

# MSL-10A

High Power  
Loudspeaker  
System



The Meyer Sound MSL-10A is an extremely high-power, high-performance loudspeaker system designed for large-scale music reinforcement and public address applications.

The MSL-10A System comprises an all-horn, integral full-range loudspeaker cabinet constructed as a 30-degree arrayable section, and a 19" electronics rack (on wheels) housing the M-10A Control Electronics Unit, three MS 10 Power Amplifiers and an Interface Unit.

The minimum standard MSL-10A configuration comprises two loudspeaker cabinets, each with its own electronics rack. Additional MSL-10A cabinets may be employed as modular 30-degree building blocks to increase the coverage and acoustical power of the system, providing extensive flexibility to meet specific application requirements.

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## *Features*

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**Extremely High Power**

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**Exceptional Clarity**

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**Point Source Arraying**

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**Weatherproof Hardware**

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**Long-Term Reliability**

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## *Applications*

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**Paging and Announcing**

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**Outdoor Sports Arenas**

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**Stadiums**

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**Racetracks**

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**Large-Scale Touring**

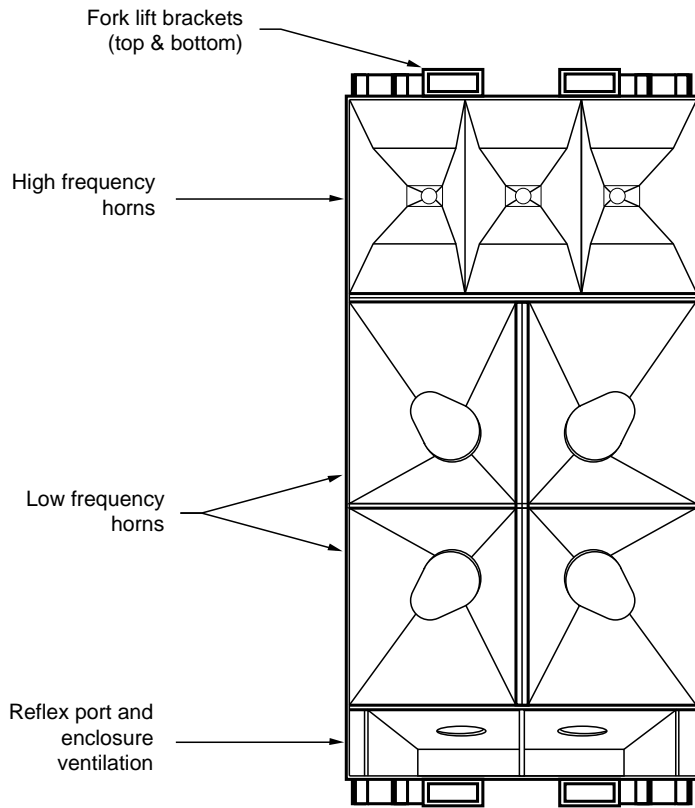
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**Concert Reinforcement**

