

JM-1P Arrayable Loudspeaker



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JM-1P Operating Instructions, PN 05.202.005.01 B

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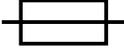
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IMPORTANT SAFETY INSTRUCTIONS

These symbols indicate important safety or operating features in this booklet and on the frame or chassis:

SYMBOLS USED

					
Dangerous voltages: risk of electric shock	Important operating instructions	Replaceable Fuse	Protective earth ground	Hot surface: do not touch	Electronic instructions for use: instruction location in QR code 
Gefährliche Spannungen: Stromschlaggefahr	Hinweis auf wichtige Punkte der Betriebsanleitung	Austauschbare Sicherung	Schutzerde	Heiße Oberfläche: nicht berühren	Elektronische Gebrauchsanweisung: anweisungsort im QR-Code
Pour indiquer les risques résultant de tensions dangereuses	Instructions d'utilisation importantes	Fusible remplaçable	Terre de protection	Surface chaude: ne pas toucher	Mode d'emploi électronique: emplacement des instructions dans le code QR
Para indicar voltajes peligrosos	Instrucciones importantes de funcionamiento y/o Mantenimiento	Fusible reemplazable	Toma de tierra de protección	Superficie caliente: no tocar	Instrucciones de uso electrónicas: ubicación de instrucciones en el código QR

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with Meyer Sound's installation instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. The AC mains plug or appliance coupler shall remain readily accessible for operation.
11. Only use attachments/accessories specified by Meyer Sound.
12. Use only with the caster rails or rigging specified by Meyer Sound, or sold with the apparatus. Handles are for carrying only.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. If equipped with an external fuse holder, the replaceable fuse is the only user-serviceable item. When replacing the fuse, only use the same type and the same value.
15. Refer all other servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug has been damaged; liquid has been spilled or

objects have fallen into the apparatus; rain or moisture has entered the apparatus; the apparatus has been dropped; or when for undetermined reasons the apparatus does not operate normally.



WARNING: For Meyer Sound IntelligentDC Power Supply models MPS-488HP and MPS-482HP, the external wiring connected to the output terminals of the units require installation by an Instructed person or the use of ready-made leads or cords.



WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Do not install the apparatus in wet or humid locations without using weather protection equipment from Meyer Sound.



WARNING: Class I apparatus shall be connected to a mains socket outlet with a protective earthing connection.



CAUTION: Disconnect the mains plug before disconnecting the power cord from the loudspeaker.

English

- To reduce the risk of electric shock, disconnect the apparatus from the AC mains before installing audio cable. Reconnect the power cord only after making all signal connections.
- Connect the apparatus to a two-pole, three-wire grounding mains receptacle. The receptacle must be connected to a fuse or circuit breaker. Connection to any other type of receptacle poses a shock hazard and may violate local electrical codes.
- Do not install the apparatus in wet or humid locations without using weather protection equipment from Meyer Sound.
- Do not allow water or any foreign object to get inside the apparatus. Do not put objects containing liquid on or near the unit.
- To reduce the risk of overheating the apparatus, avoid exposing it to direct sunlight. Do not install the unit near heat-emitting appliances, such as a room heater or stove.
- If equipped with an external fuse holder, the replaceable fuse is the only item that can be serviced by the user. When replacing the fuse, only use the same type and value.
- This apparatus contains potentially hazardous voltages. Do not attempt to disassemble the unit. The only user-serviceable part is the fuse. All other repairs should be performed only by factory-trained service personnel.

