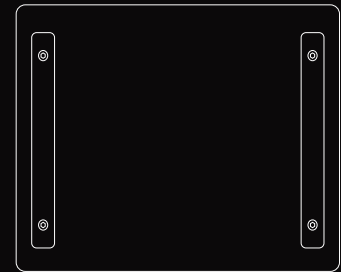
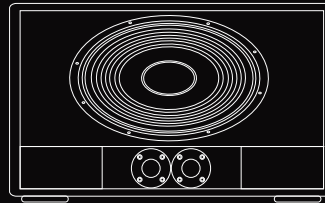
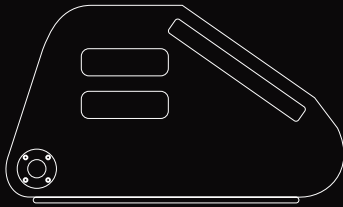


COAX STAGE MONITORS

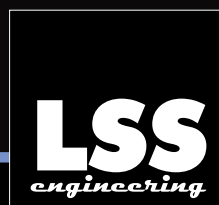
User Manual



COAX STAGE MONITORS



User Manual



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General information

STAGE MONITORS USER Manual

Version: 1.0 Polistena February 28 2025

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Keep this document with the product or in a safe place so that it is available for future reference.

We recommend you to regularly check the LSS.it website for the latest version of this document.

If you require additional documents for this purpose, you can order them from LSS.

LSS Advanced Speakers Systems, viale degli Artigiani Zona PIP 89024 Polistena (RC) Italy

Introduction

Thank you for purchasing this LSS stage monitor system.

The LSS STAGE MONITORS are system of high performance on-stage monitoring in a compact, low-profile enclosure. All stage monitors LSS use Coaxial Technology.

MM1, WM2, WM3 with special design Horn to overcome the common constraints of wedge monitor speaker.

TSM14 is a specially stage monitor with out-standard hybrid coax of 14". The cabinets are of low profile to improve audience sight lines. The enclosures are constructed from birch plywood. The protection grilles are black perforated steel with an acoustically transparent black scrim PP foam Treathed backing. A water anti stretch finiture guaranted a very strong use. LSS stage monitors are light in weight to aid handling, transportation and set-up. Multiple NL4 connectors are fitted to both models for ease of on-stage cabling and to facilitate daisy-chaining. All model have a state of art crossover network.

While primarily intended for use as an on-floor wedge monitor, both models are fitted with M10 inserts to permit flying if required; eyebolts are available as a standard accessory. Additionally, the WM2, WM3 is fitted with a 35 mm mount socket permitting it to be pole-mounted and used as a versatile PA system. All Monitors models have moulded rubber feet to protect the monitor during set-up and break-down.

This user guide covers the STAGE MONITORS models offered by LSS to optimize sound quality for various applications.

Unpacking and Inspection

Before using your MONITORspeaker, please take a moment to inspect the package carefully upon delivery. At LSS, every unit is meticulously checked and tested in our facility to ensure it meets our high standards of quality. Once the product leaves our factory, however, it is packaged with the appropriate protective materials for transit.

Please note that any damage incurred during shipping is not the responsibility of LSS. We strongly recommend that you inspect all components of the package immediately after opening. If you find any damage or missing items, please contact your distributor right away to report the issue.

By checking the package contents at the time of receipt, you help ensure that your product has arrived in perfect condition and can perform at its best.



Please think of our environment.

When the product has reached the end of its useful life, please dispose of it responsibly through a recycling centre.

Cabinet Option

Standard color of speaker is Black.

The custom color (CC) version of the cabinet is available in all colors of the RAL color table. The respective openings of the cabinet are covered by plates in cabinet color. The connector type is NL4.



STAGE MONITORS overview

The LSS STAGE MONITORS are system of high performance on-stage monitoring in a compact, low-profile enclosure. All stage monitors LSS use Coaxial Technology.

MM1, WM2, WM3 with special design Horn to overcome the common constraints of wedge monitor speaker.

TSM14 is a specially stage monitor with out-standard hybrid coax of 14".

