the LEON AUDIO company

LSM900
Professional Omni-directional Instrument Microphone

Specifications

Generating Element
Electret Condenser

Operating Principle
Pressure Transducer

Frequency Response
20Hz - 20kHz ±3dB
(into 2000 ohm load)

Polar Pattern
Omni-directional

Output Level
(0dBm = 1 mW/Pascal)
-33dBm

Nominal Output Impedance
600 ohms @ 1kHz

Recommended Load Impedance
1000 ohms or greater

Maximum Sound Pressure Level
$120dB_{SPL}$ (20 Pascals)

Power Supply
5 to 50V Phantom Power
with indicating LED

Supply Current
1mA at 9 volts
3mA at 24 volts
5.5mA at 48 volts

Finish
Non reflecting black capsule
Silver or black connector
Black cable

Weight
76 grams net. including connector

Dimensions
Capsule: 7mm diameter
Cable: 2.3 metres standard,
other lengths available to order

Optional Accessories
Phantom Power Supplies
Mains and battery versions

Description

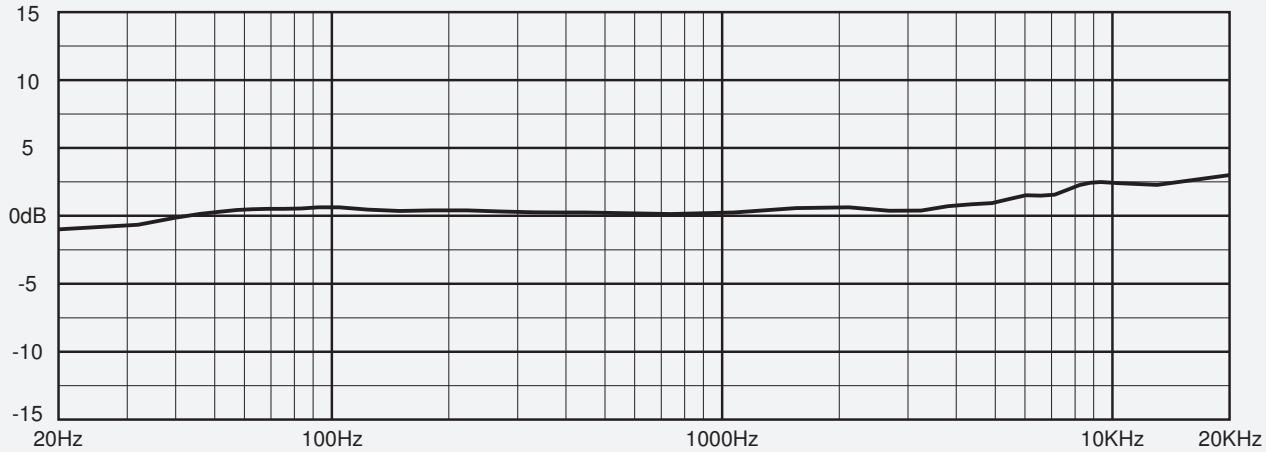
The LSM900 electret condenser microphone is a professional quality omni-directional microphones designed for recording and live sound reinforcement. The microphone's small size and superb performance enable many previously difficult situations to now be handled with ease.

An extended frequency response, coupled with an excellent transient response, make the LSM series of microphones easily comparable with the finest microphones available.

