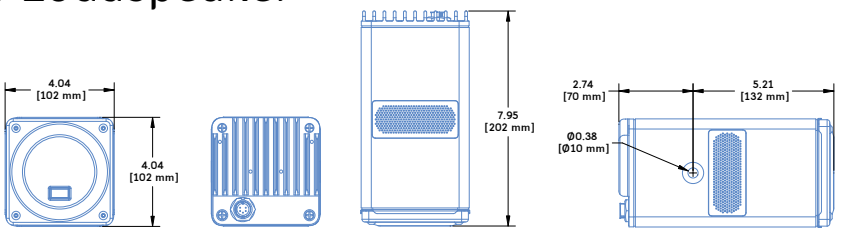
MM-4XPD : Directional Miniature Self-Powered Loudspeaker



Dimensions	4.04" w x 4.04" h x 7.95" d (10.20" d with connector) (102 mm x 102 mm x 202 / 259 mm)
Weight	5.2 lbs (2.36 kg)
Enclosure	Extruded aluminum
Finish	White or black anodized
Protective Grille	Perforated steel
Mounting	Two 3/8"-16 side inserts; MUB-MM4XPD U-bracket available

The MM-4XPD directional miniature loudspeaker is a self-powered loudspeaker specifically designed to provide high-quality reproduction in distributed systems deployed in reverberant spaces. Housed in a compact aluminum enclosure, the MM-4XPD is ideally suited for open, reverberant installations or to isolate sound from adjacent areas, increasing gain before feedback or other applications where a directional loudspeaker is needed. Its flexible and easy-to-configure mounting options, as well as its ability to effortlessly reproduce both speech and music, make the MM-4XPD an excellent choice for large distributed systems, theatrical presentations, museums, and small portable systems in corporate AV applications, where intelligibility is critical.

The MM-4XPD meets the same exceptional performance standards as the MM-4XP, with the added advantage of a hypercardioid coverage pattern. Patent-pending technology yields a high degree of attenuation between the front and back of the loudspeaker, and achieves a directional polar response using passive acoustical techniques.

The benefits of this breakthrough technology are broadband, achieving attenuation of 10 dB at the rear of the loudspeaker enclosure even at low frequencies, and retaining directional dispersion into the high frequencies. The MM-4XPD's single driver design avoids the complexity and cost incurred by directional techniques employing two drivers, eliminating the additional amplification and signal processing requirements of these techniques. The directional polar pattern of the loudspeaker at low frequencies significantly reduces excitation of low-frequency room reverberation, increasing the intelligibility of the system.

The single 4-inch cone transducer, designed and manufactured at Meyer Sound's Berkeley, Calif., factory, delivers an impressive maximum peak SPL of 113 dB and a wide operating frequency range of 120 Hz to 18 kHz, with very low distortion. The MM-4XPD exhibits the same high intelligibility and flat frequency and phase responses for which Meyer Sound loudspeakers are known. Peak and rms limiters regulate loudspeaker temperatures and excursion.

The MM-4XPD's amplifier and signal-processing circuits are designed to store DC power and tolerate voltage drops, thereby accommodating light-gauge cables and long cable runs. A Switchcraft EN3 connector on the rear panel accepts both balanced audio input and DC power.

MM-4XPD loudspeaker systems require an external MPS power supply. Designed to power a single loudspeaker, the compact MPS-481 includes a 10-foot cable that receives balanced audio from its XLR female input connector and routes the audio, along with 48 V of DC power, from the power supply to a Switchcraft EN3 5-pin female connector that attaches to the MM-4XPD input connector. For applications with multiple loudspeakers, the MPS-488HP single rack space power supply delivers DC power and balanced audio for up to eight MM-4XPD or other Meyer Sound low-voltage loudspeakers. Meyer Sound's RMS remote monitoring system is available as an option for the MPS-488HP.

