MILO 120 : High-Power Extended Coverage Curvilinear Array Loudspeaker

A variation on the popular MILO™ high-power curvilinear loudspeaker, the MILO 120 high-power expanded coverage curvilinear array loudspeaker excels where wide horizontal and increased vertical coverage are needed.

The self-powered MILO 120 is a compact, lightweight four-way system that provides 120 degrees of horizontal and 20 degrees of vertical coverage. The MILO 120 expanded coverage pattern is optimized for medium to near field applications, making it the perfect downfill complement for standard MILO or M3D line array loudspeaker systems. MILO 120 can also be used to form wide coverage arrays or in other fill applications that can be satisfied by one or two cabinets.

As part of the M Series, the MILO 120 loudspeaker comes standard with Meyer Sound's RMS™ remote monitoring system. The MILO 120 shares the same dimensions as the standard MILO cabinet to facilitate seamless integration with MILO and existing MILO QuickFly® rigging accessories, like the MG-3D/M multipurpose grid and MCF-MILO caster frame. The flexibility of MILO 120 also allows it to be configured with other Meyer Sound loudspeakers in complex systems.

MILO 120 produces a peak output of 138 dB SPL with exceptionally flat phase and frequency response. Its wide operating frequency range (60 Hz to 18 kHz) is complemented by extended high-frequency headroom and a dedicated very-high frequency section (4.2 kHz to 18 kHz) that renders delicate transient information with detailed resolution through its wide coverage pattern. The MILO 120 loudspeaker's acoustical characteristics are designed to facilitate seamless integration when used with other MILO curvilinear elements.

The optional MILO 120-I insert (shown below) can be fitted to enhance the appearance of arrays which include the MILO 120, and also provide acoustical benefits that allow MILO and MILO 120 cabinets in the same array to be fed with identical signals, with no additional equalization.

Flown and ground-stacked MILO 120 arrays and combined arrays with other M Series (MILO/M3D/M3D-Subs) models are easy to deploy using QuickFly components. Custom front and rear AlignaLinks at the cabinet corners couple the units for flying or stacking, and allow from 13 to 19 degrees of cabinet splay adjustable in two-degree increments. Because rigging connections are rigid, the array tilt is easy to adjust – often eliminating the need for a pullback strap in flown configurations.

A combined MILO/MILO 120 array with M3D-Subs affords precise low-frequency directional control that has won widespread acclaim for M3D systems. The M3D-Sub provides a well-controlled coverage pattern to 30 Hz, assuring that very low-frequency energy does not spill onto the stage or cause excessive reverberation. In applications where directional low-frequency control is not primary, a MILO/MILO 120 array can be flown adjacent to or ground stacked with Meyer Sound 700-HP subwoofers. With significantly more output than other "high-power" subwoofers, the Meyer Sound 700-HP sets a new standard for the power-to-size equation. Its power and bandwidth handle high continuous operating levels and extreme transient information with minimal distortion in its operating frequency range.

FEATURES & BENEFITS

- Extreme coverage angles of 120 degrees (horizontal) and 20 degrees (vertical)
- Exceptional fidelity and peak capability assure clean, high-impact response
- Seamless integration with other M Series models
- Optional MILO 120-I insert enhances appearance of arrays and provides acoustical benefits
- QuickFly rigging system simplifies use in flown or ground-stacked arrays

APPLICATIONS

- Stadiums, arenas, concert halls and theatres
- Touring sound reinforcement
- Large-scale events

Architect Specifications

The loudspeaker shall be a self-powered, full-range unit for deployment in line array systems. The low/low-mid frequency transducers shall consist of two 12-inch cone drivers, each rated to handle 1200 watts AES*. The mid-high frequency transducer shall be one 4-inch diaphragm (1.5-inch exit) compression driver, rated to handle 250 watts AES, coupled via a custom manifold to a 120-degree horizontal constant directivity horn. The very-high frequency transducers shall consist of two 2-inch diaphragm (0.75-inch exit) compression drivers, each rated to handle 100 watts AES, coupled via a custom manifold to a 120-degree horizontal constant directivity horn.

The loudspeaker shall incorporate internal processing electronics and a four-channel amplifier. Processing functions shall include equalization, phase correction, driver protection and signal division for the three frequency sections. The crossover points shall be 560 Hz and 4.2 kHz. An additional low-frequency crossover shall cause the two low/low-mid frequency transducers to work in combination between 60 Hz and 180 Hz, with only one working between 180 Hz and 560 Hz, to maintain optimal polar response characteristics.