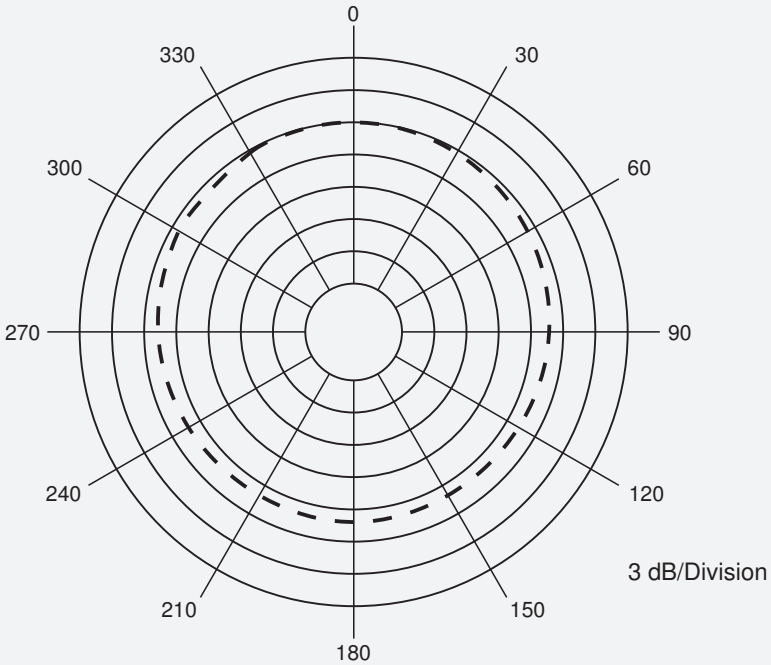
There is a model (see page 3) to suit virtually any application, covering choirs, conferences, surveillance and instruments such as guitars, trumpets, saxophones, flutes and drum kits, to name just a few.

The LSM microphones are free of the bass boosting *proximity effect* found when using most cardioid microphones close to a sound source.

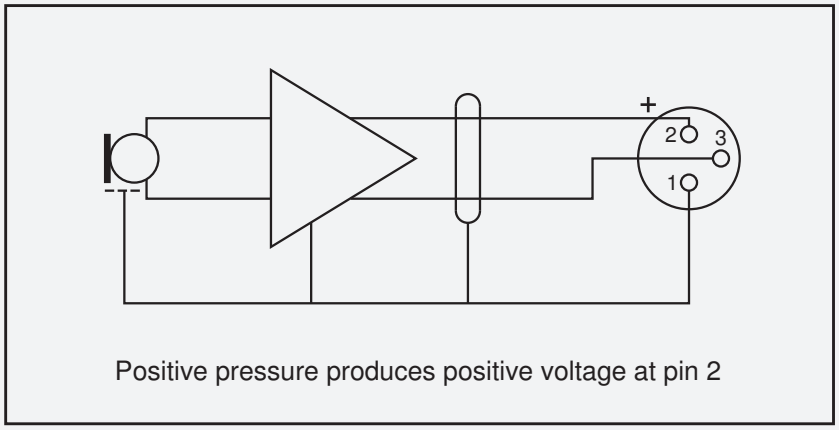
The electret condenser generating element produces considerably higher output than most dynamic microphones and in many cases will be sufficient for medium to high impedance inputs.



Frequency Response



Polar Response



Wiring Diagram

Behind the scenes.

The original LSM900 microphone was designed for an in-house application to provide the highest possible performance without any limitations. For example, its frequency response is smooth without the usual poor low frequency response and lumps and bumps in the mid range that are common in other designs. It was not built to a price tag. Demand has since made these microphones commercially available. As the microphone was intended for professional applications, Phantom Power was chosen to power the microphone. External mains and battery Phantom Power Supplies can also be used.

Elegant design of the electronics enables all of the components to be housed within the microphone's XLR connector, eliminating the need for a separate electronics box. The design of the electronics even provides for the microphone cable to remain balanced between the XLR connector and the capsule. In other designs, this cable segment is unbalanced, even if the signal at the microphone connector is balanced. The XLR connector also incorporates a *power on* LED that indicates the presence of Phantom Power; a handy diagnostic aid.

The LSM's transformerless output does away with the cost, size and performance trade-offs associated with a conventional transformer output design.

Critical components within the microphone's electronics module are matched by hand to ensure the highest possible Common Mode Rejection Ratio (CMRR). This provides excellent rejection of external electrical noise, often encountered when using long cable runs or when operating near stage lighting systems.

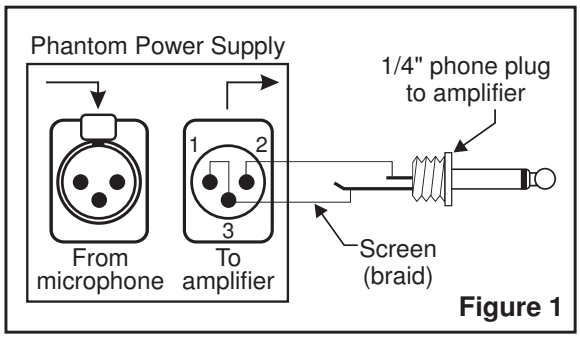
Other Leon Audio Microphones

All three models share the same specifications except for *output level* and *maximum sound pressure level*.

