycling regulations. These products also all comply to the RoHS Directive 2002/95/EC.

PRODUCT OVERVIEW

EMS-115/115C quasi-bandpass compact subwoofer



The EMS-115 is a compact, powerful subwoofer product designed for a wide variety of sound reinforcement applications where compact size and weight are more critical than low frequency extension. It features a high-power 15" (381mm) neodymium LF drive unit in a quasi-bandpass enclosure, resulting in a response which is swift and punchy, whilst still retaining usable low frequency extension. The EMS-115C is identical in every respect, except that the drive unit utilises a ceramic magnet system for more cost-sensitive applications.

The EMS-115 is suited to a wide variety of professional audio applications, from corporate and theatre use through to small-medium scale front of house or nightclub use.

As with all EM Acoustics subwoofers, no programmed EQ is required for correct operation. For normal usage, active high and low pass filters are required. This is a lot of flexibility in the choice of crossover points, depending on program material and user taste. Please see page 7 for further information.

The EMS-115 is supplied as standard in black or white, and is fitted with two Neutrik SpeakON™ NL4MPR connectors. An optional castor set is also available to fit heavy-duty wheels to the EMS-115. Custom colours, weather protection and specific connectors can also be supplied if required – please contact your local EM Acoustics representative for more details.

SYSTEM SET-UP

Safety Considerations

Loudspeaker systems are potentially dangerous objects if used incorrectly. Please ensure that you read this section fully, and contact EM Acoustics or your local dealer should you be in any doubt over correct operation procedures.

Professional loudspeaker systems are capable of producing damage-inducing sound pressure levels, and hence care should be taken when setting your system up, particularly when it comes to loudspeaker placement within a venue. Damage to the ear can result from levels above 90dB under prolonged exposure.

Pole Mounting fullrange loudspeakers from the EMS-115/115C

The EMS-115/115C can be support other loudspeakers using either a standard 35mm pole, or an M20 threaded pole depending on your choice of hardware. When mounting in this way, please consider the following:

- Ensure your stand height is locked off and the system is stable.
- Check the weight loading of your poles before attempting to mount the loudspeaker.
- Do not stack a second loudspeaker on top of the stand-mounted one.
- Ensure cables are run so as to leave enough slack to enable neat wiring, and thus reduce the risk of the speaker being pulled over. Loose cables should be covered or taped down wherever possible to reduce trip hazards.
- If the system is being used outdoors, it may be necessary to add support to the system to prevent it toppling over.

Ground Stacking

- Ensure that the floor or stage surface can withstand the weight of the system.
- Wherever possible, avoid high stacks and use ratchet straps to secure loudspeakers together. Please also remember that vibrations from subwoofer systems can shake other loudspeakers out of place, which may present a toppling hazard. The use of ratchet straps and non-slip material is recommended to prevent this.

Cabling and Amplifier Selection

The EMS-115 is designed to be used with professional power amplifiers providing the following power outputs:

EMS-115 1000W/channel **into eight ohms**

A small power amplifier working too hard is more likely to damage a loudspeaker than a large power amplifier working within its operating range!

It is good practice to use an amplifier equal to the program power rating of the loudspeaker – so as to retain sufficient headroom and good dynamic range. Care should be taken during operation to avoid amplifier clipping – as this can cause serious damage to your loudspeakers. If in doubt, please contact your dealer who will be happy to assist you in correct amplifier choice and setup.

Cabling

The EMS-115 is supplied as standard with Neutrik SpeakON™ NL4 connectors, wired pin 1+/1-. It is recommended that the resistance of your cable is less than one tenth of the nominal system impedance. Given below are the recommended maximum cable lengths for different cross-sections and impedances.

Conductor Cross Sectional Area	Maximum Recommended Cable Length		
	<i>4 ohms</i>	<i>8 ohms</i>	<i>16 ohms</i>
1.0mm ²	11m	22m	44m
1.5mm ²	17m	34m	68m
2.0mm ²	22m	44m	88m
2.5mm ²	29m	58m	116m
4.0mm ²	44m	88m	176m
6.0mm ²	66m	132m	264m

Pins 2+/2- on the SpeakON™ connectors are wired together to allow link-through with 4-core cables.

DSP Settings

The EMS-115 requires at the minimum an active low pass filter to function correctly. The settings below are given as a starting point – as the user you are given maximum flexibility to adjust for your taste. To protect the drive unit, it is also advisable to apply a high pass filter to the system to protect the EMS-115 drive unit from over-excursion from frequencies it cannot reproduce. The higher you raise the high pass filter on an EMS-115, the more headroom and overall sound pressure level output there is available. For most medium-to-high level applications, we would recommend a minimum of an 45Hz high pass filter with a 24dB/octave slope to sufficiently protect the loudspeaker. For higher SPL applications, we would recommend raising this filter – we would stress that the higher the filter, the safer the loudspeaker will be. If you are in any doubt over suitable settings for your EMS-115, please don't hesitate to contact EM Acoustics or your local dealer for support and advice.