Both MPS power supplies can deliver DC power to MM-4XPD loudspeakers at cable lengths of up to 300 feet with just 1 dB of loss in peak SPL when using 18 AWG wire. The use of composite multiconductor cables (such as Belden® 1502) allows a single cable to carry both audio and DC power to the MM-4XPD. Longer cable lengths are possible for moderate applications that don't drive the loudspeakers to maximum output, or for installations with heavier wire gauges. Powering the MM-4XP from a unipolar external power source reduces induced noise significantly and eliminates the need for wiring conduits. For information and specifications for the MPS power supplies, refer to their respective datasheets.

The MM-4XPD's extruded aluminum enclosure acts as a heat sink to dissipate heat from the driver's voice coil. The enclosure is available in standard white or black anodized finishes with a perforated steel grille. It can also be custom painted to match specific color schemes. The MUB-MM4XPD U-bracket is dedicated to the MM-4XPD and is used to mount the loudspeaker on walls and ceilings and permits adjustment of its positioning angle.

Features & Benefits

- Directional hypercardioid pattern provides 10dB of attenuation between the front and rear of the loudspeaker, even at low frequencies
- Directional pattern reduces room excitation, desirable in highly reverberant spaces
- Extremely compact size fits in small spaces
- Patent-pending, passive, single-driver directional technology minimizes energy consumption, weight, and cabinet volume
- Convenient U-bracket enables quick and easy mounting

Applications

- Restaurants, bars, and highly reverberant public spaces
- Large distributed systems
- Trade show presentations

MM-4XPD Specifications

Acoustical	
Operating Frequency Range[1]	120 Hz – 18 kHz
Frequency Response[2]	135 Hz – 17 kHz ±4 dB
Phase Response	330 Hz – 20 kHz ±45˚
Maximum Peak SPL[3]	113 dB
Dynamic Range	100 dB
Coverage	
Horizontal and Vertical	HyperCardioid Response with ‹10dB front-to-back ratio up to 500 Hz 120˚ (500 Hz – 4 kHz); 80˚ (4 kHz – 10 kHz ±10˚)
Transducer	
Type	One 4" cone driver
Nominal Impedance	4 Ω
Voice Coil Size	0.75"
Power-Handling Capability	100 W (AES)[4]
Rear Panel	
Audio/Power Connector	SwitchCraft EN3 5-pin male (3 pins for balanced audio, 2 pins for DC power)
Wiring	Pin 1: DC power (–) Pin 2: DC power (+) Pin 3: Balanced audio shield, chassis/earth Pin 4: Balanced audio (–) Pin 5: Balanced audio (+)
LED	Displays loudspeaker status
Audio Input	
Type	Differential, electronically balanced
Maximum Common Mode Range	±5 V DC
Input Impedance	10 kΩ electronically balanced
DC Blocking	4.8 Hz high pass
CMRR	‹–60 dB, typically ‹–72 dB (200 Hz – 3 kHz)
RF Filter	Common mode: 616 kHz Differential mode: 616 kHz
Nominal Input Sensitivity	–2.5 dBV (0.75 V rms, 1.00 V peak) continuous average is typically the onset of limiting for noise and music
Input Level	Audio source must be capable of producing +16 dBV (6.3 V rms, 9.0 V peak) into 600 Ω to produce maximum peak SPL over the operating bandwidth of the loudspeaker
Amplifier	
Type	Class D
Output Power[5]	220 W (440 W peak)
THD, IM, TIM	‹.02%
Load Capacity	4 Ω
Cooling	Convection
DC Power	
Safety Agency Rated Operating Range[6]	48 V DC
Current Draw:	0.7 A average; 2.2 A peak
Idle Current	0.16 A rms
Maximum Long-Term Continuous Current (›10 sec)	0.7 A rms
Burst Current (‹1 sec)	2.2 A rms
Ultimate Short-Term Peak Current	2.35 A peak
Inrush Current	‹7.0 A peak
MPS Power Supply Required	For information and specifications for the Meyer Sound MPS-481 and MPS-488HP power supplies, refer to their respective datasheets.

Architect Specifications

The loudspeaker shall be self-powered and include a single 4-inch (102 mm) diameter cone transducer with a 100 watt (AES), 4-ohm, long-excursion voice coil. The loudspeaker shall incorporate a Class D power amplifier with a burst capability of 220 W total (440 W peak) into a nominal load of 4 ohms. Distortion (THD, IM, TIM) shall not exceed .02%.