Deutsch

- Zur Minimierung der Gefahr eines elektrischen Schlages trennen Sie das Produkt vor dem Anschluss von Audio-und/oder Steuerleitungen vom Stromnetz. Das Netzkabel darf erst nach Herstellung aller Signalverbindungen wieder eingesteckt werden.
- Das Produkt an eine vorschriftsgemäss installierte dreipolige Netzsteckdose (Phase, Neutralleiter, Schutzleiter) anschließen. Die Steckdose muss vorschriftsgemäss mit einer Sicherung oder einem Leitungsschutzschalter abgesichert sein. Das Anschließen des Produkts an eine anders ausgeführte Stromversorgung kann gegen Vorschriften verstossen und zu Stromunfällen führen.
- Das Produkt nicht an einem Ort aufstellen, an dem es direkter Wassereinwirkung oder übermäßig hoher Luftfeuchtigkeit ausgesetzt werden könnte, solange es sich nicht um ein Produkt handelt, dass mit der Meyer Sound Weather Protection Option ausgestattet ist.
- Vermeiden Sie das Eindringen von Wasser oder Fremdkörpern in das Innere des Produkts. Stellen Sie keine Objekte, die Flüssigkeit enthalten, auf oder neben dem Produkt ab.
- Um ein Überhitzen des Produkts zu verhindern, halten Sie das Gerät von direkter Sonneneinstrahlung fern und stellen Sie es nicht in der Nähe von wärmeabstrahlenden Geräten (z.B. Heizgerät oder Herd) auf.
- Bei Ausstattung mit einem externen Sicherungshalter ist die austauschbare Sicherung das einzige Gerät, das vom Benutzer gewartet werden kann. Verwenden Sie beim Austausch der Sicherung nur den gleichen Typ und Wert.
- Dieses Gerät enthält möglicherweise gefährliche Spannungen. Versuchen Sie nicht, das Gerät zu zerlegen. Der einzige vom Benutzer zu wartende Teil ist die Sicherung. Alle anderen Reparaturen dürfen nur von im Werk geschultem Servicepersonal ausgeführt werden.

Français

- Pour éviter tout risque d'électrocution, débranchez l'enceinte de la prise secteur avant de mettre en place le câble audio. Ne rebranchez le cordon secteur qu'après avoir procédé à toutes les connexions de signal audio.
- Brancher l'appareil sur une prise secteur à trois fils et deux pôles avec mise à la terre. La prise doit être reliée à un fusible ou à un disjoncteur. Le branchement à tout autre type de prise présente un risque de choc électrique et peut enfreindre les codes locaux de l'électricité.
- N'installez pas l'enceinte dans des endroits humides ou en présence d'eau sans utiliser d'équipements de protection adéquats fournis par Meyer Sound.

- Ne laissez pas d'eau ou d'objet étranger, quel qu'il soit, pénétrer à l'intérieur de l'enceinte. Ne posez pas d'objet contenant du liquide sur ou à proximité de l'enceinte.
- Pour réduire les risques de surchauffe, évitez d'exposer directement l'enceinte aux rayons du soleil. Ne l'installez pas à proximité de sources de chaleur, radiateur ou four par exemple.
- S'il est équipé d'un porte-fusible externe, le fusible remplaçable est le seul élément qui peut être réparé par l'utilisateur. Lors du remplacement du fusible, n'utilisez que le même type et la même valeur.
- Cet appareil contient des tensions potentiellement dangereuses. N'essayez pas de démonter l'appareil. Le fusible est la seule pièce réparable par l'utilisateur. Toutes les autres réparations doivent être effectuées uniquement par du personnel de maintenance formé en usine.

Español

- Para reducir el riesgo de descarga eléctrica, desconecte el aparato de la red eléctrica antes de instalar el cable de audio. Vuelva a conectar el cable de alimentación sólo después de realizar todas las conexiones de señal.
- Conecte el aparato a una toma de corriente de tres hilos y dos polos con conexión a tierra. El receptáculo debe estar conectado a un fusible o disyuntor. La conexión a cualquier otro tipo de receptáculo representa un riesgo de descarga eléctrica y puede violar los códigos eléctricos locales.
- No instale el aparato en lugares húmedos o mojados sin usar el equipo de protección contra intemperie de Meyer Sound.
- No permita que penetre agua u otros objetos extraños en el interior del aparato. No coloque objetos que contengan líquido sobre o cerca de la unidad.
- Para reducir el riesgo de sobrecalentamiento del aparato, evite exponerlo a la luz solar directa. No instale la unidad cerca de aparatos que emitan calor, como un calefactor o una estufa.
- Si está equipado con un portafusibles externo, el fusible reemplazable es el único elemento que puede ser reparado por el usuario. Cuando reemplace el fusible, use solamente el mismo tipo y valor.
- Este aparato contiene voltajes potencialmente peligrosos. No intente desmontar la unidad. La única pieza que el usuario puede reparar es el fusible. Todas las demás reparaciones deben ser realizadas únicamente por personal de servicio capacitado de fábrica.

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INTRODUCTION

HOW TO USE THIS MANUAL

Please read these instructions in their entirety before configuring a Meyer Sound loudspeaker system. In particular, pay close attention to material related to safety issues.