Model	Output Level (0dBm = 1 mW/Pascal)	Maximum Sound Pressure Level	Notes
LSM50C	**-23dBm** 10dB more output than the LSM900	**110dB$_{SPL}$**	Use in applications where *sounds are very quiet.*
LSM900	**-33dBm**	**120dB$_{SPL}$**	As used in Aungles Flute Microphone *Also suits many other instruments*
LSM1000	**-43dBm** 10dB less output than the LSM900	**130dB$_{SPL}$**	Use in applications where *sounds are very loud.*

Unbalanced Inputs

If an amplifier has an unbalanced input (2 conductor wiring), an external Phantom Power Supply is required to provide power for the microphone's internal amplifier. The microphone connects to the input of the Phantom Power Supply via a standard 3 pin XLR microphone lead. The output of the Phantom Power Supply connects to the unbalanced input of the amplifier via a *3 pin to 2 pin* lead. A very common type of unbalanced connector is the 1/4" phone (guitar style) plug. The wiring for an *XLR to phone* lead is shown in figure 1.



3 pin XLR to 1/4" phone plug wiring

Phantom Power

As the microphone uses a condenser capsule, an external power source is required for the microphone's internal amplifier. The LSM microphones will operate from any Phantom Power Supply between 5 and 50 volts. Phantom Power is usually supplied from the mixing desk. External mains powered and battery Phantom Power Supplies are available from Aungles Flute Microphones for use with mixers and amplifiers that don't have inbuilt Phantom Power.

The microphone's XLR connector incorporates a *power on* LED indicator. This LED lights when Phantom Power is applied. Even if the LED lights very dimly, (occurs with low values of phantom supply voltage and when using a battery phantom supply, especially near the end of battery life), there is sufficient power for correct microphone operation. The sensitivity of the microphone falls with lower Phantom Power Supply voltages. With a 9 volt supply, the microphone's output is about 2dB below that with a 48 volt supply.

A mains powered Phantom Power Supply is recommended to maintain the optimum performance of any condenser microphone. Battery powered Phantom Power Supplies should only be considered when mains power is not available.

To dispel a popular myth, Phantom Power can be fed into an ordinary balanced dynamic microphone without any damage or change in performance of the microphone.

Options

- Foam wind sock.
- A special version is available to suit Chiayo and Eleco. radio microphone belt pack transmitters.
- Custom cables of any length can be supplied. (Standard cable length is 2.3 metres)

Optional Accessories

Phantom Power Supplies.

All Phantom Power Supplies are constructed in die cast aluminium cases for maximum protection and have balanced XLR connectors on both inputs and outputs. Other connectors are available on special order.

- Single or dual channel, mains powered, industry standard 48 volt Phantom Power Supply. (Suits any microphone that requires 48 volt Phantom Power.) Includes protection circuitry to prevent excessive voltages from being fed to the mixing desk under cable fault conditions. Even though this power supply is mains powered, it has been designed so that it will not introduce earth loops into the sound system.

- 8 volt Phantom Power Supply. (Non standard voltage. Suits any microphone that can operate on 8 volt Phantom Power) This supply uses a 12 volt plug pack.

- Battery supply. (Non standard voltage. Suits any microphone that can operate on 9 volt Phantom Power) Uses one standard alkaline 9 volt transistor radio battery such as Duracell MN1604, Eveready No. 522. or Panasonic 6LR61.

Warranty

The LSM900 microphones and Phantom Power Supplies are guaranteed for two years from date of original purchase against defects in workmanship and materials. If such malfunction occurs, the item will be repaired or replaced (at our option) without charge for materials or labour if delivered prepaid to THE LEON AUDIO COMPANY. Unit will be returned prepaid. Warranty does not cover finish or malfunction due to abuse or operation at other than specified conditions. Repairs by other than THE LEON AUDIO COMPANY or authorised agents will void this guarantee.

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