MM1	Component Low 6.5" woofer Component High 1.4" diaphragm compression driver Loading Low Bass-reflex Loading High 1" Rotable Horn 90°X40°
WM2	Component Low 12" woofer Component High 3" diaphragm compression driver Loading Low Bass-reflex Loading High 3" Rotable Horn 90°X40°
WM3	Component Low 15" woofer Component High 3" diaphragm compression driver Loading Low Bass-reflex Loading High 3" Rotable Horn 90°X40°
TSM14	Component Low 14" woofer Component High 3" diaphragm compression driver Loading Low Bass-reflex Loading High 3" HF DRIVER



MM1



WM2



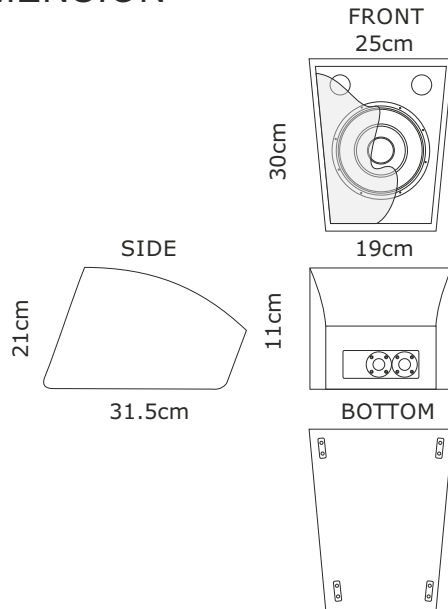
WM3



TSM14



MM1 DIMENSION



DESCRIPTION

MM1 is the smallest of monitor in LSS. Small sides makes it ideal as a personal monitor in the most different applications. MM1 surprises due to the pressure and the natural timbre it reproduce. Mm1 is easily transportable and extremely lightweight. Due to its extremely low profile and small size, fits easily next to any console. Every DJ, sound engineer, performer or keyboard-player will have a faithful companion to share their best performance.

The pilotage need only one amplifier channel the frequency splitting being accomplished by the low-loss passive filter passive crossover network inside the enclosure manufactured with top grade components, including coils with very low resistance and metalized polypropylene capacitors. It also features circuitry to protect the HF component against excessive current and voltage. Personalized setup available for Powersoft sytem amplifier, The cabinet is from Baltic birch features craftsmanship protected by an epoxy powder coated, resonance-free steel grill over acoustically transparent foam. Every cabinet is coated with a high-tech black textured polwater scratch free finish and custom RAL is possible on request.

FACILITIES

Auditorium, concert halls, houses of worship, shopping centers, conference rooms, sport facilities, retail stores, industrial, commercial and leisure projects, pubs, bars and cafes, small theatrical installations, schools malls hotels.

APPLICATIONS

Mini monitor System, Mini floor monitor system.

PERFORMANCE

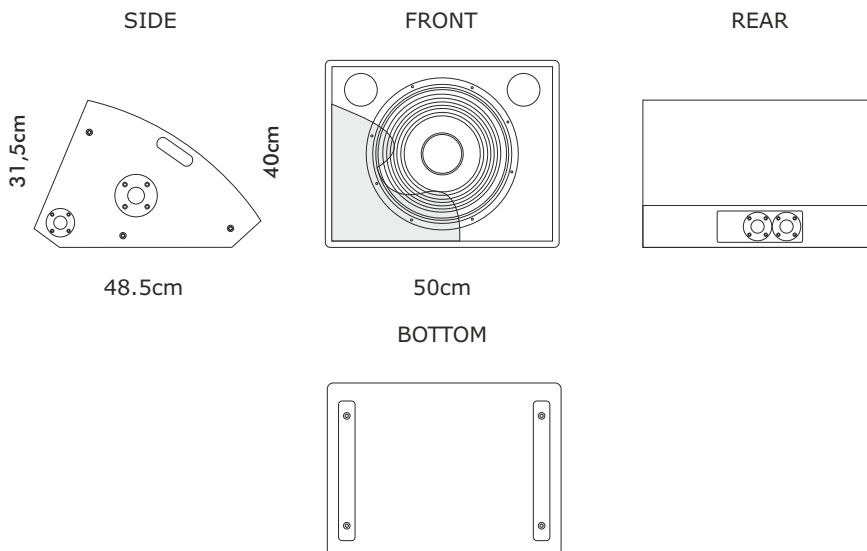
Frequency Response -10 dB 60 Hz ± 5 dB 80 Hz ~ 18 kHz
 Nominal Dispersion 70° x 70° (H x V)
 Impedance (Nom) 8 Ω
 Watts AES Continuous 150 W/Peak 400 W
 Maximum SPL Output calculated 118 dB SPL