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M E Y E R S O U N D

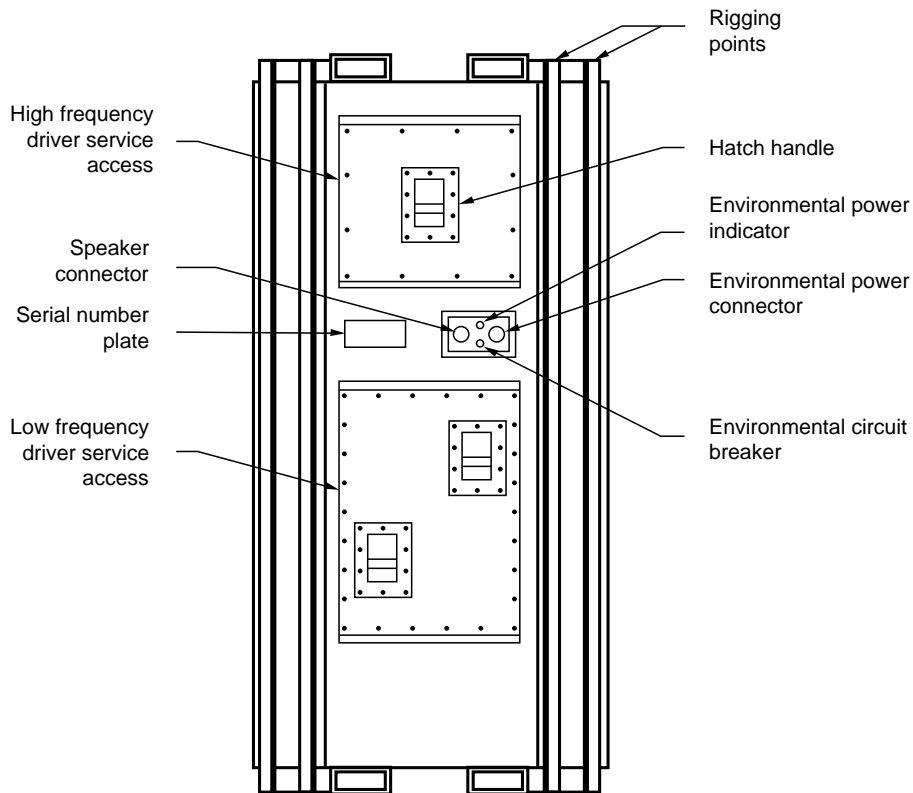
# MSL-10A Loudspeaker



*Front View*

## Enclosure Features:

- High Q maximizes reverberation control
- Modular, arrayable design for predictable, coherent coverage
- High acoustical output with low distortion
- Rugged construction
- Internal environmental heating/cooling system
- Extensive weatherproofing for long-term reliability
- Stainless steel hardware throughout
- Rigged for transportation and installation



*Rear View*

The MSL-10A Loudspeaker cabinet is fortified for long-term reliability in outdoor installations, and is thoroughly inspected at several stages during assembly. Constructed of high-grade Finnish birch hardwood, the enclosure is resin-impregnated in critical areas, bonded with structural epoxy adhesive, and coated with a finish that tolerates cabinet swelling without cracking. Thermostatically-controlled environmental heating and cooling systems, which receive power from the MSL-10A Rack, ventilate the cabinet and stabilize its interior temperature.

The MSL-10A cabinet is internally damped and braced for maximum energy transfer and highly intelligible reproduction of voice and music — which is especially important in acoustically difficult environments. Internal and external steel bracing and integral all-steel rigging points ensure safe, efficient installation, and integral forklift brackets ease handling.

#### Component Quality and Linearity

The MSL-10A Loudspeaker employs driver components whose design, construction, and testing have been proven in over a decade of demanding professional use. The transducer magnetic circuits and suspen-

sions have been optimized for maximum linearity, resulting in extremely low harmonic distortion and consistent sonic accuracy at all dynamic levels. Ferrofluid cooling and back-vented gaps and pole pieces maximize power handling, and water-resistant treatment of all driver elements ensures greatest reliability in outdoor installations. Gold-plated contacts and stainless steel mounting hardware resist corrosion.

#### Rigorous Testing

The M-10A Control Electronics and MSL-10A Loudspeaker components are individually and fully tested at several stages of manufacture to ensure maximum reliability and minimum component failure.

Each driver is subject to an eight-hour dynamic burn-in to test for power handling and peak excursion performance, and thorough computer-based testing prior to shipment ensures optimal system operation upon installation.

Finally, the MSL-10A System has undergone years of field testing in stadium installations and touring reinforcement, resulting in a mature, refined technology that offers unmatched performance.

