



# MD Powered Series

## ModularDesign Loudspeakers

MD-FP122/64r | MD-FP122/66 | MD-FP122/94r | MD-FP122/96r | MD-FP122/124r  
MD-FP152/64r | MD-FP152/66 | MD-FP152/94r | MD-FP152/96r | MD-FP152/124r



### Features of the MD Powered Series

- PM1000 Power Module offer state-of-the-art integration of amplification and signal processing in an extremely compact, lightweight package
- All full range models feature a rotatable high-frequency horn, enabling them to be utilized in a vertical or horizontal configuration
- Available in either black or white finishes (handles on black only)
- All full range and low-frequency enclosures employ the same overall dimensions and identical attachment point locations
- All models constructed in a trapezoidal design of multi-ply birch with a powder coated steel grille

### Features of the PM1000 Power Module

- PM1000 provides 1000 watts of continuous power, 800 watts to the LF transducer and 200 W to the HF compression driver
- Class D switching technology
- 120V and 230V models available
- Accepts balanced XLR input connector with pass-through connector
- Integrated active crossover & equalization electronics
- Internal limiters prevent over driving the system

The MD (ModularDesign™) Series Powered Loudspeakers combine the superb loudspeaker performance of MD with the latest generation of QSC's legendary amplification and signal processing technologies. For more detail about the PM modules, see the rear page.

MD Powered offers exceptional performance in a wide variety of applications, including houses of worship, performing arts facilities, hotels, casinos, night clubs, and sporting facilities. Specifying MD Powered is appropriate anywhere there is a need for dependable high performance loudspeakers with predictable coverage, extended frequency response and the precision of integrated power amplification and signal processing. For design/build contractors and electroacoustic design consultants, the MD Powered Series offers an effective solution to the myriad of challenges encountered in the design and implementation of permanently installed sound reinforcement systems.

Designed as a family of modular, arrayable loudspeakers, the full-range self-powered MD family includes six models: five models with 12" LF sections, and five with 15" LF sections. Nominal coverage patterns of 60° x 40°, 60° x 60° 90° x 40°, 90° x 60° and 120° x 40° are available with either low-frequency complement. In addition, two low-frequency only MD Powered systems, the MD-LP115 and MD-LP118, share the common form factor of the full-range systems. All share the same 35" tall, 30° trapezoidal enclosure as their passive MD Series counterparts.

The form factor common to all MD loudspeaker models makes creating full range or combined full range/low-frequency clusters painless. The enclosures are designed with 30° angles; wall-to-wall tight packing enclosures splay the 60° x 40° horns perfectly and provide uniform coverage in any multiple of 60° to 360°. No gaps or spacers are required and the radial form

of the front surface of the enclosures forms a contiguous cylindrical surface for a clean and aesthetically pleasing appearance. Each enclosure is equipped with a total of fifteen 3/8"-16 threaded attachment points offering the installer tremendous flexibility in suspension and mounting.

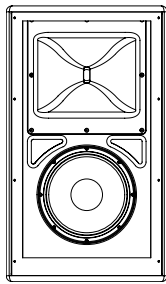
Low frequency transducers feature technically advanced 4" voice coils assembled with proprietary high temperature adhesives, vented magnet assemblies and highly optimized motor design to provide excellent dynamic range, flat frequency response and a very low distortion figure.

High frequency compression drivers feature a Neodymium magnet motor structure and 65 mm (2.5") aluminum voice coil and titanium diaphragm plus a pole piece mounted copper shorting cap for extended HF response.