PHYSICAL

Component Low - 6.5" Coax Neodymium Transducer
 Component High - 1.4" Polyester Diagram on Exponential horn
 Loading Low Bass-reflex
 Connectors 2 x NL4 PAR Pins 1+/1-
 Cabinet Material Baltic birch plywood
 Cabinet Finish Black polywater coating
 Grill Epoxy powder coated
 Height 210 mm
 Width 250 mm
 Depth 315 mm
 Weight 4kg



WM2 DIMENSION



DESCRIPTION

The WM2 was designed to support the widest possible range of pro audio applications. Is ideal for stage monitoring applications high output vocal presence and neutral balanced sound. The 12" low frequency cone with 3" voice coil and 3" voice coil high frequency compression driver provides higher output and lower distortion plus enhanced power handling capabilities for better performance in both touring applications. The pilotage need only one amplifier channel the frequency splitting being accomplished by the low-loss passive filter passive crossover network inside the enclosure manufactured with top grade components, including coils with very low resistance and metalized polypropylene capacitors. It also features circuitry to protect the HF component against excessive current and voltage. The pole mount cup provide front or side fill for concert touring applications. The comprehensive system mounting points permit safe, suspension in permanent installations. Personalized setup available for Powersoft sytem amplifier, the cabinet is from Baltic birch features craftsmanship protected by an epoxy powder coated, resonance-free steel grill over acoustically transparent foam. RAL color is possible on request.

FACILITIES

Auditorium, concert halls, houses of worship, shopping centers, conference rooms, sport facilities, retail stores, industrial, commercial and leisure projects, pubs, bars and cafes, theatrical installations.

APPLICATIONS

Monitor System, Delay and Stage fill.

PERFORMANCE

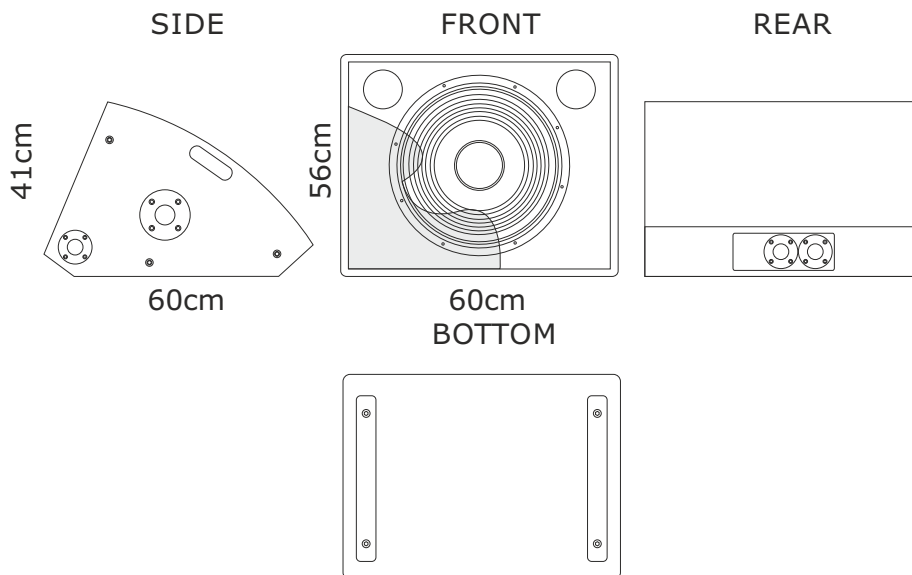
Frequency Response -10 dB 50 Hz ± 5 dB 65Hz to 18KHz
 Nominal Dispersion 60° x 40° (H x V)
 Impedance (Nom) 8 Ω
 Watts AES Continous 600 W/Peak 1800 W
 Maximum SPL Output calculated 131 dB SPL

PHYSICAL

Component Low - 12" coax woofer
 Component High - 3" diaphragm coax compression driver
 Loading Low Bass-reflex
 Loading High 3" Rotable Horn
 Connectors 2 x NL4 PAR Pins 1+/-
 Cabinet Material Baltic birch plywood
 Cabinet Finish Black polywater coating
 Grill Epoxy powder coated
 Installation Points 6 x M10
 Pole Mount 35 mm socket
 Height 315 mm
 Width 500 mm
 Dept h 485 mm
 Weight 16.5 kg