As you read these instructions, you will encounter the following icons for notes, tips, and cautions:



NOTE: A note identifies an important or useful piece of information relating to the topic under discussion.



TIP: A tip offers a helpful tip relevant to the topic at hand.



CAUTION: A caution gives notice that an action may have serious consequences and could cause harm to equipment or personnel, or could cause delays or other problems.

Information and specifications are subject to change. Updates and supplementary information are available at:

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INTRODUCING THE JM-1P LOUDSPEAKER

The JM-1P self-powered loudspeaker is a high-Q, arrayable loudspeaker suited for a wide range of applications. Utilizing Meyer Sound's patented REM™ technology and trapezoidal cabinet design, the JM-1P can be deployed in tightly packed array clusters to deliver coverage that is proportional to the number of units in the array. While JM-1P point source arrays are optimized for horizontal installations, they can also be used vertically when necessary. With its scalable coverage and versatile QuickFly® rigging options, the JM-1P loudspeaker can be used for touring, rental, and fixed installations.



JM-1P Arrayable Loudspeaker

Boasting a wide operating frequency range of 53 Hz to 18 kHz, the JM-1P delivers a remarkably smooth sound with ample low-frequency headroom. Designed and manufactured at Meyer Sound headquarters in Berkeley, California, the JM-1P's drivers include one low-frequency 15-inch long excursion cone driver, and one high-frequency 4-inch compression driver with an REM manifold coupled to an extremely accurate horn. The JM-1P is distinguished by its constant-Q horn that provides a 20-degree horizontal by 60-degree vertical coverage. The unit's consistent polar response and trapezoidal enclosure allow for tightly packed arrays with minimal overlap in high frequencies.

The JM-1P's sophisticated onboard amplification and processing produces consistent and predictable results in any system design. A proprietary two-channel, class AB/H power amplifier with complementary MOSFET output stages yields a total power output of 1275 W (2550 W peak). Built-in signal processing includes an electronic crossover, driver protection, and correction filters for achieving flat phase and frequency responses. Each amplifier channel has peak and rms limiters that prevent driver overexcursion and regulate voice coil temperatures. Limiting activity is easily monitored with the rear panel limit LEDs. The optional RMS™ remote monitoring system provides comprehensive monitoring of system parameters on a Windows®-based computer.

The JM-1P's end plates include captive GuideALinks™ and quick-release pins that allow the unit to be easily linked with other JM-1Ps in arrays. The optional MPA-JM1 pickup plate suspends JM-1P horizontal arrays of up to four units with uptilt or downtilt from a single hanging point; two pickup plates can suspend arrays of up to six units from a single hanging point or motor using the MTGSB-4B spreader bar.



JM-1P Horizontal Array with MPA-JM1 Pickup Plates and MTGSB-4B Spreader Bar

The optional MTG-JM1 grid suspends vertical arrays of up to six JM-1Ps.



MTG-JM1 Vertical Grid with Two JM-1Ps

Constructed of premium birch plywood, the durable JM-1P enclosure is coated with a black-textured, hard-shell finish. A hex-stamped, steel grille with acoustical black mesh protects the unit's drivers. Other options include weather protection and custom color finishes for fixed installations and applications with specific cosmetic requirements. The optional MDB-JM1 dolly board transports the JM-1P on caster wheels; multiple dolly boards can be interlocked to transport up to three linked JM-1Ps.

POWER REQUIREMENTS

The JM-1P loudspeaker combines advanced loudspeaker technology with equally advanced power capabilities. Understanding power distribution, voltage and current requirements, as well as electrical safety issues, is critical to the safe operation of the JM-1P.

AC POWER DISTRIBUTION

All components in an audio system (self-powered loudspeakers, processors, etc.) must be properly connected to an AC power distribution system, ensuring that AC line polarity is preserved, and that all grounding points are connected to a single node or common point using the same cable gauge as the neutral and line cables.

 **NOTE:** Improper grounding connections between loudspeakers and the rest of the audio system may produce noise or hum, or cause serious damage to the input and output stages of the system's electronic components.

 **CAUTION:** Before applying AC power to any Meyer Sound self-powered loudspeaker, make sure that the voltage potential difference between neutral and earth ground is less than 5 V AC.

Figure 1 illustrates a basic three-phase AC distribution system with the loudspeaker load distributed across the three phases. All loudspeakers are connected to common neutral and earth-ground points.