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#### Acoustical System<sup>1</sup>

Frequency Response <sup>2</sup>	70 Hz - 16 kHz ±4 dB
Maximum SPL at 100 feet	
Continuous	110 dB
Peak	120 dB
HF Coverage, -6 dB points	
Horizontal	60 degrees
Vertical	40 degrees

#### MSL-10A Loudspeaker (one 30° section)

Driver Complement	(4) MS-12 12-inch cone drivers (3) MS-2001 2-inch horn drivers
HF DC Protection	50 µf polypropylene capacitor
Enclosure	Vented, horn-loaded, 12-ply hardwood
Finish	Weatherproof black coating
Protective Grill	Three-piece expanded metal screen, damped
Rigging	Eight points, 3/4 inch rigging holes in steel cradle
Dimensions	41" W x 85" H x 35" D
Weight	700 lbs (318 kg)
Power Requirement	200–240 VAC, 3A (heater and fan supply)
Connectors	Pyle with weather cap, heavy-duty AC in, weather protected

#### Notes:

1. Acoustical specifications are given for the minimum configuration of two 30° sections.
2. Measured 100 feet on axis, half-space conditions, pink noise input, in third-octave bands.

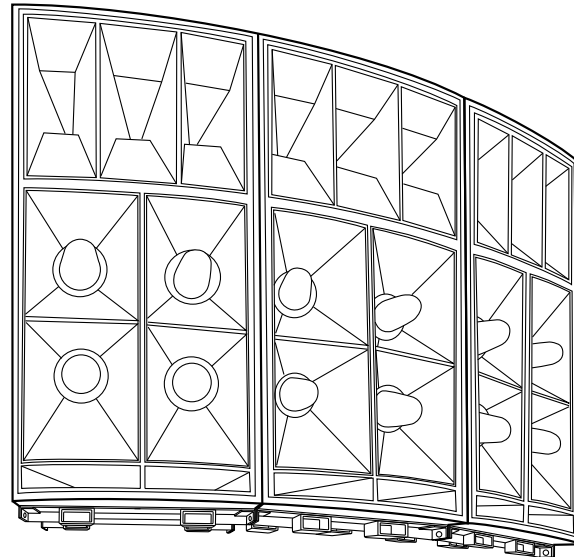
# Arraying and Rigging

The MSL-10A loudspeaker is designed to function as a modular building block capable of being arrayed in multiples to satisfy a wide range of acoustical power and coverage requirements.

Configured as a tightly controlled 30-degree section, the MSL-10A cabinet features a trapezoidal construction which forms curved arrays. MSL-10A's in an array combine acoustically in a seamless fashion to form a radiating arc, producing uniform, coherent wavefronts over the angle subtended by the array.

The propagation characteristic of an MSL-10A array thereby closely approximates that of a theoretically perfect pulsating gas sphere — but rather than being omnidirectional, the radiation is confined to an area that is controlled by the array configuration. This yields exceptional intelligibility in reverberant environments, with substantially the same sonic character in both the near and far field — a critical advantage in large-scale sound reinforcement.

To expedite arraying and installation, the MSL-10A is fitted with an integral rigging system. Comprising steel braces on the cabinet sides and convenient fork lift feet on top and bottom, the rigging system eases handling and provides secure points from which to suspend the cabinet. In



**Three-Section Array**  
40° Vertical Coverage  
90° Horizontal Coverage

conjunction with an accessory spacer/hanger bar, it also facilitates coupling adjacent cabinets to form rigid arrays.

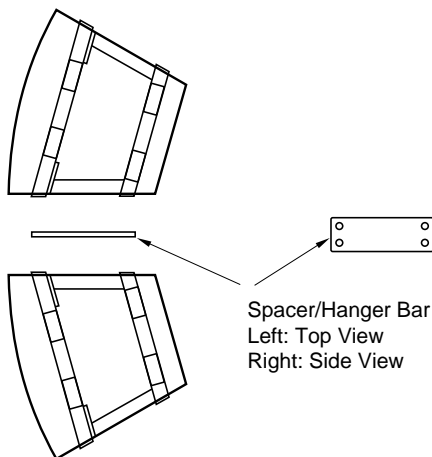
## Wide Horizontal Arrays

The minimum MSL-10A configuration is two cabinets (as shown below).