WM3 DIMENSION



DESCRIPTION

The WM3 was designed to support the widest possible range of pro audio applications. Is ideal for stage monitoring applications high output vocal presence and neutral balanced sound. The 15" low frequency cone with 3" voice coil and 3" voice coil high frequency compression driver provides higher output and lower distortion plus enhanced power handling capabilities for better performance in both touring applications. The pilotage need only one amplifier channel the frequency splitting being accomplished by the low-loss passive filter passive crossover network inside the enclosure manufactured with top grade components, including coils with very low resistance and metalized polypropylene capacitors. It also features circuitry to protect the HF component against excessive current and voltage. The pole mount cup provide front or side fill for concert touring applications. The comprehensive system mounting points permit safe, suspension in permanent installations. Personalized setup available for Powersoft sytem amplifier, the cabinet is from Baltic birch features craftsmanship protected by an epoxy powder coated, resonance-free steel grill over acoustically transparent foam. RAL color is possible on request.

FACILITIES

Auditorium, concert halls, houses of worship, shopping centers, conference rooms, sport facilities, retail stores, industrial, commercial and leisure projects, pubs, bars and cafes, theatrical installations.

APPLICATIONS

Monitor System, Delay and Stage fill.

PERFORMANCE

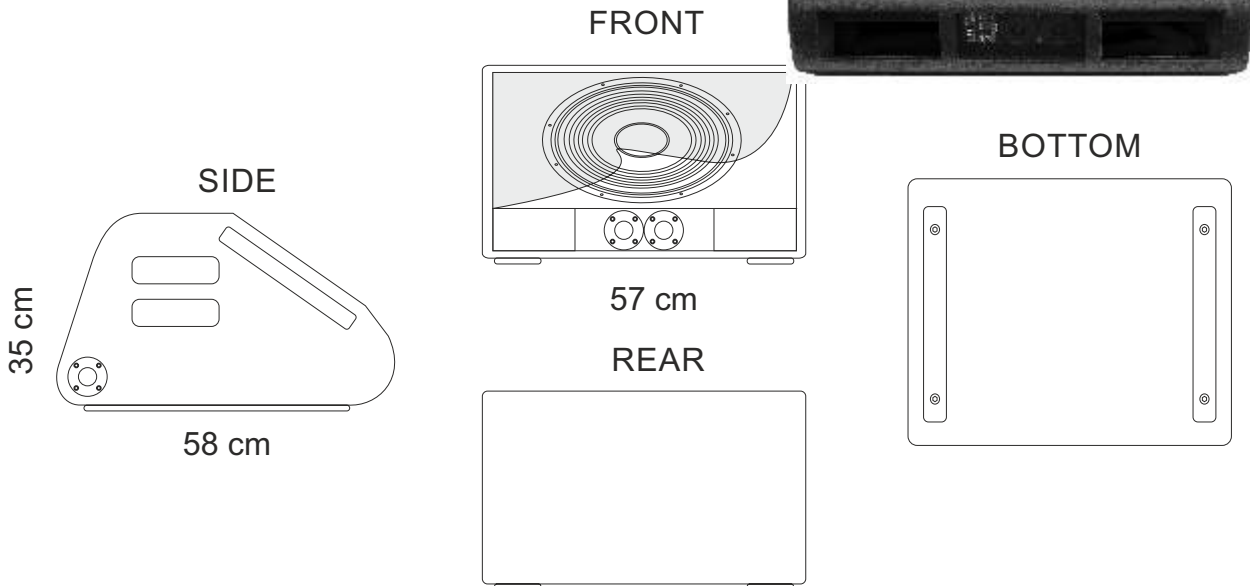
Frequency Response -10 dB 40 Hz \pm 5 dB 50Hz to 18KHz
 Nominal Dispersion 60° x 40° (H x V)
 Impedance (Nom) 8 Ω
 Watts AES Continous 600 W/Peak 1800 W
 Maximum SPL Output calculated 131 dB SPL

PHYSICAL

Component Low - 15" coax woofer
 Component High - 3" diaphragm coax compression driver
 Loading Low Bass-reflex
 Loading High 3" Rotable Horn
 Connectors 2 x NL4 PAR Pins 1+/-
 Cabinet Material Baltic birch plywood
 Cabinet Finish Black polywater coating
 Grill Epoxy powder coated
 Installation Points 6 x M10
 Pole Mount 35 mm socket
 Height 410 mm
 Width 600 mm
 Dept h 600 mm
 Weight 23 kg