Each amplifier channel shall be class AB/H with complementary MOSFET output stages. Burst capability shall be (two channels 1125 watts, one channel 750 watts and one channel 560 watts) with a nominal 4-ohm load for low and low-mid frequency channels, 6-ohm load for very-high frequency channel and 8-ohm load high-frequency channel. Distortion (THD, IM, TIM) shall not exceed 0.02%. Protection circuits shall include peak and TruPower limiting. The audio input shall be electronically balanced with a 10 kOhm impedance and accept a nominal 0 dBV (1 V rms, 1.4 V pk) signal (+20 dBV to produce maximum SPL). Connectors shall be XLR (A-3) type male and female or VEAM all-in-one (integrates AC, audio and network). RF filtering shall be provided. CMRR shall be greater than 50 dB (typically 80 dB 50 Hz – 500 Hz).

Performance specifications for a typical production unit shall be as follows, measured at 1/3 octave resolution: Operating frequency range shall be 60 Hz to 18 kHz. Phase response shall be ±30˚ from 750 Hz to 16 kHz. Maximum peak SPL shall be 138 dB at 1 meter. Beamwidth shall be 120 degrees horizontal. Vertical coverage in multi-cabinet arrays shall be dependent on system configuration; for a single cabinet vertical coverage shall be 20 degrees.

The internal power supply shall perform automatic voltage selection, EMI filtering, soft current turn-on and surge suppression. Powering requirements shall be nominal 100 V, 110 V or 230 V AC line current at 50 Hz or 60 Hz. UL and CE operating voltage ranges shall be 95 to 125 V AC and 208 to 235 V AC. Current draw during burst shall be 14.4 A at 115 V AC and 7.2 A at 230 V AC. Current inrush during soft turn-on shall not exceed 7 A at 115 V AC. AC power connectors shall be locking NEMA L6-20 connector, IEC 309 male or VEAM.

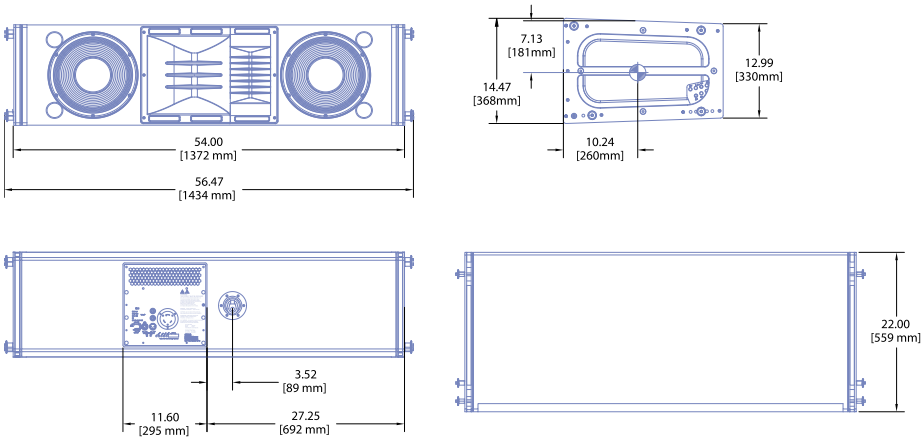
The loudspeaker system shall incorporate the electronics module for Meyer Sound's RMS remote monitoring system.

All loudspeaker components shall be mounted in an enclosure constructed of multi-ply hardwood with a hard black textured finish. The front protective grille shall be powder-coated, hex stamped steel.

Dimensions shall be 54.00" wide x 14.47" high (cabinet front) x 22.00" deep (1372 mm x 368 mm x 559 mm). Weight shall be 235 lbs (106.60 kg).

The loudspeaker shall be the Meyer Sound MILO 120.

