M'ELODIE : UltraCompact High-Power Curvilinear Array Loudspeaker

The self-powered M'elodie ultracompact high-power curvilinear array loudspeaker is a member of the popular MILO® family of loudspeakers. Its extended high-frequency headroom gives it a smooth sound over its wide operating frequency range of 70 Hz to 18 kHz. This headroom combines with a 100-degree horizontal coverage pattern to provide detailed resolution of delicate transient information across a broad coverage area.

M'elodie is ideal for creating arrays with a very small footprint for applications that do not require the power and throw distance of the MICA™ compact high-power curvilinear array loudspeaker, or where reduced size and weight are advantageous. With its versatile QuickFly® rigging, which features captive GuideALinks™ for maximum flexibility and safety, M'elodie is equally suited to touring, rental, and fixed installation applications. Amazing power-to-size ratio, low profile, and ease of use makes it an outstanding performer in corporate AV applications, and ideal for smaller venues such as theatres, ballrooms, and clubs. M'elodie produces a peak output of 131 dB SPL with exceptionally flat phase and frequency response, making it capable of filling much larger spaces than one might expect.

While M'elodie can be used as a main system, individual cabinets work well for under-balcony coverage and frontfill. Since its sound and rigging are designed to pair seamlessly with MICA, M'elodie is an excellent downfill or sidefill complement to a MICA main system for tours playing a variety of venues.

The low/low-mid section features two high-power, neodymium-magnet, 8-inch cone drivers with 1.5-inch voice coils, created to meet the power requirements of the system. The drivers are a proprietary design employing neodymium magnets for higher efficiency and power handling with reduced weight. The lowest frequency range is reproduced by these high-power drivers working in tandem, each powered by a dedicated amplifier channel.

To assure the smoothest response in the critical midrange and crossover region, M'elodie incorporates a complex active crossover design. For low frequencies, both drivers work together, but in the low-mid frequencies only one of the two 8-inch drivers is active. This eliminates interference between the drivers that would otherwise occur at shorter wavelengths, while maintaining optimal polar and frequency response characteristics at the crossover frequency.

The high-frequency section uses a 1.2-inch exit, 3-inch diaphragm compression driver with a neodymium magnet, powered by a dedicated amplifier channel. The output of the driver is coupled to a 100-degree (horizontal coverage) constant-directivity horn through a custom REM™ manifold. The REM is a patented coupling device that introduces driver output to the horn throat across a very short path, effectively controlling the dispersion characteristics, but with dramatically reduced distortion in comparison to other techniques.

As a self-powered loudspeaker, M'elodie incorporates a high-power, 3-channel, class AB/H power amplifier and sophisticated control circuitry housed within the cabinet, dramatically simplifying setup and installation. The M'elodie loudspeaker's on-board amplifier delivers 1275 watts total burst power (2550 watts peak). Dedicated limiters protect and extend the life of the drivers at very high levels and prevent severe non-linear circumstances. This modular, field-replaceable amplifier/processing package also incorporates Meyer Sound's Intelligent AC™ power supply, which automatically adjusts for any line voltage worldwide and provides both soft turn-on and transient protection. M'elodie is fitted standard with Meyer Sound's exclusive RMS™ interface, allowing you to monitor and troubleshoot an entire RMS-equipped Meyer Sound system remotely from your PC notebook or desktop system.

Options for M'elodie include a weather-protected version with a rain hood to safeguard the electronics, and custom color finishes. Top and transition grids, a caster frame for transporting stacks of multiple units, and protective covers are available.

FEATURES & BENEFITS

- Exceptional power-to-size ratio
- Wide and even horizontal coverage pattern
- Very small footprint keeps a low profile appearance
- Seamless integration with MICA
- QuickFly rigging with captive GuideALinks simplifies use in flown or ground-stacked arrays, alone or with MICA and/or 600-HP subwoofer

APPLICATIONS

- Corporate AV
- Small theatres, houses of worship, and ballrooms
- Downfill or sidefill for systems using MICA
- Frontfill
- Under-balcony coverage

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 8-inch cone drivers, rated to handle 600 watts AES* (900 watts peak). The high-frequency transducer shall consist of one 3-inch diaphragm, 1.2-inch exit compression driver, rated to handle 180 watts AES* (360 watts peak) coupled via a custom manifold to a 100-degree horizontal constant-directivity horn.