TSM14 DIMENSION



DESCRIPTION

The TSM14 is a two ways COAXIAL loudspeaker system designed to support the widest possible range of pro audio applications. Is ideal for stage monitoring applications, high output vocal presence and neutral balanced sound. It is a state of art stage monitor with a very high output. The 14" coaxial speaker offer a combination of a better low frequency output than a 12-inch, but more balanced midrange performance than a 15-inch. Incredible SPL, exceptional vocal enclosure. Better performance in both touring and permanently installed applications. The pilotage need only one amplifier channel the frequency splitting being accomplished by the low-loss passive filter passive crossover network inside the enclosure manufactured with top grade components, including coils with very low resistance and metalized polypropylene capacitors. It also features circuitry to protect the HF component against excessive current and voltage. Personalized setup available for Powersoft sytem amplifier, the cabinet is from Baltic birch features craftsmanship protected by an epoxy powder coated, resonance-free steel grill over acoustically transparent foam. RAL color is possible on request

LF SECTION: (14.13 ") Glass Fiber reinforced low frequency cone, (3,5") Aluminium Winding voice coil, Glass Fiber former, Aluminium demodulating ring, double silicone spider, Neodymium ring magnet.

HF SECTION: (3") voice coil, Pure Titanium Diagram Aluminium winding, kaptonformer.

FACILITIES

Auditorium, concert halls, houses of worship, shopping centers, conference rooms, sport facilities, retail stores, industrial, commercial and leisure projects, pubs, bars and cafes, small theatrical installations, schools malls hotels.

APPLICATIONS

Professional Monitor Stage System

PERFORMANCE

Frequency Response -10 dB 55 Hz – 22 kHz
 Nominal Dispersion 80° x 60° (H x V)
 Impedance (Nom) 8 Ω
 Watts AES Continuous 800 W/Peak 2000 W
 Maximum SPL Output calculated 132 dB SPL

PHYSICAL

Component Low 14" woofer
 Component High 3" diaphragm compression driver
 Loading Low Bass-reflex
 Loading High 1 1/4 Rotable Horn
 Connectors 4 x NL4 PAR Pins 1+/-1-
 Cabinet Material Baltic birch plywood
 Cabinet Finish Black polywater coating
 Grill Epoxy powder coated
 Height 350 mm
 Width 570 mm
 Depth 580 mm



Accessories

A soft bags for MM1, also a flight-case for two pcs of monitors: WM2, WM3, TSM14 is available upon request.





Safety first

The use of professional audio systems requires attention and awareness to ensure maximum safety. Please read the following guidelines carefully for the safe use of MONITORS Series speakers.

Sound Levels and Hearing Protection

MONITOR SERIES speakers can generate high sound pressure levels, so it is important to use them with caution. Prolonged exposure to levels above 90 dB can cause hearing damage, which accumulates over time. Avoid standing too close to the speakers when they are operating at high volumes to prevent any risk.

Stacking

Stability and Positioning

- Always ensure that the surface where you place the speakers is stable and sturdy.
- When used outdoors, consider wind as a potential risk factor and ensure that the stacking is secure.
- High-power speakers may experience slight vibrations and shifts during use. To prevent unwanted movement, use anti-slip materials between the speakers and the floor or secure them with safety straps.

Rigging and suspension

Warning: Suspended mounting must only be performed by qualified personnel, following strict safety procedures. All mounting points must be securely anchored to an appropriate structure. If in doubt, consult industry experts such as structural engineers or specialized technicians.

MONITORS SERIES speakers are designed for versatile installation. Each unit is equipped with threaded mounting points for use with dedicated accessories. However:

