Abbingdon Music Research

LS-77 Reference Class

Professional Monitor

Owner's Manual

Ver 2.5.1

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying this component.

This component weighs over 30 kilograms. Do not place this component on an unstable cart, stand, tripod, bracket or table as the component may fall causing serious injury to a child or adult and serious damage to the unit. An appliance and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the component and cart combination to overturn.

Any mounting of the device on a wall or ceiling should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer.

Read and follow all the safety and operating instructions before connecting or using this component.

All warnings on the component and in its operating instructions should be adhered to.

Retain this Owner's Manual for future reference.

Do not use this unit near water; for example, near a bath tub, washbowl, kitchen sink, laundry tub, in a wet basement or near a swimming pool.

Unplug the component before cleaning. Never use benzine, thinner or other solvents for cleaning; use only a soft damp cloth.

Precautions

This component has been tested and found to comply with the limits set out in the EMC Directive using a connection cable shorter than 3 metres.

Running-In

AMR estimates that the LS-77 may take between 300-500 operating hoursat fairly high sound pressure levels for all of the internal components to be fully-broken in. Hence, please anticipate the sonic performance of the LS-77 to settle only after it has been used for this approximate length of time.

Contents

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Section 1 - Unpacking and Setup

Abbingdon Music Research

Thank you for purchasing this AMR reference class component.

We hope you derive as much pleasure from using your new AMR LS-77 Reference Class Professional Monitors as we have enjoyed making them for you.

Please check that all contents are present

This section refers to the unpacking of the LS-77 and its subsequent setup. Due to the weight, the LS-77 are shipped individually packaged.

Upon unpacking, please find in each package:

i. *LS-77 Reference Class Professional Monitor*
ii. *Set of two TO-220 Power Resistors (10R & 22R).*
iii. *Set of two Foam Port Plugs*
iv. Set of two *OptiLink*® Bi-Wire Jumpers (installed)
v. *AMR Warranty Card*
vi. *Aluminium professional flightcase*
vii. *LS-77 Owner's Manual*
viii. *AMR Test Disk*
ix. *2mm Allen Key*

Please ensure that all items are present. Should an item be missing, please contact your AMR distributor/retailer.

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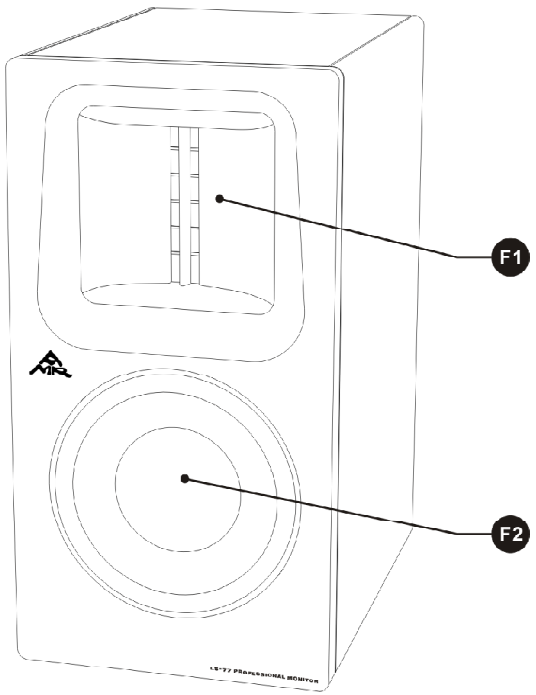
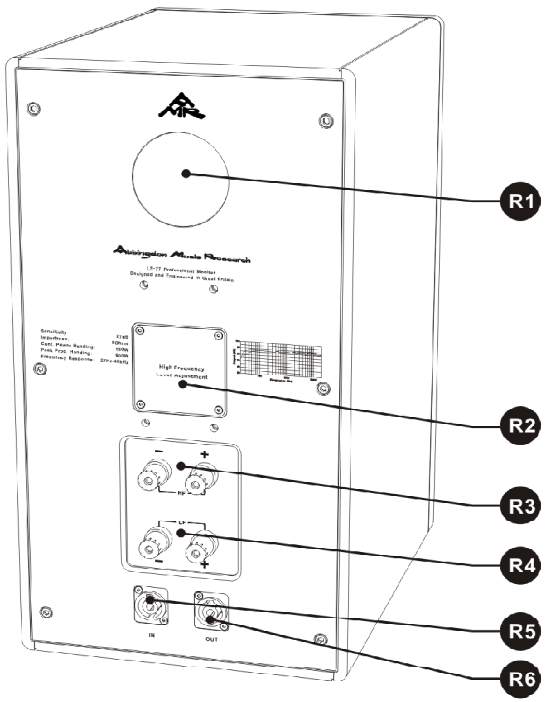
2.1 - Front Baffle