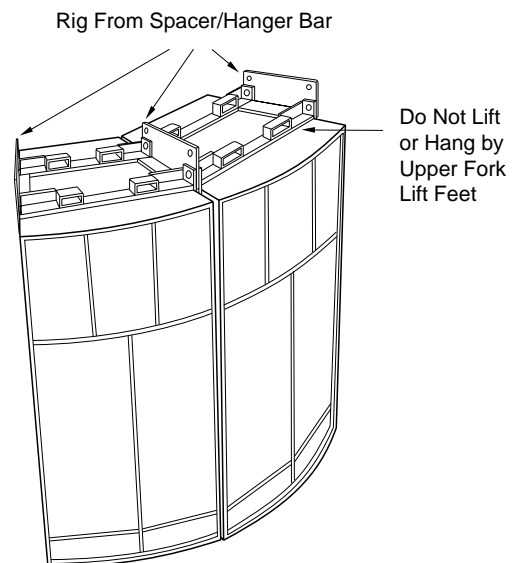
Coupled side-by-side, this configuration delivers 60 degrees horizontal coverage. Spacer/hanger bars and

case-hardened steel bolts join the cabinets together and provide rigging points for hoisting.

To increase the horizontal coverage of the array, one or more cabinets may be added as shown in the illustration above. Each cabinet added to the array extends its horizontal coverage by 30 degrees while maintaining a consistent 40 degrees of vertical coverage.



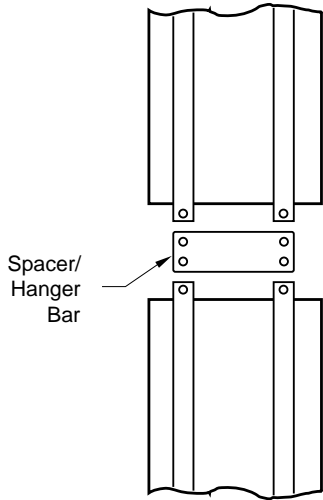
**Installation of Spacer/One-Piece Hanger Bar**



**A Two-Section Array Showing Locations of Hanging Points**

### Long-Throw Arrays

To increase the effective throw of the system, MSL-10A cabinets may be arrayed one atop another with high horns together, as shown in the illustration at the right. Spacer/