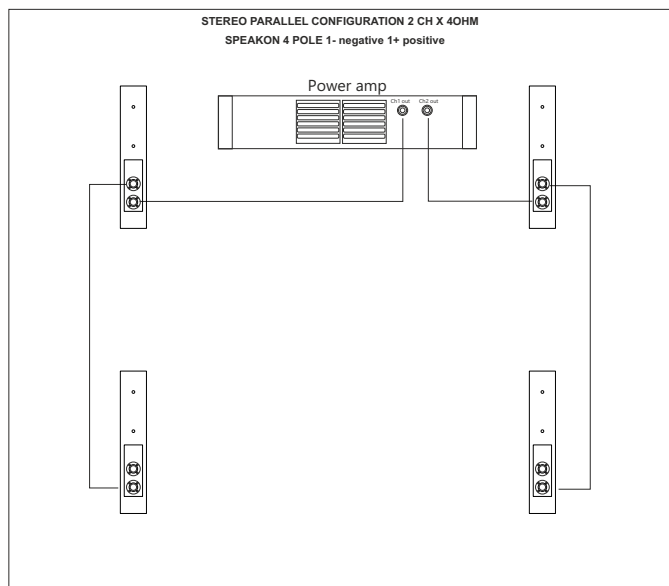
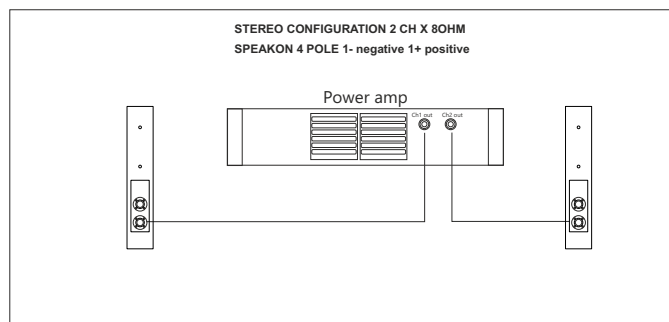
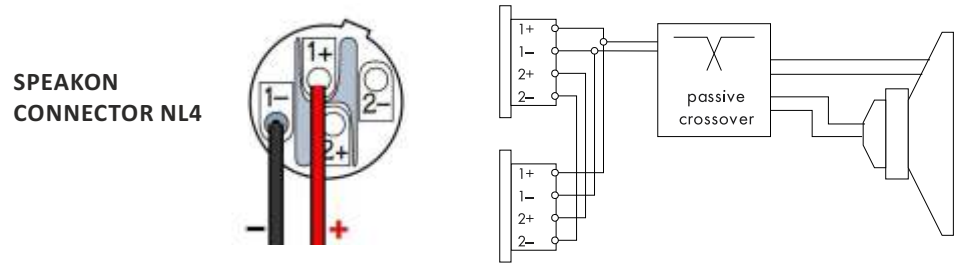
- It is not permitted to suspend one speaker directly from another.
- Only forged or machined steel shoulder eye bolts with a thread length of at least 30 mm must be used for anchoring.
- Low-quality eye bolts, made by simply bending a metal rod, do not provide the necessary safety and must not be used.
- An inclined installation creates forces that are not aligned with the thread axis. It is therefore essential to use certified equipment capable of withstanding such stresses.

By following these guidelines, you can ensure maximum safety when using your MONITORS SERIES speakers, protecting both people and equipment.



Connections

On the back of the speaker you have a connector panel has two Neutrik Speakon connectors wired in parallel with each other. The second connector allows use of a short link to drive another, parallel MONITORS loudspeaker. The connectors are wired as follows:



Cable lengths

Here you have a simple suggestion to wire cables systems to an amplifier, it is recommended that the return resistance of the cable used is less than one tenth of the nominal impedance of the system or systems in parallel. The table below gives an indication of the maximum permissible cable runs for various conductor cross-sectional areas.

Conductors	Maximum Cable Run		
	4 ohms	8 ohms	16 ohms
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



Amplification

HOW TO CHOOSE THE RIGHT AMPLIFIER FOR YOUR SPEAKERS

Choosing the right amplifier is essential to get the best performance from the MONITORS Series speakers by LSS. An unsuitable amplifier can compromise sound quality and shorten the system's lifespan. Here are the key factors to consider:

1. POWER: MATCHING AMPLIFIER AND SPEAKER

The amplifier must provide the right amount of power to drive the speakers without causing distortion or damage.

- **Recommended Power:**
- To ensure optimal performance and good dynamic headroom, the amplifier should deliver 1.5 to 2 times the RMS power rating of the speaker.
- Example: If a speaker has a 500W RMS rating, the amplifier should provide between 750W and 1000W per channel.
- **Why not use an underpowered amplifier?**
- A weak amplifier clips earlier, generating distortion that can damage the driver.
- It is better to have a more powerful amplifier with a properly set limiter rather than an underpowered one.