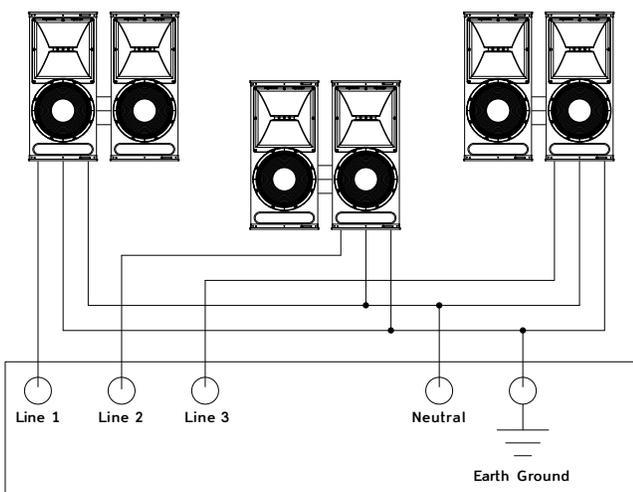


Figure 1: AC Power Distribution System

THE AC CONNECTORS

The user panel on the back of the JM-1P includes PowerCON AC connectors (Figure 2).

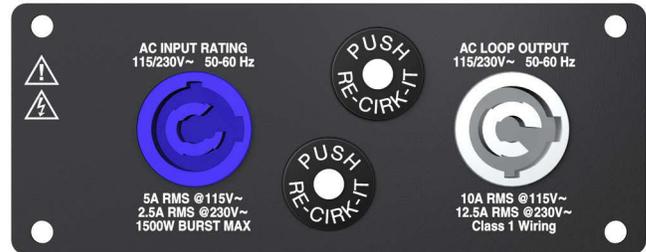


Figure 2: JM-1P AC Input (left) and AC Loop Output (right) Connectors

The AC Input Connector (Blue)

The blue AC Input connector supplies power to the JM-1P. The connector is rated at 20 amps and uses a PowerCon AC mains locking connector that prevents accidental disconnections. A 10-foot AC power cable, rated at 15 amps, is included with each loudspeaker. If you replace the included AC power cable, make sure to use a cable with the appropriate power plug (on the other end) for the area in which you will operate the unit.

The AC Input connector also supplies power to any additional loudspeakers connected to the loudspeaker's gray Loop Output connector. Each JM-1P loudspeaker requires approximately 5 A rms (maximum long-term continuous current) at 115 V AC for proper operation.

 **CAUTION:** When using the included AC power cable, do not loop more than two additional JM-1P loudspeakers from the AC Loop Output connector at 115 V (three total for the circuit), and not more than five at 230 V (six total for the circuit).

The AC Loop Output Connector (Gray)

The gray AC Loop Output connector allows multiple JM-1P loudspeakers to be looped and powered from a single power source. Connect the AC Loop Output of the first loudspeaker to the AC Input of the second, and so forth. The AC Loop Output uses a PowerCon3 AC mains locking connector that prevents accidental disconnections.

The maximum number of loudspeakers that can be looped from the Loop Output connector is determined by the voltage of the power source, the circuit breaker rating, and the rating of the AC power cable connected to the first JM-1P loudspeaker.

Table 1: Number of JM-1Ps that Can Be Looped with AC Power

Circuit Breaker/ Connector Rating	115 V AC	230 V AC	100 V AC
15 amps	2 looped (3 total)	5 looped (6 total)	1 looped (2 total)
20 amps	3 looped (4 total)	7 looped (8 total)	2 looped (3 total)

Each JM-1P loudspeaker ships with one AC looping connector for making AC looping cables. Assembled AC looping cables are available from Meyer Sound (15-inch UL AC looping cable, PN 28.115.032.01; 0.35 m CE AC looping cable, PN 28.115.032.02).

CAUTION: Do not exceed the current capability of the 20-amp Input connector for the JM-1P loudspeakers. When looping loudspeakers, consider the total current draw for all loudspeakers on the circuit, *including* the first loudspeaker.

POWER CONNECTOR WIRING

The JM-1P requires a grounded outlet. To operate safely and effectively, it is extremely important that the entire system be properly grounded.