F1. HIGH FREQUENCY driver: to repoduce the high frequencies.

F2. LOW FREQUENCY driver: to reproduce the low frequencies.

2.2 - Rear Baffle



Warning: ensure no speaker connector is in contact with the chassis

R1. TRANSMISSION LINE PORT: to reproduce the lowest frequencies.

R2. HIGH FREQUENCY LEVEL ADJUSTMENT: to cover the replaceable resistors in the high frequency level adjustment circuit.

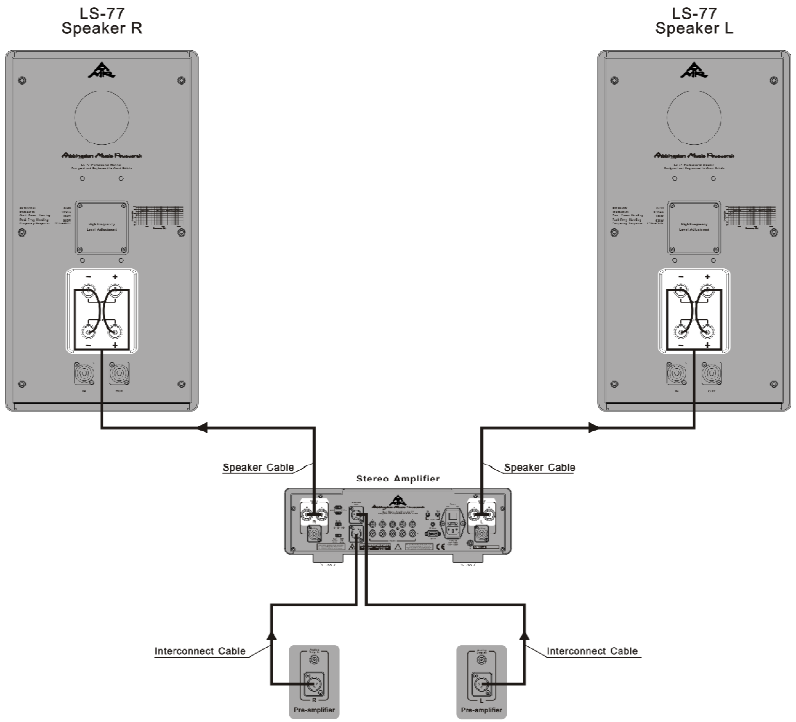
R3. SPADE/BANANA high frequency inputs: for connection of standard termination speaker cables.

R4. SPADE/BANANA low frequency inputs: for connection of standard termination speaker cables.

R5. *SPEAKON*® low & high frequency outputs: for connection of Speakon terminated speaker cables.

R6. *SPEAKON*® low & high frequency inputs: for connection of Speakon terminated speaker cables.

2.3 - System Connection



i. Connect the respective bi-wire jumper cables as shown.

ii. Connect the respective spade/banana connector or bare wire of the speaker cables to the LS-77.

iii. Connect the respective spade/banana connector or bare wire of the speaker cables to your amplifier.

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3.1 Care and maintenance

Never use aggresive or abrasive cleaners!

The cabinet and other plain parts should be cleaned with a soft, dry or slightly damp cloth. Please avoid any aggressive cleaning fluids or abrasive cleaners. Dust on the woofer diaphragms or the tweeters waveguide may be gently removed with a fine furniture brush.