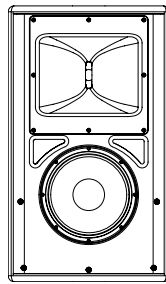
*ModularDesign is a trademark of QSC Audio Products, Inc.*

# MD Powered Series

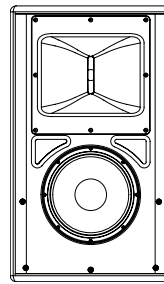
## 12" Loudspeaker Specifications



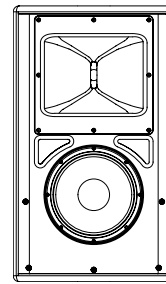
**MD-FP122/64r**



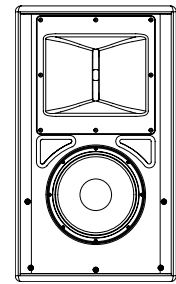
**MD-FP122/66**



**MD-FP122/94r**



**MD-FP122/96r**



**MD-FP122/124r**

Configuration	12" 2-way full-range loudspeaker				
Transducers					
Low-frequency	12" transducer with 4" voice coil, ferrite magnet	12" transducer with 4" voice coil, ferrite magnet	12" transducer with 4" voice coil, ferrite magnet	12" transducer with 4" voice coil, ferrite magnet	12" transducer with 4" voice coil, ferrite magnet
High-frequency	60° x 40° rotatable horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet	60° x 60° horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet	90° x 40° rotatable horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet	90° x 60° rotatable horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet	120° x 40° rotatable horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet
Frequency Response ( $\pm 3\text{dB}$ ) <sup>1</sup>	55 Hz - 17.5 kHz	55 Hz - 17.5 kHz	55 Hz - 19.5 kHz	55 Hz - 16.5 kHz	55 Hz - 19 kHz
Frequency Range (-10 dB) <sup>1</sup>	50 Hz - 18 kHz	50 Hz - 19.5 kHz	50 Hz - 20 kHz	50 Hz - 19.5 kHz	50 Hz - 20 kHz
Maximum Output					
Continuous <sup>2</sup>	129 dB	127 dB	128 dB	125 dB	126 dB
Peak <sup>3</sup>	139 dB	137 dB	138 dB	135 dB	137 dB
Nominal Coverage (-6 dB) <sup>4</sup>	60° x 40° rotatable	60° x 60°	90° x 40° rotatable	90° x 60° rotatable	120° x 40° rotatable
Amplifier Module					
Power Output <sup>5</sup>	LF: 800 W / HF: 200 W				
Input Sensitivity	1.2 Vrms (+4 dBu)				
Input Clipping	7.5 Vrms (+19.5 dBu)				
Input Impedance	20k ohms				
Input Connector	Balanced XLR female (Pin 1: Earth, Pin 2: +, Pin 3: -)				
Output (loop-thru) Connector	XLR male wired in parallel with input				
AC Power Connector	Neutrik® Powercon (10' (3 m) #18 AWG 120V North American cordset)				
Controls	Gain control, 100 Hz high-pass filter, Power on/off				
Indicators	Clip/Limit (red LED) / Signal (green LED) / AC Power (blue LED)				
Protection	Thermal limiting, on/off muting, AC inrush current limiting				
Operating Voltages	Available in 120V or 230V versions (+15% -40%)				
AC Power Requirements <sup>6</sup>					
Pink Noise (6 dB crest factor)	Idle < 0.5 A (< 100 BTU waste heat) / 1/8 power 2.5 A (570 BTU waste heat) / 1/3 power 5.0 A (1380 BTU waste heat)				
Typical Program Material at Full Power	2.5 A (570 BTU waste heat)				
Enclosure					
Suspension Points	15 load-rated attachment points that accept 3/8"-16 threaded hardware				
Finish	Wear resistant textured paint. Available in black and white (handles on black only)				
Grille	Powder-coated perforated steel with black foam backing				
Dimensions (HWD)	35" x 20.5" x 18" (889 mm x 521 mm x 457 mm)				
Weight	88 lbs (40 kg)				

All amplifiers are FCC class B (conducted and radiated emissions), UL/CE listed

1) Free Field Response (4pi)

2) Calculated based on sensitivity and continuous amplifier power at onset of limiting

3) Calculated based on sensitivity of transducers and peak output capability of amplifier

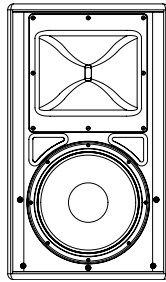
4) Coverage: Included angle between -6 dB points, 500 to 3.2k Hz, taken at ISO preferred one-third octave intervals, or for an otherwise specified frequency range

5) Amplifier Power: The maximum sustained power at less than 1% clipping, averaged over the intended frequency range

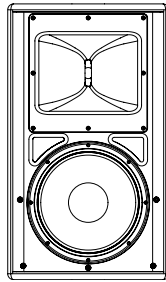
6) Current values are for 120V, for 230V operation divide by 2

Specifications subject to change without notice.