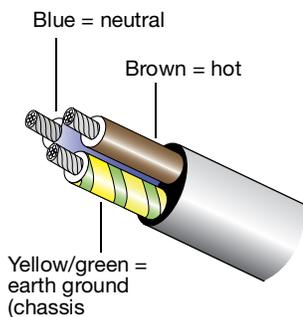


Figure 3: AC Cable Wiring Scheme

When wiring international or special-purpose power connectors:

- Connect the blue wire to the black terminal, or the terminal marked with an N.
- Connect the brown wire to the red terminal, or the terminal marked with an L.
- Connect the yellow and green wire to the green (or green and yellow) terminal, or the terminal marked with an E.

CAUTION: When creating AC power cables and distribution systems, it is important to preserve AC line polarity and connect the earth ground on both ends of the cable. The JM-1P requires a grounded connection. Always use a grounded outlet and plug. It is extremely important that the system be properly grounded in order to operate safely and properly. Do not ground-lift the AC cable.

JM-1P VOLTAGE REQUIREMENTS

The JM-1P operates safely and continuously when the AC voltage stays within 95–125 V AC and 208–235 V AC at 50 or 60 Hz. The JM-1P allows any combination of voltage to GND (neutral-line-ground or line-line-ground).

If the voltage drops below 85 V (brownout), the JM-1P uses stored power to continue operating temporarily; the loudspeaker will shut down if the voltage does not rise above the low boundary before the stored power is used.

If the voltage rises above 235 V, the power supply could become damaged.

CAUTION: The power source for the JM-1P should always operate within the required voltage range, at least a few volts from the upper and lower ranges. This will ensure that AC voltage variations from the service entry — or peak voltage drops due to cable runs — will not cause the loudspeaker’s amplifiers to cycle on and off or cause damage to the power supply.

Powering Up the JM-1P

When AC power is applied to the JM-1P, its Intelligent AC™ power supply automatically selects the correct operating voltage, allowing it to be used internationally without manually setting voltage switches. In addition, Intelligent AC also suppresses high-voltage transients up to several kilovolts, filters common mode and differential mode radio frequencies (EMI), and sustains operation temporarily during low-voltage periods.

When powering up the JM-1P, the following startup events take place over several seconds.

1. Audio output is muted.
2. Voltage is detected and the power supply mode is automatically adjusted as necessary.
3. The power supply ramps up.
4. The green On/Temp LED on the user panel lights up, indicating the loudspeaker is ready to output audio.



NOTE: The fan remains off at turn-on. It is controlled by audio level and operates only at high audio levels.



CAUTION: If the On/Temp LED does not light up, or the loudspeaker does not output audio after ten seconds, remove AC power immediately and verify that the voltage is within the required range. If the problem persists, contact Meyer Sound Technical Support.



CAUTION: If either of the loudspeaker's circuit breakers trip (the white center buttons disengage), do NOT reset and reapply power. Instead, disconnect from AC power and contact the Meyer Sound Service Department for instructions on how to proceed.

JM-1P CURRENT REQUIREMENTS

The current draw for the JM-1P is dynamic and fluctuates as operating levels change. Since different cables and circuit breakers heat up at varying rates, it is important to understand the following types of current ratings and how they affect circuit breaker and cable specifications.

- **Idle Current** — The maximum rms current during idle periods.
- **Maximum Long-Term Continuous Current** — The maximum rms current during a period of at least 10 seconds. The Maximum Long-Term Continuous Current is used to calculate temperature increases for cables, to

ensure that cable sizes and gauges conform to electrical code standards. The current rating is also used as a rating for slow-reacting thermal breakers. In addition, the Maximum Long-Term Continuous Current can be used to calculate the AC looping capability of the JM-1P.

- **Burst Current** — The maximum rms current during a period of around one second. The Burst Current is used as a rating for magnetic breakers. It is also used for calculating the peak voltage drop in long AC cable runs according to the following formula:

$$V_{pk} (\text{drop}) = I_{pk} \times R (\text{cable total})$$

- **Ultimate Short-Term Peak Current** — A rating for fast-reacting magnetic breakers.
- **Inrush Current** — The spike of initial current encountered when powering on.

Use Table 2 as a guide for selecting cable gauges and circuit breaker ratings for the system's operating voltage.

Table 2: JM-1P Current Draw

Current Draw	115 V AC	230 V AC	100 V AC
Idle Current	0.50 A rms	0.28 A rms	0.56 A rms
Maximum Long-Term Continuous Current	4.55 A rms	2.50 A rms	5.25 A rms
Burst Current	8.0 A rms	4.1 A rms	9.2 A rms
Ultimate Short-Term Peak Current	20.8 A peak	13.0 A peak	21.6 A peak
Inrush Current	7.1 A peak	8.4 A peak	7.1 A peak

The minimum electrical service amperage required by a JM-1P loudspeaker system is the sum of the Maximum Long-Term Continuous Current for each loudspeaker. An additional 30 percent above the minimum amperage is recommended to prevent peak voltage drops at the service entry.