The loudspeaker shall incorporate internal processing and a three-channel amplifier. Processing functions shall include equalization, phase correction, driver protection and signal division for the three frequency sections. The crossover point shall be 1100 Hz. An additional low-frequency crossover shall cause the two low/low-mid frequency transducers to work in combination between 70 Hz and 320 Hz, with only one working up to the crossover frequency to maintain optimal polar characteristics.

Each amplifier channel shall be class AB/H with complementary MOSFET output stages. Burst capability shall be 1275 watts total (2550 watts peak) with two channels at 500 watts into a nominal 4-ohm load for the low and low-mid drivers and one channel at 275 watts into a nominal 8-ohm load for the high-frequency driver. Distortion (THD, IM, TIM) shall not exceed 0.02%. 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. Connectors shall be XLR (A-3) type male and female. 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 70 Hz to 18 kHz. Phase response shall be ±30° from 1.5 kHz to 16 kHz. Maximum peak SPL shall be 131 dB at 1 meter. Beamwidth shall be 100 degrees horizontal. Vertical coverage in multi-cabinet arrays shall be dependent on system configuration.

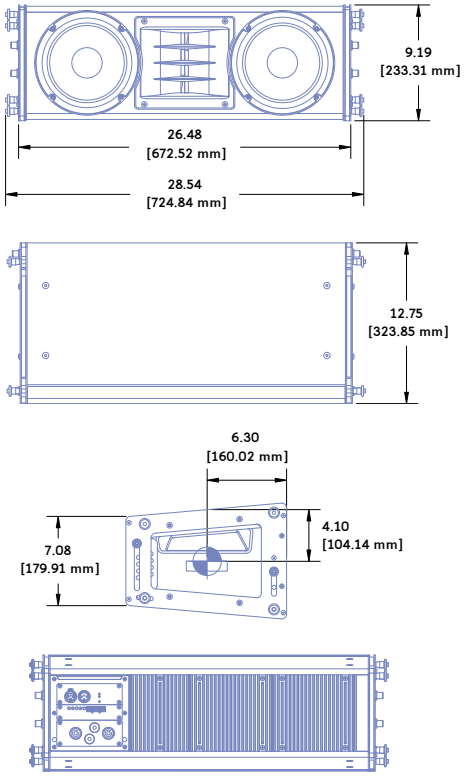
The internal power supply shall perform automatic voltage selection, EMI filtering, soft current turn-on and surge suppression. Powering requirements shall be nominal 100, 110, or 230 V AC line current at 50 Hz or 60 Hz. UL and CE operating voltage range shall be 100 to 230 V AC. Maximum peak current draw during burst shall be 4 A at 115 V AC and 2 A at 230 V AC. Current inrush during soft turn-on shall not exceed 10 A at 115 V AC. AC power connectors shall be PowerCon with looping output or VEAM all-in-one.

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 premium birch plywood with a hard and damage-resistant black textured finish. The front protective grille shall be powder-coated, hex-stamped steel. To build flown or ground-stacked loudspeaker arrays, linking to the grid and between cabinets shall be accomplished with QuickFly rigging hardware using captive GuideALinks allowing 12 splay angles between 0 and 11 degrees.

Dimensions shall be 28.54" wide by 9.19" high by 12.75" deep (724.84 mm x 233.31 mm x 323.85 mm). Weight shall be 62 lbs (28.12 kg).

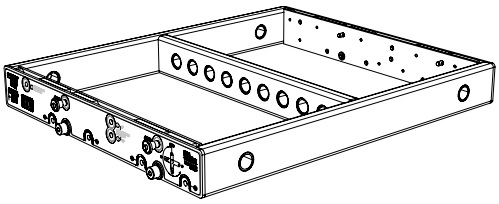
The loudspeaker shall be the Meyer Sound M'elodie.