**Loudspeaker driven with a band-limited noise signal with 6 dB peak-to-average ratio for a period of two hours.*



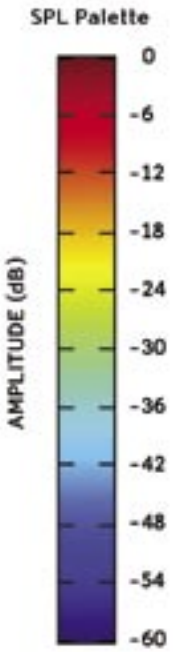
Dimensions	54.00" w x 14.47" h x 22.00" d (1372 mm x 368 mm x 559 mm)
Weight	235 lbs (106.60 kg)
Enclosure	Multi-ply hardwood
Finish	Black textured
Protective Grille	Powder-coated hex stamped steel
Rigging	MRF-MILO rigging frame, custom AlignaLink connectors and quick release pins

About the Vertical Directivity Plots

The color images accompanying the upper diagram on the following page are sound intensity plots made using the Meyer Sound MAPP Online® acoustical prediction program, a unique and highly accurate visualization tool for professional sound system designers.

Using an Internet-connected personal computer, the designer specifies Meyer Sound loudspeaker models, their locations, how they are aimed and, optionally, the locations and composition of walls. This information travels over the Internet to a powerful server computer at Meyer Sound headquarters in Berkeley, Calif. Running a sophisticated algorithm and using highly accurate measured data that describe each loudspeaker's directional characteristics, the server predicts the sound field that the loudspeakers will produce, forms a color representation, and sends the result back for the designer's computer to display.

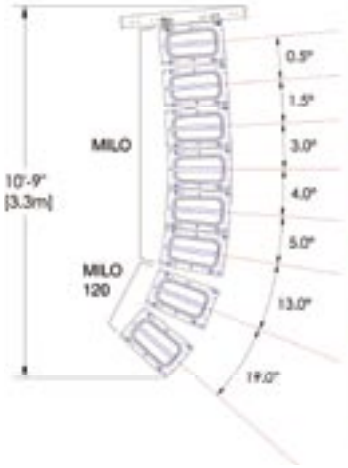
In these sound field plots, the color spectrum is used to represent levels of sound intensity, with red being the loudest and blue the softest, as shown in the scale to the immediate right. These examples illustrate coverage characteristics for an array whose splay angles have been tailored to the actual venue whose section view is superimposed on the MAPP Online plots.