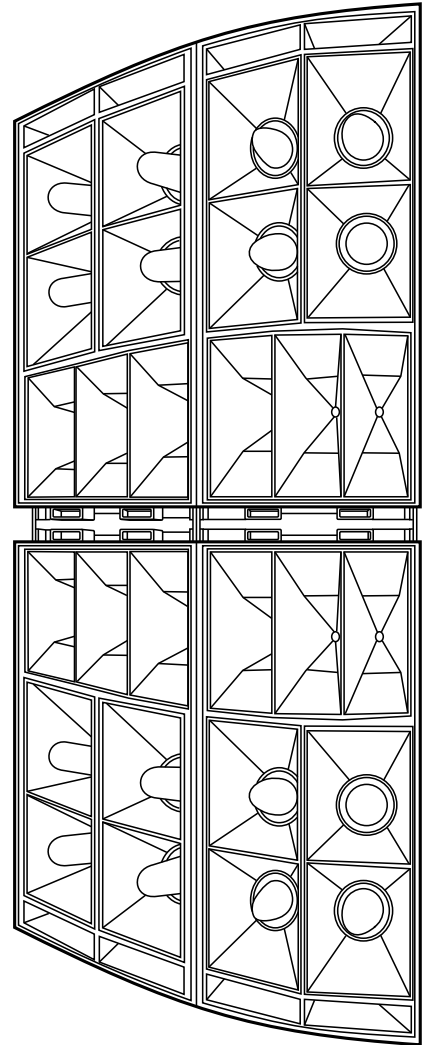


**Use of Spacer/Hanger Bar to Couple Cabinets Vertically**

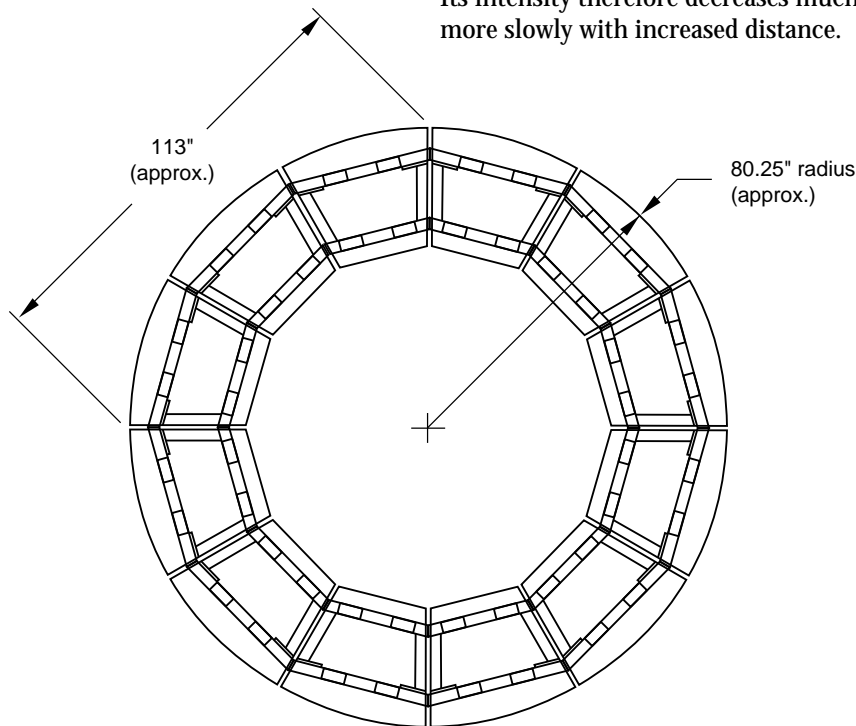
hanger bars are used to couple the cabinets both horizontally and vertically, as illustrated at the left. A second set of spacer/hanger bars at the top provides convenient points for hoisting and hanging the array.

In this configuration, coupling between the adjacent horns narrows the vertical dispersion of the array to  $\pm 10$  degrees, moving the focal point (or virtual source) farther behind the array. Since inverse-square propagation losses depend upon the distance from the focal point (rather than from the array surface), this configuration maintains high sound pressures over very long distances.

The effect is analogous to the difference between a floodlight and a searchlight. The floodlight distributes energy very widely, as though from a proximate point source, and its intensity decreases relatively quickly with increased distance. The searchlight, on the other hand, projects a narrow, focused beam which is the equivalent of colimated light from a distant, very powerful point source. Its intensity therefore decreases much more slowly with increased distance.