2. LOAD IMPEDANCE: AMPLIFIER-SPEAKER COMPATIBILITY

Each amplifier has a range of impedance levels it can safely operate with.

- The amplifiers to driver the MONITOR series must be designed to work at:
- 8Ω, 4Ω, and in some cases, 2Ω.
- Impedance changes with different speaker connections:
- Two 8Ω speakers in parallel → 4Ω total.
- Four 8Ω speakers in parallel → 2Ω total.
- Two 8Ω speakers in series → 16Ω total.

⚠ Warning: Using a load too low (e.g., 2Ω on an amplifier not designed for it) can overheat the system and activate protection circuits.

3. AMPLIFIER CLASS: WHICH ONE IS BEST FOR YOUR NEEDS?

Amplifiers are categorized by their operating class, affecting efficiency and sound performance.

- Class AB:
- Superior sound quality, suitable for Hi-Fi systems or recording studios.
- Higher heat dissipation and lower efficiency compared to other classes.
- Class D (recommended for PA and installations):
- High efficiency (90%+), lightweight, lower heat generation.
- Perfect for live sound, nightclubs, and fixed installations.

4. CONNECTIONS: CHECK COMPATIBILITY WITH YOUR AUDIO SYSTEM

- Inputs: The amplifier must be compatible with the audio source (Mixer, DSP, Controller).
- Balanced XLR: Best for long cables with no interference.
- TRS Jack/RCA: Used in less professional contexts.
- Speaker Outputs:
- Speakon (NL4): Professional standard for secure connections.
- Binding post: More versatile connections, commonly used in fixed installations.

5. COOLING AND RELIABILITY CONSIDERATIONS

An amplifier designed for live environments or nightclubs must guarantee thermal stability.

- Forced ventilation with temperature sensors → Smart cooling system.
- Aluminum heatsinks and efficient circuits → Longer lifespan.

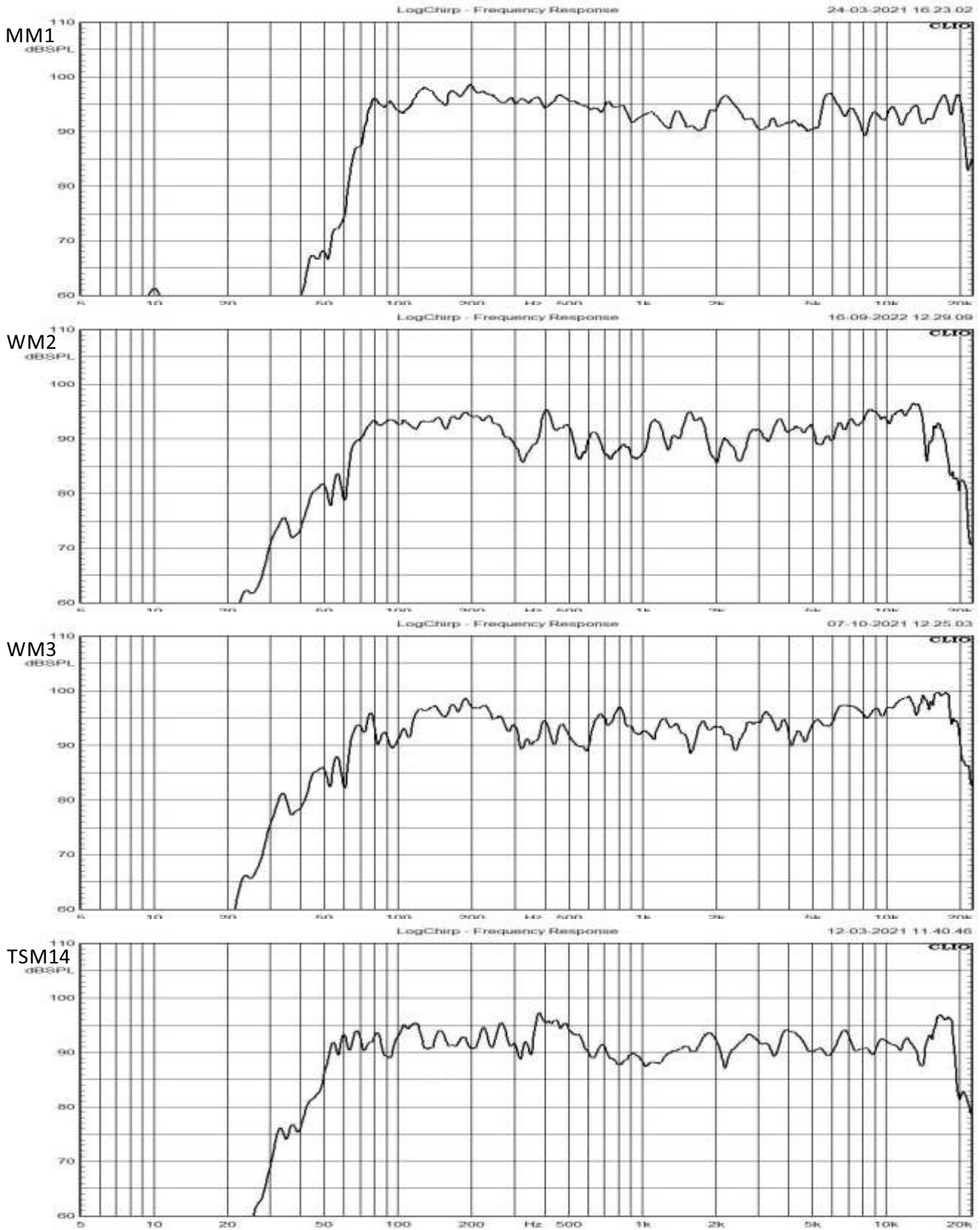
Tip: Always leave space around amplifiers in racks to allow for proper heat dissipation.