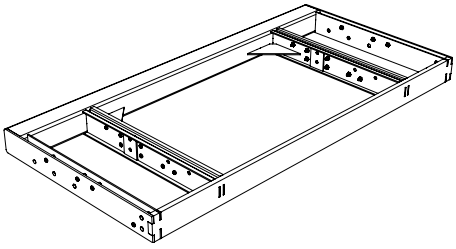
Dimensions	28.54" w x 9.19" h x 12.75" d (724.84 mm x 233.31 mm x 323.85 mm)
Weight	62 lbs (28.12 kg)
Enclosure	Premium birch plywood
Finish	Black textured
Protective Grille	Powder-coated hex-stamped steel
Rigging	QuickFly rigging with four captive GuideALinks in the bottom corners of two aluminum and steel end frames, secured with quick-release pins

*Both transducers driven continuously for two hours with band-limited noise signal having a 6 dB peak-average ratio.

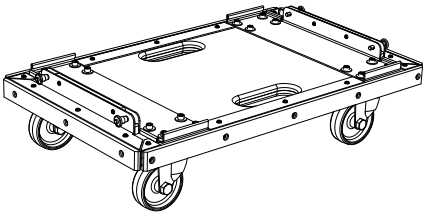
QuickFly Rigging and Transport Accessories



MG-M'elodie multipurpose grid
Supports flying up to 18 M'elodie cabinets with a 7:1 safety ratio or 25 M'elodie cabinets with a 5:1 safety ratio. Can also be used for ground-stacking M'elodie.



MTF-MICA/M'elodie transition frame
Facilitates using M'elodie as downfill for a MICA array, for flying M'elodie under the 600-HP high-power subwoofer, or for ground-stacking with the 600-HP.



MCF-M'elodie caster frame
Allows up to five cabinets to be transported fully rigged, and is dimensioned for tight packing in both U.S. and European trucks. Durable nylon covers are also available to make M'elodie completely ready for the road.

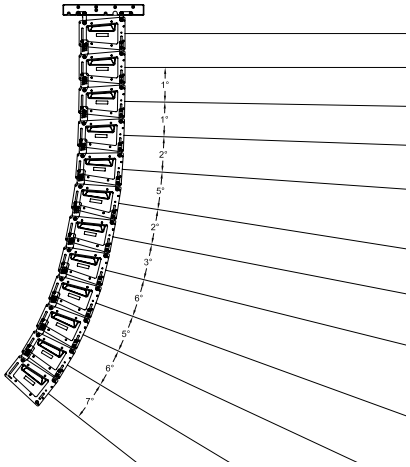
M'elodie Vertical Splay and Coverage

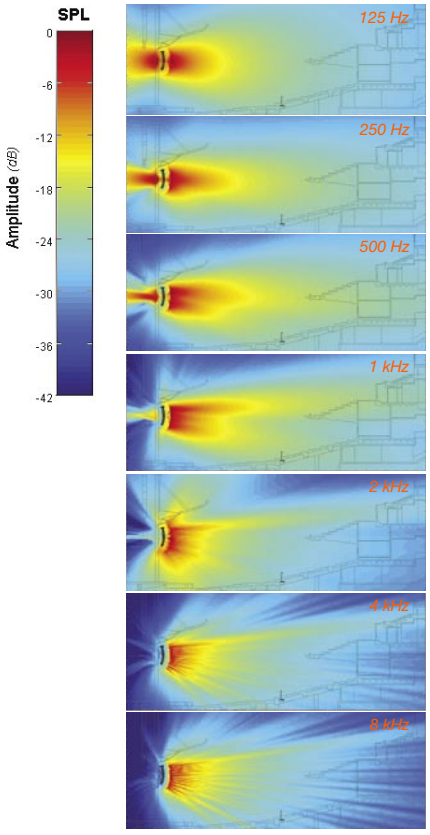
These illustrations show how the splay between adjacent cabinets in a M'elodie array may be adjusted to tailor coverage for a specific venue. The plots on the right illustrate the vertical directivity characteristics of the array on the left, with a section view of an example venue superimposed.