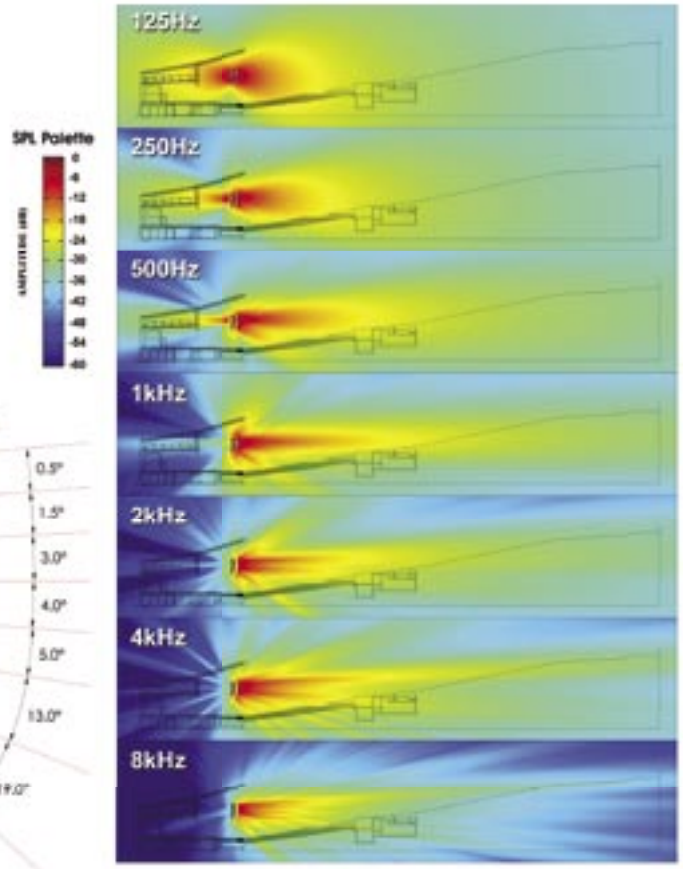


MILO 120 Vertical Splay and Coverage

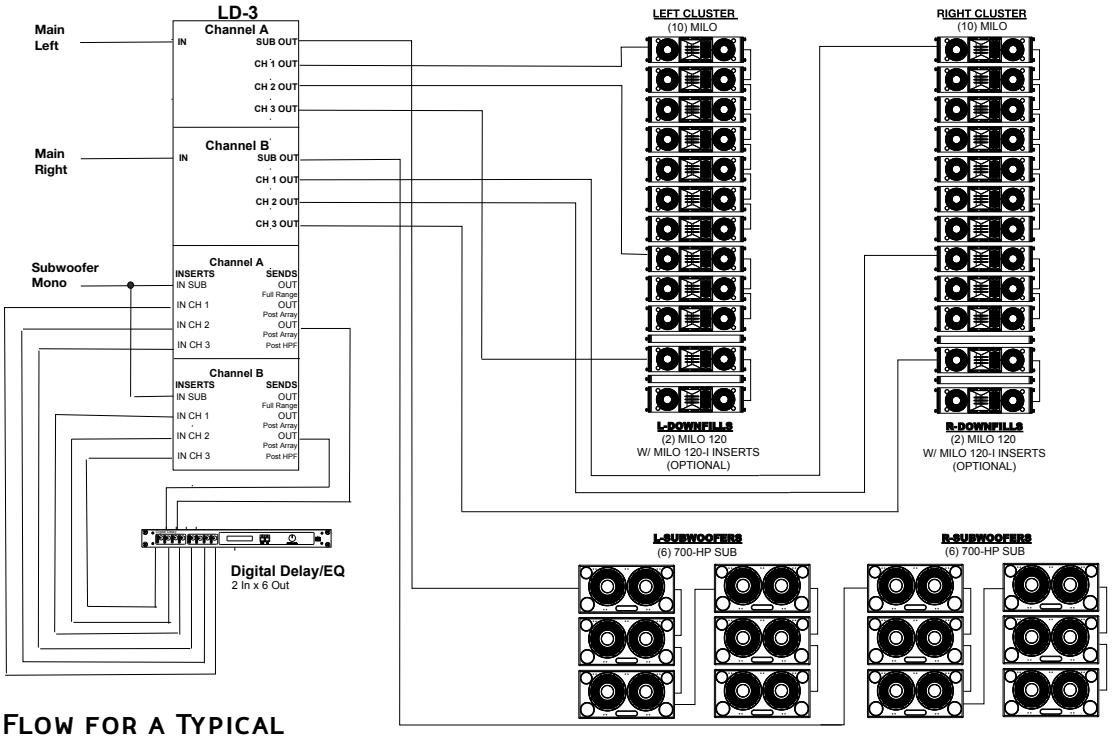
These illustrations show how the splay between adjacent cabinets in a MILO/MILO 120 array may be adjusted to tailor coverage for a specific venue. The MAPP Online plots illustrate the vertical directivity characteristics of this example array, with a section view of the venue superimposed.

The top six cabinets (MILO) are splayed at small angles to throw farther through coupling and cover the back of the venue. The bottom two cabinets (MILO 120) are splayed at wider angles to better cover the near field.





Signal Flow for a Typical Integrated Reinforcement System



Because the MILO 120 loudspeaker is compatible with most other Meyer Sound reinforcement loudspeakers, sound designers have maximum freedom to customize systems for their needs. This block diagram illustrates the signal flow for a typical integrated sound reinforcement system using 10 MILO cabinets per side for the main arrays, and two MILO 120 loudspeakers used as downfill.