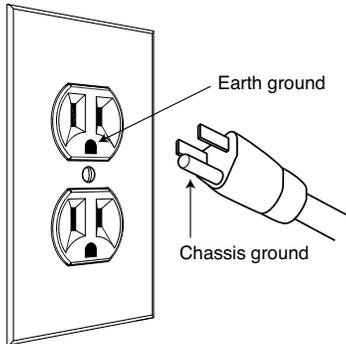
NOTE: For best performance, the AC cable voltage drop should not exceed 10 V, or 10 percent at 115 V and 5 percent at 230 V.

Make sure that even with AC voltage drops that the AC voltage always remains within the operating windows.

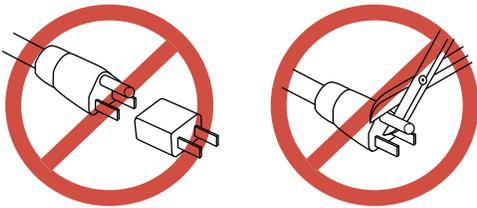
ELECTRICAL SAFETY ISSUES

Pay close attention to these important electrical and safety issues.

- The JM-1P requires a grounded outlet. Always use a grounded outlet and plug.



- Do not use a ground-lifting adapter or cut the AC cable ground pin.



- Do not exceed the current capability of the 20-amp AC Input connector for the loudspeaker. When looping loudspeakers, consider the total current draw for all loudspeakers on the circuit, including the first loudspeaker.
- Make sure the AC power cable for the loudspeaker has the appropriate power plug (on the other end) for the area in which you will operate the loudspeaker. In addition, the AC power cable must be rated for the total current draw of all loudspeakers looped from the power source.
- Do not operate the unit if the power cables are frayed or broken.
- Keep all liquids away from the JM-1P to avoid hazards from electrical shock.

AMPLIFICATION AND AUDIO

The JM-1P low- and high-frequency drivers are powered by a proprietary two-channel Meyer Sound amplifier with MOSFET output stages. The audio signal is processed with an electronic crossover, correction filters for phase and frequency response, and driver protection circuitry. Each channel has peak and rms limiters that prevent driver over-excursion and regulate the temperature of the voice coil.

The user panel on the back of the JM-1P has two slots for modules. The top slot contains an audio input module (described in this chapter). The bottom slot is reserved for the optional RMS module, used for connecting to the RMS remote monitoring system (see “RMS Remote Monitoring System” on page 21).

THE LOOPING AUDIO INPUT MODULE

The Looping Audio Input module includes input and looping connectors, and LEDs for monitoring temperature and limiting.

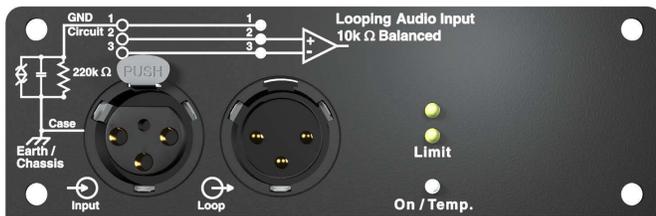


Figure 4: Looping Audio Input Module

Input Connector

The female XLR Input connector accepts a balanced audio signal with an input impedance of 10 kOhm. The connector uses the following wiring:

- **Pin 1** — 220 kOhm to chassis and earth ground (ESD clamped)
- **Pin 2** — Signal (+)
- **Pin 3** — Signal (-)
- **Case** — Earth (AC) ground and chassis

Pins 2 and 3 carry the input as a differential signal. Pin 1 is connected to earth through a 220 kOhm, 1000 pF, 15 V clamped network. This circuitry provides virtual ground lift for audio frequencies while allowing unwanted signals to bleed to ground. Make sure to use standard, balanced XLR audio cables with all three pins connected on both ends. Telescopic grounding is not recommended, and shorting an input connector pin to the case may cause a ground loop, resulting in hum.

 **TIP:** If unwanted noise or hiss is produced by the loudspeaker, disconnect its input cable. If the noise stops, there is most likely nothing wrong with the loudspeaker. To locate the source of the noise, check the audio cable, source audio, and AC power.