As any form of cloth or foam cover or metal grille interferes significantly with sound reproduction, no grill is included.

3.2 Running-in the monitors

A newly unpacked pair of AMR professional monitors requires more than 500 hours of running-in or playing to reach its optimum performance capability. After that period, a short period of playing time before every listening session will be helpful to 'warm up' the monitors.

3.3 Power rating

If you find that your system continuously lacks the necessary sound pressure level for your liking, despite using a high-quality, high-powered amplifier (> 120W RMS into 8 Ohm) please consider upgrading to one of AMR's *Opti-Array*® configurations (see Appendix B - LS-77 OptiArray) and/or the use of AMR's Reference Class amplifiers using active crossover bi-amplification. Be sure to consult your authorised AMR retailer for advice and a demonstration.

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Troubleshooting

Symptom	Possible cause	Solution
No sound	• incorrect audio cable connections	• connect the cables correctly
	• incorrect amplifier operation	• make sure that the input selector on the amplifier is set to the desired source
Sound with no bass and generally strange	• check speaker connectors are not connected with wrong polarity	• check polarity using the AMR test CD and correct if required
Sound is too bright or	• Incorrect placement of speaker	• Place speaker with high frequency driver upright dull and at ear hight, pointing at the listening position
	• Incorrect adjustment of HF Level	• Adjust HF level as per Appendix A
Bass is too full or lean	• Incorrect placement of speaker	• Place speaker correctly
	• Incorrect use of port inserts	• Add (if too full bass) or remove (if too lean bass) port inserts as required
Other problems		• re-trace the procedure or contact your nearest AMR distributor/dealer

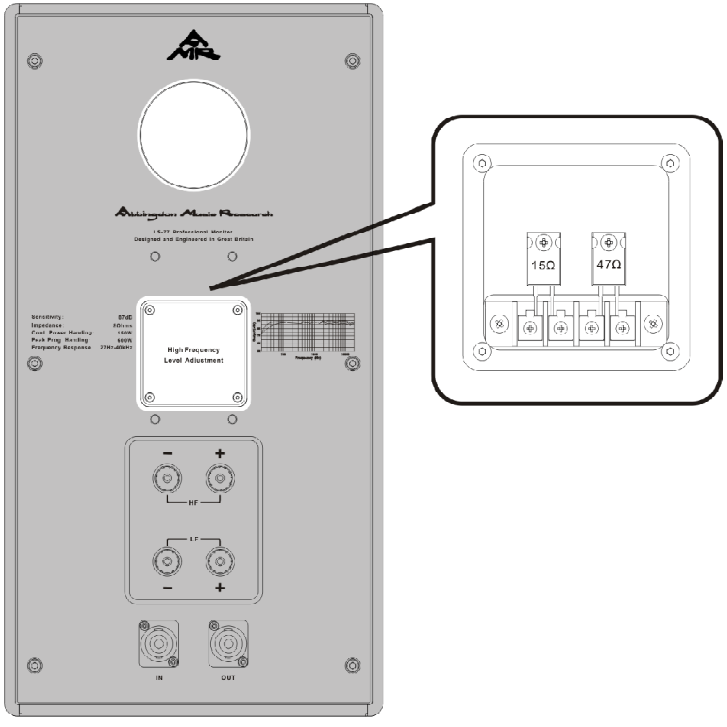
Specifications

Sensitivity (2.83V/1m in room):	87dB
Long Term Power Handling (AES/RMS):	150W
Peak Program Power Handling :	600W
Impedance, nominal:	8Ohm
Impedance, minimal:	6Ohm
Frequency Response (in IEC Standard Room):	26Hz - 40kHz (+/-3dB)
Directivity Index (DI) 500-10KHz:	6dB (+/-3dB)
Low Frequency Driver:	243mm/10"Diameter 100mm/4" Voice Coil
High Frequency Driver:	125mm/5" long isoplanar ribbon
Bass Enclosure Principle:	Transmission Line Reflex Port
Weight:	Speaker (each): 35 Kg / 73 lbs Shipped (pair): 100 Kg / 220 lbs
Dimensions (W x H x D) each:	250 x 490 x 300mm / 10 x 19 x 12"
Crossover:	AMR OptiSlope® design (60 dB/octave)

Information and specifications subject to change without notice.