About the Vertical Directivity Plots

These color images are sound intensity plots made using the Meyer Sound MAPP Online Pro™ acoustical prediction program, a unique and highly accurate visualization tool for professional sound system designers. Utilizing rigorous scientific techniques and careful, high-resolution measurements, MAPP Online Pro is a powerful, cross-platform, Java-based application which allows users to accurately predict the coverage pattern, frequency response, impulse response, and maximum SPL output of single or arrayed Meyer Sound loudspeakers.

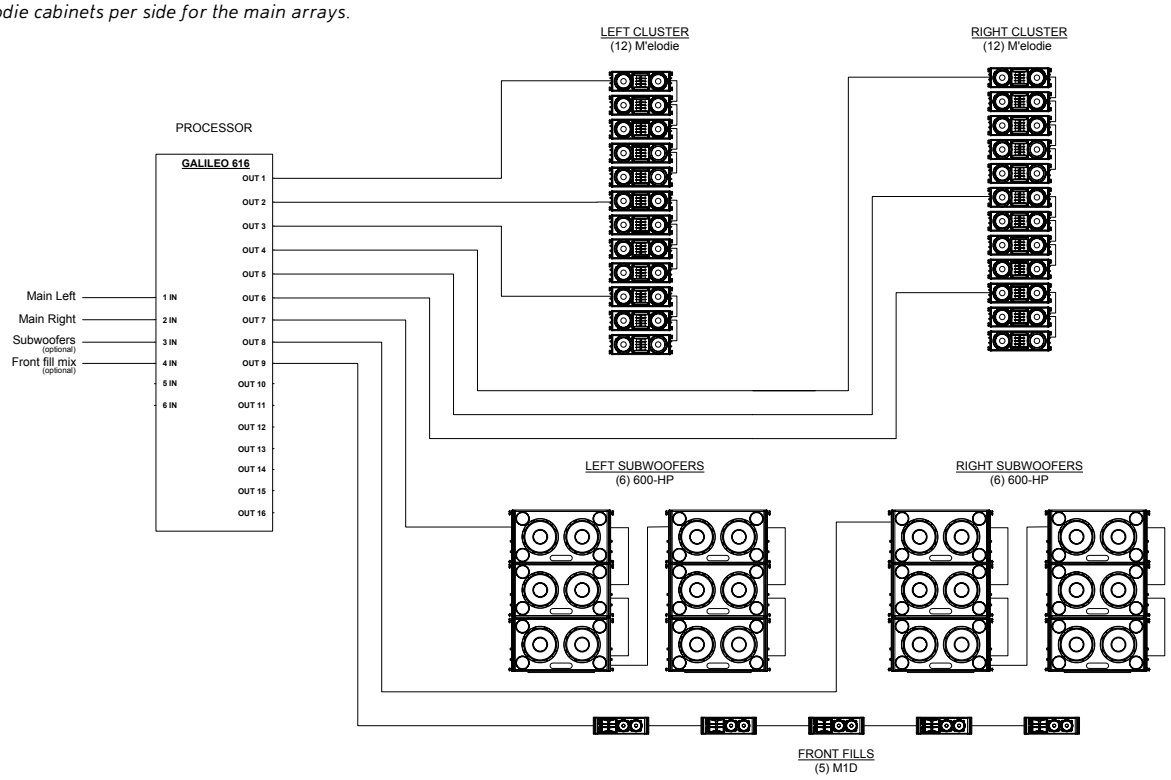
In these sound field plots, the color spectrum is used to represent levels of sound intensity, with red being the loudest and blue being the softest, as shown in the scale above right.