Recommended Amplifiers

Model	AES Power	Peak Power	Ideal amplifier rating		Minimum rating	
	Rating	Rating	4Ω	8Ω	4Ω	8Ω
MM1	150W	400W	800W	400W	400W	200W
WM2	600W	1800W	3600W	1800W	1800W	900W
WM3	600W	1800W	3600W	1800W	1800W	900W
TSM14	800W	2000W	4000W	2000W	2000W	1000W



Frequency Response





Warranty

This product is warranted by LSS for a period of twelve (12) months from the date of purchase under the terms and conditions of this warranty. The LSS covers material and manufacturing defects. The warranty comes into force only if the warranty certificate is fully and correctly completed by a LSS dealer.

The manufacturer's warranty does not cover:

- speakers
- damage resulting from improper handling, lack of care accidents or normal wear
- possible consequential damage resulting e.g. from defects, use, inaccuracy
- transport.

In case of defects covered by the warranty, your product will be repaired by LSS or authorized LSS dealer.

Any further claims against LSS e.g. compensation for damage, withdrawal from the purchase contract or refund of the purchase price are excluded. Your dealer carries responsibility only for any other guarantees.

The warranty becomes void in the event of servicing or repair of the product by any person not duly authorized by LSS or its representatives.

The above manufacturer's warranty does not effect the purchaser's rights against the seller nor any other statutory rights the purchaser may have.

CE Declaration

The Manufacturer LSS Advanced Speakers Systems, with office in viale degli Artigiani Zona PIP 89024 Polistena (RC) Italy

DECLARES

That the speakers STAGE MONITORS SERIES

MODEL MM1

MODEL WM2

MODEL WM3

MODEL TSM14



are compliant with essential requirements according to relevant directive and designated standard:

LVD 2014/35/EU directive

- EN 62368-1:2014

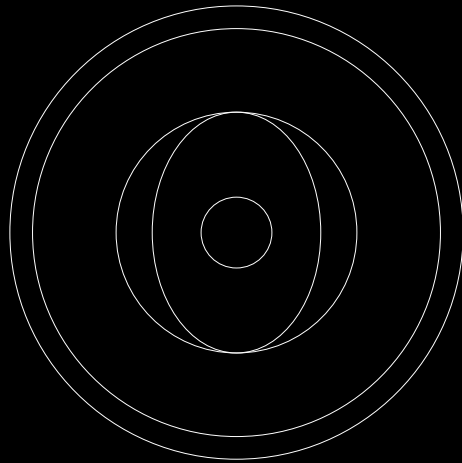
RoHS 2011/65/EC directive

WEEE 2012/19/EC directive

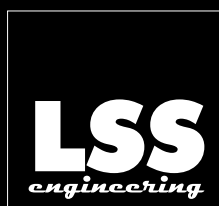
- EN50419

Polistena, March 24 2019


Legal Representation
(Giuseppe Laruffa)



COAX STAGE MONITORS



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