A.1 High Frequencies Adjustment

If you feel that the tonal balance in the upper midrange and lower treble frequencies of the LS-77 is not correct for you, you may wish to change the resistor combination fitted under the cover labelled “High Frequency Level Adjustment”. Some of the required adjustment may be due to the differences in listening distance while others may be a result of differences in taste and furnishings.



Remove the resistor cover using the 2mm metric hex key (Allen Key). Under the cover you will find two resistors one marked 15Ù and one marked 47R in default condition.You will also find a pair of optional resistors included per speaker, one marked 100 and the other marked 220.

Respectively the resistor marked 100 will be referred to below as 10R, the 15Ù as 15R and the one marked 220 as 22R. Using different combinations allows an adjustment of the upper midrange and lower treble frequencies by +/-3dB in steps of around 1.5dB.

Listed below are AMR recommendations for different listening distances and placements. However, there is not per se, any specific value that is right or wrong. Please use your own preference, discernment and hearing as guide. It is right when it sounds right.

To increase the high frequencies level, use a combination marked with a greater dB value; to decrease the high frequencies level, use a combination marked with a lower dB value. Should you, for any reason find the existing adjustment range insufficient please contact your AMR dealer for further options.

Listening Distance around 1m (nearfield listening and nearfield monitoring)

HF Level	R1	R2	Placement Suggestions
+1.5dB	15 R	10 R	Placement of speaker on a bookshelf or very close to walls
0 dB	15 R	22 R	Placement within around 1m of rear wall
- 1.5dB	**15 R**	**47 R**	**Placement of speaker 2m or more from rear wall (Default)**
- 3 dB	15 R	not fitted	not recommended

Listening Distance around 3m (normal listening room placement and midfield monitoring)

HF Level	R1	R2	Placement Suggestions
+3 dB	15 R	10 R	not recommended
+1.5dB	15 R	22 R	Placement of speaker on a bookshelf or very close to walls
0 dB	**15 R**	**47 R**	**Placement within around 1m of rear wall (Default)**
- 1.5dB	15 R	not fitted	Placement of speaker 2m or more from rear wall

Listening Distance around 5m (farfield listening or monitoring)

HF Level	R1	R2	Placement
+3 dB	15 R	22 R	not recommended
+1.5dB (Default)	**15 R**	**47 R**	**Placement of speaker on a bookshelf or very close to walls**
0 dB	15 R	not fitted	Placement within around 1m of rear wall
- 1.5dB	not Fitted	22 R	Placement of speaker 2m or more from rear wall

A.2 Low Frequencies Adjustment

If you feel that the tonal balance in the low frequencies of the LS-77 is not correct for you or your room, you may need to change the positioning of the LS-77. Some of the required adjustment may be due to the differences in placement or the room's low frequency behaviour, while others may be a result of differences in taste and furnishings.

If the low frequencies are percieved as too prominent you may wish to fit the large cell foam inserts to either reduce the output of the port or you can completely seal the port using the insert made from dense foam. Typically, the closer you place your speaker to the wall, the more the port output needs to be attenuated.

Appendix B - LS-77 OptiArray®

B.1 Introducing AMR's *OptiArray*® scalable acoustic system

Above and beyond the role of an exceptional quality midfield monitor, the AMR LS-77 is designed to form the main element of the AMR *OptiArray*® scalable, modular loudspeaker system. The *OptiArray*® system takes account of several basic acoustic facts.

i. The larger a room, the louder must a speaker play for a given sound level at the listening position.

ii The larger a room, the more and to lower frequencies must the speaker directionality increase to maintain the same ratio between direct sound (that of the recording - wanted) and indirect sound (reverbrations in the room, - unwanted).