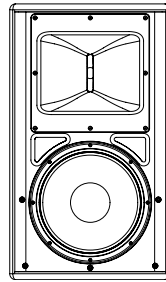
## 15" Loudspeaker Specifications



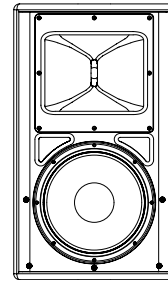
**MD-FP152/64r**



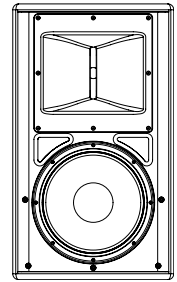
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**MD-FP152/94r**



**MD-FP152/96r**



**MD-FP152/124r**

Configuration	15" 2-way full-range loudspeaker				
Transducers					
Low-frequency	15" transducer with 4" voice coil, ferrite magnet	15" transducer with 4" voice coil, ferrite magnet	15" transducer with 4" voice coil, ferrite magnet	15" transducer with 4" voice coil, ferrite magnet	15" transducer with 4" voice coil, ferrite magnet
High-frequency	60° x 40° rotatable horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet	60° x 60° horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet	90° x 40° rotatable horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet	90° x 60° rotatable horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet	120° x 40° rotatable horn with 1.4" exit dia., 2.5" voice coil, neodymium magnet
Frequency Response ( $\pm 3$ dB) <sup>1</sup>	50 Hz - 17.5 kHz	50 Hz - 19.5 kHz	50 Hz - 19.5 kHz	50 Hz - 19 kHz	50 Hz - 19 kHz
Frequency Range (-10 dB) <sup>1</sup>	45 Hz - 18 kHz	45 Hz - 20 kHz	45 Hz - 20 kHz	45 Hz - 20 kHz	45 Hz - 20 kHz
Maximum Output					
Continuous <sup>2</sup>	129 dB	127 dB	128 dB	126 dB	127 dB
Peak <sup>3</sup>	139 dB	138 dB	138 dB	136 dB	137 dB
Nominal Coverage (-6 dB) <sup>4</sup>	60° x 40° rotatable	60° x 60°	90° x 40° rotatable	90° x 60° rotatable	120° x 40° rotatable
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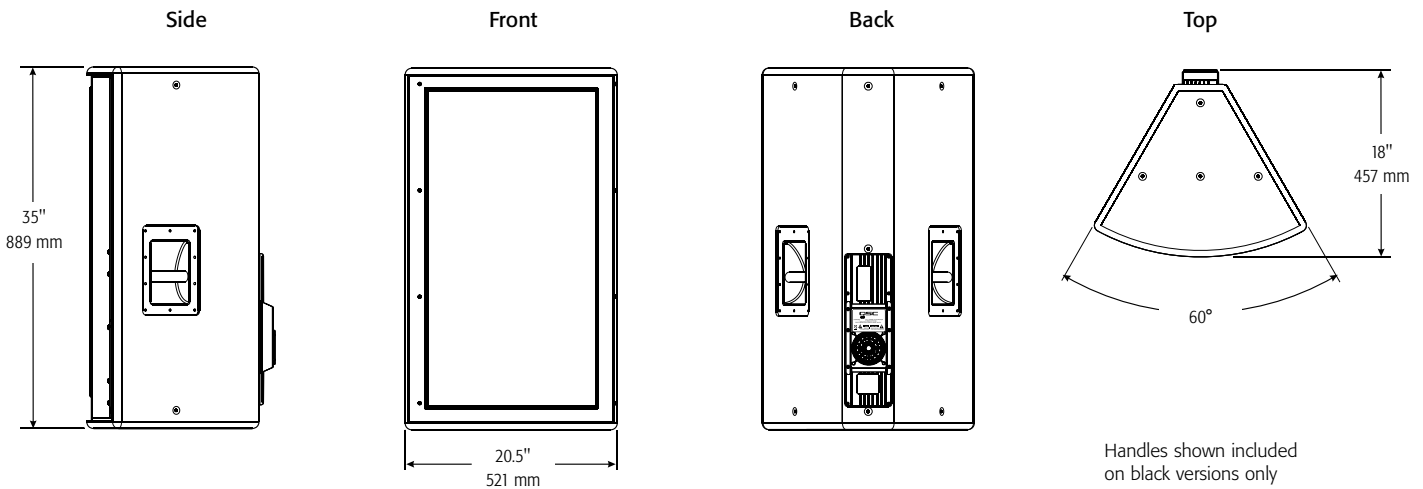
3) Calculated based on sensitivity of transducers and peak output capability of amplifier