MILO 120 Specifications

Acoustical[1]	
Operating Frequency Range[2]	60 Hz – 18 kHz
Free Field Frequency Response[3]	65 Hz – 17.5 kHz ±4 dB
Phase Response	750 Hz – 16 kHz ±30˚
Maximum Peak SPL[4]	138 dB
Dynamic Range	›110 dB
Coverage	
Horizontal Coverage	120˚
Vertical Coverage	Varies, depending on array length and configuration; 20˚ for single loudspeaker
Crossover[5]	560 Hz, 4.2 kHz
Transducers	
Low/Low-Mid Frequency[7]	Two 12" cone drivers with neodymium magnets Nominal impedance: 4 Ω Voice coil size: 4" Power-handling capability: 1200 W (AES)[6]
Mid-High Frequency	One 4" compression driver Nominal impedance: 8 Ω Voice coil size: 4" Diaphragm size: 4" Exit size: 1.5" Power handling capability: 250 W (AES)[6] on REM
Very-High Frequency[8]	Two 2" compression drivers Nominal impedance: 12 ω Voice coil size: 2" Diaphragm size: 2" Exit size: 0.75" Power handling capability: 100 W (AES)[6] on REM
Audio Input	
Type	Differential, electronically balanced
Maximum Common Mode Range	±15 V DC, clamped to earth for voltage transient protection
Connectors	Female XLR input with male XLR loop output or VEAM all-in-one connector (integrates AC, audio and network)
Input Impedance	10 kΩ differential between pins 2 and 3
Wiring	Pin 1: Chassis/earth through 220 kΩ, 1000 pF, 15 V clamp network to provide virtual ground lift at audio frequencies Pin 2: Signal + Pin 3: Signal – Case: Earth ground and chassis
DC Blocking	None on input, DC blocked through signal processing
CMRR	›50 dB, typically 80 dB (50 Hz–500 Hz)
RF Filter	Common mode: 425 kHz Differential mode: 142 kHz
TIM Filter	Integral to signal processing (‹80 kHz)
Nominal Input Sensitivity	0 dBV (1 V rms, 1.4 V pk) continuous is typically the onset of limiting for noise and music
Input Level	Audio source must be capable of producing a minimum of +20 dBV (10 V rms, 14 V pk) into 600 Ω in order to produce maximum peak SPL over the operating bandwidth of the loudspeaker
Amplifiers	
Type	Complementary power MOSFET output stages (class AB/H)
Output Power	3560 W (1125 W x 2 channels, 750 W x 1 channel, 560 W 1 x channel)[9]
THD, IM, TIM	‹.02%
Load Capacity	4 Ω low and low-mid, 8 Ω mid, 6 Ω very-high channel
Cooling	Forced air cooling, four fans (two ultrahigh-speed reserve fans)
AC Power	
Connector	250 V AC NEMA L6-20 (twistlock) inlet, IEC 309 male inlet, or VEAM
Automatic Voltage Selection	Automatic, two ranges, each with high-low voltage tap
Safety Agency Rated Operating Range	95 V AC – 125 V AC, 208 V AC – 235 V AC; 50/60 Hz
Turn-on and Turn-off Points	85 V AC – 134 V AC; 165 V AC – 264 V AC
Current Draw:	
Idle Current	1.1 A rms (115 V AC); 0.55 A rms (230 V AC); 1.3 A rms (100 V AC)
Max Long-Term Continuous Current (›10 sec)	11.2 A rms (115 V AC); 5.6 A rms (230 V AC); 12.9 A rms (100 V AC)
Burst Current (‹1 sec)[10]	14.4 A rms (115 V AC); 7.2 A rms (230 V AC); 16.6 A rms (100 V AC)
Ultimate Short-Term Peak Current Draw	32 A pk (115 V AC); 16 A pk (230 V AC); 37 A pk (100 V AC)
Inrush Current	7 A (115 V AC and 110 V AC); 10 A (230 V AC)
RMS Network	Equipped for two conductor twisted-pair network, reporting all operating parameters of amplifiers to operator's host computer.

Notes:

1. *The low-frequency power response of the system will increase according to the length of the array.*
2. *Recommended maximum operating frequency range. Response depends upon loading conditions and room acoustics.*
3. *Measured with 1/3 octave frequency resolution at 4 meters.*
4. *Measured with music at 1 meter.*
5. *At these frequencies, the transducers produce equal sound pressure levels: 560 Hz for the low-mid and mid-high and 4.2 kHz for the mid-high and very-high frequency drivers.*
6. *Power handling is measured under AES standard conditions: transducer driven continuously for two hours with band limited noise signal having a 6 dB peak-average ratio.*
7. *To eliminate interference at short wavelengths, the two 12-inch drivers work in combination at low frequencies (60 Hz – 180 Hz). At mid frequencies (180 Hz – 560 Hz) only one cone driver is fed from the crossover to maintain optimal polar and frequency response characteristics.*
8. *The three drivers are coupled to a constant-directivity horn through a proprietary acoustical combining manifold (REM).*
9. *Amplifier wattage rating is based on the maximum unclipped burst sine-wave rms voltage the amplifier will produce in to the nominal load impedance low, mid and very high channels 67 V rms (95 V pk) into 4, 6 and 8 ohms.*
10. *AC power cabling must be of sufficient gauge so that under burst current RMS conditions, cable transmission losses do not drop voltage below specified operating range at the speaker.*

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N775

3K59 COMMERCIAL AUDIO SYSTEM
US LISTED

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