Large listening spaces invariably require more acoustic power applied to the air volume in the room to excite the same amount of pressure change (a bottle of beer will nearly fill a pint glass, however in a large bucket it will barely moisten the bottom), this much is quite obvious, so the need for more output from the speaker as rooms get larger is simple and intuitive.

However, large listening spaces are invariably also less well damped, in an acoustical sense, than small ones. This and the much longer dimensions with the thus increased delay between reflections lead to much longer reverb times in the room. The room reverbrant field (that is sound radiated and re-radiated by the walls, floor and ceiling) will interfere most crucially with the percieved space of the recording and will secondarily often change the tonality of the sound as well.

For a striking example compare the sound of a portable radio in an equal size empty room and one well furnished. In the empty room the sound will be clattery, echoy, phasey and indistinct as well as subjectively too bright. In a normally furnished room with carpeted floor the sound will be much more natural.

Ideally we wish to keep the unavoidable contribution of the room sound over the direct sound below the threshold where the room influenced sound overwhelms the direct sound.

The modular nature of the LS-77 *OptiArray*® system allows AMR's setup to be scaled to almost any size listening room. As the numbers of speaker pairs are increased in the Opti-Array configuration, the power handling and SPL capability increase ever more dramatically over a single pair of LS-77s.

AMR recommends the following OptiArray Setups:

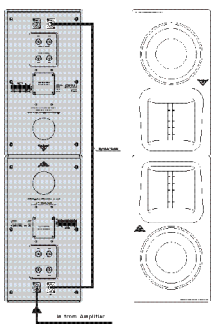
Room Size	**<35m²**	**25m²–70m²**	**50m²-140m²**	**100m²-280m²**	**200m²-480m²**
System	***Alpha***	***Epsilon***	***Iota***	***Omicron***	***Upsilon***
	(passive)	*(passive)*	*(passive)*	*(passive)*	*(passive)*
AM-77	1	1	2	4	8
LS-77 (pairs)	1	2	4	8	16
Power	360W	360W	720W	1440W	2880W
SPL (3m)	109dB	112dB	118dB	124dB	130dB

System	***Beta***	***Zeta***	***Kappa***	***Sigma***	***Omega***
	(biamplification)	*(biamplification)*	*(biamplification)*	*(biamplification)*	*(biamplification)*
AM-77	2	2	3	6	12
LS-77 (pairs)	1	2	4	8	16
Power	720W	720W	1080W	2160W	4320W
SPL (3m)	113dB	116dB	122dB	128dB	134dB

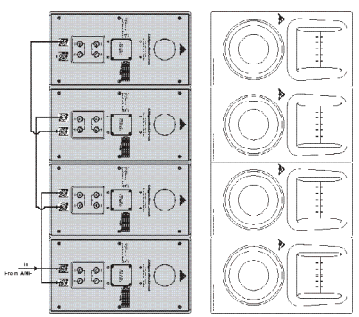
*: OptiArray configuration

The following pages show the wiring diagrams and setup options for some of the recommend speaker arrangements (the Epsilon/Zeta systems, the Iota/Kappa systems and finally the Omicron/Sigma systems). Available page space prohibits the illustration of the largest configurations.

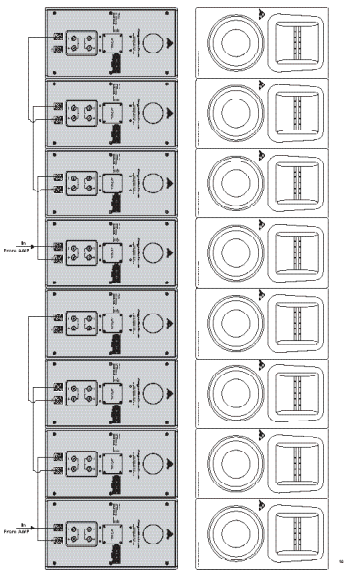
Epsilon/Zeta



Iota/Kappa



Omicron/Sigma



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