EMS-115:	High Pass Filter:	45Hz, 24dB/Octave Linkwitz-Riley
	Low Pass Filter:	125Hz maximum, 24dB/Octave Linkwitz-Riley

MAINTENANCE

Your EM Acoustics loudspeakers have been rigorously tested before they leave our factory, to ensure that they give you a lifetime of flawless operation. Should any of your drive units fail and need replacing, please follow the guidelines below.

EMS-115: Low Frequency Drive Unit

1. Using a 5mm Allen key, undo the M6 machine screws securing the drive unit access door.
2. Using a 5mm Allen key, remove the six M6 socket-head bolts holding the drive unit in place, and keep them safe – ensuring you have collected both the shake-proof and flat washers for each bolt. Gently lift the drive unit out of its locating hole – please take care as it is heavy! Carefully disconnect the cables from the drive unit. *For the EMS-115C, eight bolts secure the drive unit in place.*
3. To reinstate the driver, simply reverse the above procedure. Please observe the correct polarity – red cable to positive terminal, black cable to negative.
4. Reinstall the access door by carefully aligning the mounting holes of the door with the threaded fittings in the door support. Insert the M6 bolts and re-tighten to secure the door.

WARRANTY

Limited Warranty

This EM Acoustics loudspeaker product is warranted to the original end-user purchaser and all subsequent owners for a period of **three years** from the original date of purchase.

Warranty Coverage

This warranty covers defects in materials and workmanship. It does not include:

- Damage or failure caused by accident, misuse, neglect, abuse or modification by any person other than an authorised EM Acoustics representative.
- Damage or failure caused by operating the loudspeaker product contrary to the instructions contained within this manual.
- Damage caused during shipment.
- Claims based on any misrepresentation by the seller.
- Products which contain anything other than the original components (or EM Acoustics factory supplied spare parts).
- Products on which the serial number has been removed, altered or defaced.

Returning your EM Acoustics loudspeaker

Should your EM Acoustics loudspeaker develop a fault, please return it (freight prepaid) in its original packaging, along with proof of purchase to your local dealer or to:

EM Acoustics (Returns Department), Building 74, Dunsfold Park, Cranleigh, Surrey, GU6 8TB, UK

including a description of the suspected fault. Serial numbers must be quoted in all correspondence relating to the claim. EM Acoustics or its representatives are in no way liable for any loss or damage in transit, and hence it is recommended that the sender insure the shipment. EM Acoustics will pay for return freight should the repair be covered under warranty.

EM Acoustics' liability is to the replacement or repair (at our discretion) of any defective components, and as such are not liable for any incidental and consequential damages including (without limitation) injury to persons, damage to property or loss of use.

This warranty is exclusive and no other warranty is expressed or implied. This warranty is also in addition to – and in no way detracts from – your statutory rights as a consumer.

APPENDIX A – TECHNICAL SPECIFICATIONS

EM Acoustics operates a continuous process of research and development, and as such reserves the right to alter specifications without notice.

EMS-115/115C

ENCLOSURE TYPE:	single driver quasi-bandpass subwoofer
DIMENSIONS (HxWxD):	495 (19.5) x 516 (20.3) x 700 (27.6) mm/(ins)
NET/SHIPPING WEIGHT:	EMS-115: 36/39kg (79.2/85.8lbs) EMS-115C: 39/42kg (85.8/92.4lbs)
FREQUENCY RESPONSE¹:	50Hz – 150Hz +/- 3dB
SENSITIVITY²:	98dB
DISPERSION³:	omnidirectional
DRIVE UNITS:	1 x 15" (381mm) LF cone drive unit (neodymium in EMS-115, ceramic in EMS-115C)
POWER HANDLING:	500W RMS, 1000W program
MAXIMUM SPL⁴:	126dB continuous, 132dB peak
NOMINAL IMPEDANCE:	8 ohms
CROSSOVER:	Active, recommended below 120Hz (24dB/Octave L-R)
CONNECTORS:	2 x Neutrik SpeakON™ NL4MPR
ENCLOSURE:	18mm (3/4") multi-laminate Birch plywood – rebated, screwed & glued. Finished in impact resistant textured paint
ENCLOSURE HARDWARE:	2 x flush handles 1 x 35mm or M20 polemount socket for mid/high enclosures 4 x rubber feet & mating recesses
GRILLE:	Foam-backed hex punched steel
OPTIONS:	Colours/Weather Protection
SPARE PARTS:	DU-1504 15" (381mm) drive unit (EMS-115) DU-1506 15" (381mm) drive unit (EMS-115C) RK-1504 recone kit RK-1506 recone kit RFG-115 replacement foam/grille

Notes on measurement conditions:

¹Measured on-axis at 2m in an anechoic environment and referenced to 1m.

²Measured in half space at 2m with 4W sine wave input and referenced to 1m.

³Nominal dispersion, measured in an anechoic environment and averaged over stated bandwidth

⁴Calculated and verified by subjective listening test of familiar program material.