4) Coverage: Included angle between -6 dB points, 500 to 3.2k Hz, taken at ISO preferred one-third octave intervals, or for an otherwise specified frequency range

5) Amplifier Power: The maximum sustained power at less than 1% clipping, averaged over the intended frequency range

6) Current values are for 120V, for 230V operation divide by 2

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### PM Power Modules



QSC's PM series are the most compact, lightweight and efficient loudspeaker power modules currently available. They have been specifically developed to meet the headroom and voltage swing requirements of high-end professional loudspeaker systems. The PM1000 features two channels producing 800 watts (LF) and 200 watts (HF) respectively, while the PM1400 delivers 1400 watts into a single channel.

Users familiar with existing powered speaker technology expect to see a large heat sink, taking up most of the speaker's rear panel. Such products run hot at full power, and may not be capable of sustained high output operation in all positions or climate conditions due to thermal limitations.

The linear amplifier technology utilized in most current powered loudspeaker designs is capable of acceptable audio performance, but inherent inefficiencies limit the maximum power of these systems to the 300 to 500 watt range. Multi-tier linear technology can extend this to as

much as 700 watts (as in QSC's HPR speakers), but still requires a large, heavy heat sink.

Existing amplifier technologies forced compromises upon the loudspeaker designer that QSC engineers found unacceptable. The resulting specification called for an amplifier package measuring no more than 4.4" x 14.6" x 7" (112 mm x 371 mm x 178 mm) and weighing only 8 lbs (3.6 kg) yet capable of continuously delivering double or triple the amount of power traditionally feasible in a package of this size. Our engineers combined the lessons QSC has learned from three generations of PowerLight technology power supplies with a unique, patent pending approach to "Class D" amplification to create the PM series power modules.

Until now available Class D solutions have been constrained by voltage limitations, and thus remained below the 500 watt (at 8 ohms) barrier, and many designs have also suffered from imperfect audio quality. QSC has broken through these barriers, with ratings exceeding 800 watts into standard 8 ohm loads, and 1400 watts into 4 ohms. Peak voltages can reach 120 volts, at up to 30 amps of current (3600 watts of "peak power"). At the same time, advanced internal error-correction keeps audio quality

pristine across the entire frequency range. QSC has finally opened the door to combining the horsepower potential of Class D with no compromise audio performance.

For the MD powered models, speaker response is fine-tuned with high order crossover slopes, signal alignment and LF rolloffs as well as multiple parametric equalizer sections. The internal processing also includes long-term power limiting, allowing higher levels of amplifier drive to the speaker without damaging overloads.

The PM modules are built on a solid aluminum, three-sided extrusion that functions as a chassis, heat sink and mounting flange. Because of their high conversion efficiency, PM modules normally dissipate only about 25 to 50 watts of input power as heat, and are basically a passively cooled design. However, in order to keep the exposed surfaces within required temperature limits, and prevent thermal overload in extremely hot environments, a temperature controlled fan is mounted to the heat-sink assembly and comes on only when heat sink temperature reaches 122° F (50 C), ensuring that "the show goes on" even under extreme conditions.

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