Performance specifications for a typical production unit shall be as follows, measured at 1/3-octave resolution: operating frequency range, 120 Hz to 18 kHz; phase response, 330 Hz – 20 kHz ±45˚; maximum peak SPL, 113 dB at 1 meter. Horizontal and vertical coverage shall be HyperCardioid with ‹10dB front-to-back ratio up to 500 Hz at 120˚ (500 Hz – 4 kHz); 80˚ (4 kHz – 10 kHz ±10˚).

The loudspeaker shall be equipped with a single Switchcraft 5-pin EN3 connector (three pins for balanced audio and two pins for DC power). The audio input shall be electronically balanced with a 10-kOhm impedance and accept a nominal –2.5 dBV (0.75 V rms, 1.00 V peak) input signal. DC blocking and RF filtering shall be provided, and CMRR shall be less than –60 dB and typically less than –72 dB (200 Hz to 3 kHz).

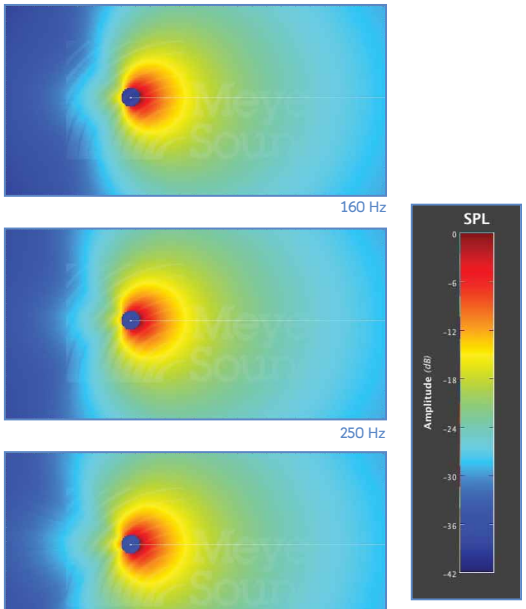
The power requirements for the loudspeaker shall be either a Meyer Sound MPS-481 or MPS-488HP power supply capable of delivering 48 V DC. Current draw for the loudspeaker during burst (‹1 sec) shall be 2.2 A at 48 V. Current inrush during turn-on shall not exceed 7.0 A at 48 V.

Loudspeaker components shall be housed in a sealed, extruded aluminum enclosure with a white paint or black anodized finish. Custom colors shall also be available. Dimensions shall be 4.04" (102 mm) wide by 4.04" (102 mm) high by 7.95" (202 mm) deep, including the grille (10.20"/259 mm deep with connector). Weight shall be 5.2 lbs (2.36 kg). 3/8"-16 inserts on each side of the enclosure shall accommodate Meyer Sound mounting and rigging options.

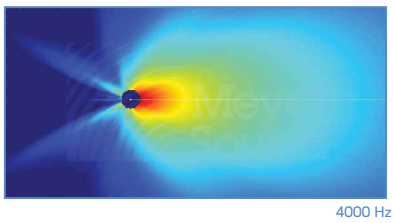
The loudspeaker shall be the Meyer Sound MM-4XPD.

MM-4XPD MAPP Online Pro Soundfields

Low Frequency Coverage



High Frequency Coverage



Notes:

1. *Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.*
2. *Free field, measured with 1/3-octave frequency resolution at 4 meters.*
3. *Measured with music referred to 1 meter.*
4. *Power handling is measured under AES standards: transducer driven continuously for two hours with band-limited noise signal having a 6 dB peak-average ratio.*
5. *Amplifier wattage rating based on the maximum unclipped burst sine-wave rms voltage the amplifier will produce for at least 0.5 seconds into the nominal load impedance. 30 V rms (42 V peak).*
6. *Tolerates voltage drops up to 30% due to long cable runs.*

Made by Meyer Sound Laboratories
Berkeley, California USA
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N775

MM-4XPD — 04.163.047.02 A

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