**Long-Throw Configuration**  
20° Vertical Coverage  
60° Horizontal Coverage



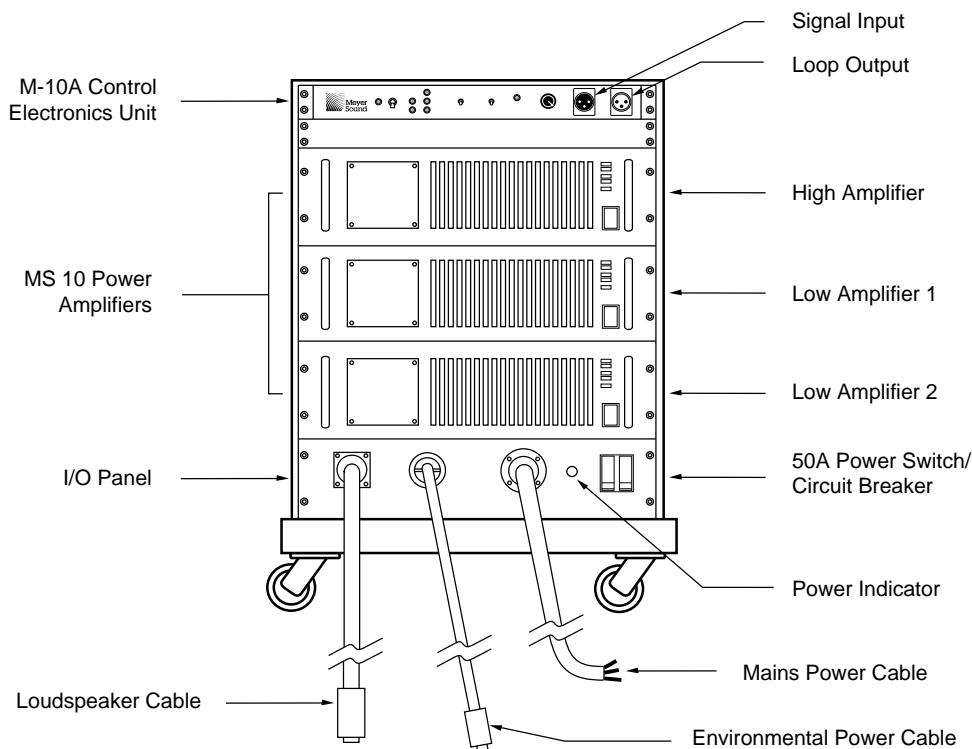
**Ring Configuration**  
360° Horizontal Coverage

### Ring Configuration

As shown at left, twelve MSL-10A cabinets arrayed horizontally form a complete ring providing 360-degree horizontal coverage.

This system produces prodigious sound pressures in a reasonably compact package (80.25" radius), and is effective for large scale concerts in-the-round or sporting events in very large stadiums. Where required, additional cabinets may be added vertically, as shown above, to increase the throw for any portion(s) of the total arc.

# MSL-10A Rack System



## Rack System Features:

- Integrated signal processing includes optimized active crossover, amplitude and phase correction, and driver protection circuitry to maintain safe operating levels
- Modular amplifier rack includes control electronics, amplifiers and interconnection panel for easy interface with speaker system
- Input/Output unit provides power switch and circuit breaker for entire system; protection and power distribution to the CEU, amplifiers, and loudspeaker; and loudspeaker and external power connections
- Completely engineered and ready to install

## MSL-10A Rack System (each section)

Component Complement	M-10A Control Electronics Unit (3) MS 10 Power Amplifiers I/O Panel
Dimensions	24" W x 36 1/4" H x 27 3/4" D
<b>Interconnects</b>	
100' Speaker Cable	10 ga. 6 cond., Pyle ZPEK 1620 both ends
100' Environmental AC Cable	16 ga. 3 cond., NEMA L6-15R both ends
30' Mains Power Cord	8 ga. 3 cond., Hubbell CS-8264-C to bare leads
<b>MS 10 Power Amplifier</b>	
Configuration	Bridge mode, single balanced input
Voltage Gain	16 dB
<b>Power Output</b>	
0.5 sec burst @ 4 ohms	1800 watts
FTC Rating @ 8 ohms	1100 watts
Continuous @ 8 ohms	367 watts
Nominal (235 VAC) Mains Operation	In bridged mode, 4 ohm resistive load, will reproduce three specified burst waveforms <sup>1,2,3</sup> , each continuously for 1 hour, without shutdown or limiting
High (255 VAC) Mains Operation	In bridged mode, 8 ohm resistive load, passes the FTC continuous power test
Low (200 VAC) Mains Operation	In bridged mode, 4 ohm resistive load, will reproduce a 400 msec sinewave burst at 225 watts, 2.8 sec burst interval, continuously for 1 hour without shutdown or limiting
General	Latch-up protection Indicators for clipping, limiting, thermal overload