Signal Flow for a Typical Reinforcement System

M'elodie loudspeakers permit versatile arrays and are compatible with other Meyer Sound reinforcement loudspeakers, giving sound designers maximum freedom to customize systems for their needs. This block diagram illustrates the signal flow for a typical sound reinforcement system using 12 M'elodie cabinets per side for the main arrays.



M'elodie Specifications

Acoustical	
Operating Frequency Range[1]	70 Hz – 18 kHz
Free Field Frequency Response[2]	76 Hz – 16 kHz ±4 dB
Phase Response	1.5 kHz – 16 kHz ±30˚
Maximum Peak SPL[3]	131 dB
Dynamic Range	›110 dB
Coverage	
Horizontal Coverage	100˚
Vertical Coverage	Varies, depending on array length and configuration
Crossover[4]	
	1100 Hz
Transducers	
Low/Low-Mid Frequency[6]	Two high-power 8" cone drivers with neodymium magnets Nominal impedance: 4 Ω Voice coil size: 1.5" Power handling capability: 600 W (AES)[5]; 900 W peak[7]
High Frequency[8]	3" compression driver Nominal impedance: 8 Ω Voice coil size: 3" Diaphragm size: 3" Exit size: 1.2" Power handling capability: 180 W (AES)[5]; 360 W peak[7]
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	Differential DC blocking up to max common mode voltage
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 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
Amplifier	
Type	Three-channel complementary MOSFET output stages (class AB/H)
Output Power[9]	1275 W (three channels; 2 x 500 W, 1 x 275 W)
Total Output[10]	2550 W peak
THD, IM, TIM	‹.02%
Load Capacity	4 Ω low and mid channels; 8 Ω high channels
Cooling	Convection
AC Power	
Connector	PowerCon with looping output or VEAM
Automatic Voltage Selection	Automatic, two ranges, each with high-low voltage tap (uninterrupted)
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	.680 A rms (115 V AC); .360 A rms (230 V AC); .760 A rms (100 V AC)
Max Long-Term Continuous Current (›10 sec)	2.3 A rms (115 V AC); 1.2 A rms (230 V AC); 2.6 A rms (100 V AC)
Burst Current (‹1 sec)[11]	4 A rms (115 V AC), 2 A rms (230 V AC), 4.5 A rms (100 V AC)
Ultimate Short-Term Peak Current Draw	13 A rms (115 V AC), 6.5 A rms (230 V AC), 15 A rms (100 V AC)
Inrush Current	10 A rms (115 and 100 V AC), 18 A rms (230 V AC)
RMS Network	
	Equipped with two-conductor twisted-pair network, reporting all operating parameters of amplifiers to system operator's host computer

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. *At these frequencies, the transducers produce equal sound pressure levels.*
5. *Power handling is measured under AES standard conditions: transducers driven continuously for two hours with band limited noise signal having a 6 dB peak-average ratio.*
6. *To eliminate interference at shorter wavelengths, the two 8-inch drivers work in combination at lower frequencies (70 Hz – 320 Hz). At mid frequencies (320 Hz – 1100 Hz) only one cone driver is active to maintain optimal polar and frequency response characteristics.*
7. *Peak power handling is measured with transducers driven for 100 milliseconds with pink noise signal having a 12 dB peak-average ratio.*
8. *The driver is coupled to a 100-degree-horizontal constant-directivity horn through a proprietary acoustical combining manifold (REM).*
9. *Amplifier wattage rating based on the maximum unclipped burst sine-wave rms voltage that the amplifier will produce for at least 0.5 seconds into the nominal load impedance: 45 V rms low channels and 47 V rms high channel.*
10. *Peak power based on the maximum unclipped peak voltage that the amplifier will produce for at least 100 milliseconds into the nominal load impedance: 63 V peak low channels and 67 V peak high channel.*
11. *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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Meyer Sound Laboratories Inc.

MEYER SOUND LABORATORIES INC.
2832 San Pablo Avenue
Berkeley, CA 94702

T: +1 510 486.1166
F: +1 510 486.8356

techsupport@meyersound.com
www.meyersound.com