## Notes:

1. Cycle consisting of 50 msec sinewave at 120 V peak and 450 msec sinewave at 24 V peak
2. Cycle consisting of 25 msec sinewave at 120 V peak and 975 msec sinewave at 41 V peak
3. Cycle consisting of 400 msec sinewave at 120 V peak and 2400 msec interval at 0 V

<b>M-10A Control Electronics Unit</b>	
Input Type	Active balanced, 10k ohms, ISO™ Input
Output Type	Active push-pull, 600 ohm drive
Maximum Input/Output Level	
Unbalanced	+20 dBv
Balanced	+26 dBv
Hum and Noise	-90 dBv ("A" weighted)
Dynamic Range	120 dB
Electronic Crossover Frequency	800 Hz
Driver Protection Circuits	
Low Frequency	RMS, peak and excursion limiters
High Frequency	RMS, peak and excursion limiters
VHF	Peak limiter
Indicators	Power/Ready LED
	High and Low Sense LED's
	VHF, HF and LF Limit LED's
	Safe LED
Controls	Standby/On switch
	VHF Cal/Music switch
	Safe/AutoSafe switch
	Input Attenuation (calibrated in dB)
Connectors	
Input	3-pin XLR-type female, front panel mounted
Loop Out	3-pin XLR-type male, front panel mounted
Hi and Lo Output	3-pin XLR-type male, rear panel mounted
Sense	Dual banana receptacles, rear panel mounted

## AC Interfacing and Protection

The MSL-10A Rack System requires a single-phase AC voltage source wired between the  $\emptyset X$  and  $\emptyset Y$  terminals of the Rack System AC inlet, with earth ground as a chassis safety connection. It may be interfaced to virtually any delta or wye source configuration, with the Rack  $\emptyset X$  and  $\emptyset Y$  connected to any two source terminals that yield 200~260 VAC; multiple racks may be connected to different phases of a polyphase source to distribute the load. The maximum safe isolation voltage between

$\emptyset X$  or  $\emptyset Y$  and earth is 480 VAC.

The AC inlet is protected with a 50 A, 250 V switch-type magnetic circuit breaker which is CSA, VDE and UL approved (UL Code "A") and is located on the front of the I/O Panel. Power distribution to each amplifier is individually protected with a two-pole, 20 A, 250 V switch-type breaker located on the rear panel. The environmental power and M-10A CEU share a single 20 A, 250 V breaker, also located on the rear panel.

### Power Requirement

Mains AC Voltage Source	200 – 260 VAC, 50 A, 50/60 Hz
Maximum Power Consumption	8700 VA
Maximum Continuous RMS Current <sup>1</sup>	38 A rms (Power factor $\approx$ .93 lagging)
Peak Instantaneous Operating Current <sup>2</sup>	94 A peak
Peak Inrush (Turn-On) Current <sup>3</sup>	
Cold	240 A peak
Hot	360 A peak
Idle Current <sup>4</sup>	9 A rms

### Notes:

1. Current waveform is non-sinusoidal, so the RMS current rating applies only to power consumption and heating from the source. The peak current rating must be considered when determining I<sup>2</sup>R losses in power cable. Peak losses will lower the internal power supply voltages linearly.
2. One AC cycle.
3. Inrush current due to magnetization, <40 ms (2 cycles).
4. Environmental heaters on.

# MEYER SOUND

*Meyer Sound Laboratories has devoted itself to designing, manufacturing, and refining components that deliver superb sonic reproduction. Every part of every component is designed and built to exacting specifications and undergoes rigorous, comprehensive testing in the laboratories.*

*Research remains an integral, driving force behind all production. Meyer strives for sound quality that is predictable and neutral over an extended lifetime and across an extended range.*

**Sound  
engineering  
for the art  
and science  
of sound.**