Loop Connector

The male XLR Loop connector allows multiple JM-1P loudspeakers to be looped from a single audio source. Connect the Loop output of the first loudspeaker to the Input of the second, and so forth. The Loop connector is wired in parallel to the Input connector and transmits the unbuffered source signal even when the loudspeaker is powered off.

To avoid distortion when looping multiple JM-1P loudspeakers, make sure the source device can drive the total load impedance of the looped loudspeakers. In addition, the source device must be capable of delivering 20 dBV (10 V rms into 600 ohms) to yield the maximum peak SPL over the operating bandwidth of the loudspeaker.

To calculate the load impedance for the looped loudspeakers, divide 10 kOhms (the input impedance for a single JM-1P) by the number of looped loudspeakers. For example, the load impedance for 10 JM-1P loudspeakers is 1000 ohms (10 kOhms / 10). To drive this number of looped loudspeakers, the source device should have an output impedance of 100 ohms or less. This same rule applies when looping JM-1P loudspeakers with other self-powered Meyer Sound loudspeakers and subwoofers.

 **NOTE:** Most source devices are capable of driving loads no smaller than 10 times their output impedance.

 **NOTE:** Make sure that all cabling for looped loudspeakers is wired correctly (Pin 1 to Pin 1, Pin 2 to Pin 2, and so forth) to prevent the

polarity from being reversed. If one or more loudspeakers in a system have reversed polarity, frequency response and coverage can be significantly degraded.

Limit LEDs

The low- and high-frequency drivers for the JM-1P are powered by separate amplifier channels, each with their own limiter. Limiting activity is indicated with the two yellow Limit LEDs. The top LED indicates limiting for the high-frequency channel and the bottom LED indicates limiting for the low-frequency channel. When engaged, a channel's limiter not only protects the driver, but also prevents signal peaks from causing excessive distortion in the amplifier's channel, thereby preserving headroom and maintaining smooth frequency responses at high levels. When a channel's level returns to normal, below the limiter's threshold, limiting ceases.

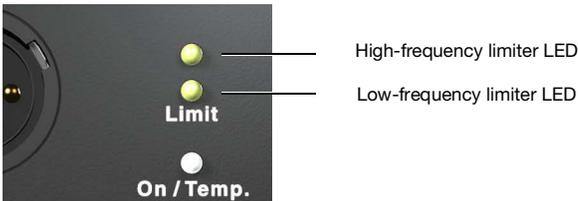


Figure 5: Limit LEDs

The JM-1P performs within its acoustical specifications at normal temperatures when the Limit LEDs are unlit, or if the LEDs are lit for two seconds or less and then turn off for at least one second. If an LED remains lit for longer than three seconds, that channel enters hard limiting where:

- Increases to the input level have no effect.
- Distortion increases due to clipping and nonlinear driver operation.
- The driver is subjected to excessive heat and excursion, which will compromise its life span and may eventually lead to damage over time.

CAUTION: The Limit LEDs indicate when a safe, optimum level is exceeded. If a JM-1P loudspeaker begins to limit before reaching the required SPL, consider adding more loudspeakers to the system.

NOTE: The JM-1P loudspeaker uses optical limiters that add no noise and have no effect on the signal when the limiters are not engaged and the Limit LEDs are not lit.

On/Temp LED

When the JM-1P is powered on, its On/Temp LED turns green. If the temperature of the heat sink reaches 85° C (185° F), the On/Temp LED changes from green to red and the limiter threshold is lowered to a safe level to prevent the system from overheating. Under high temperature conditions the output level is reduced by approximately 6 dB.

When the heat sink temperature decreases to 80° C (176° F), the On/Temp LED changes from red back to green and the limiter threshold returns to normal.

NOTE: When the On/Temp LED is red, this is an indication that the unit is reaching its maximum dissipation and a reduction in SPL is recommended.

TIP: When the JM-1P is connected to an RMS network, the RMS software provides additional feedback on the loudspeaker's operating temperature. For more information, see "RMS Remote Monitoring System" on page 21.

AMPLIFIER COOLING SYSTEM

The amplifier for JM-1P uses natural convection for cooling at low to moderate audio levels; for high audio levels, it uses Meyer Sound's proprietary QuietCool fan technology to prevent overheating. The QuietCool™ fan only engages at high audio levels, making it virtually inaudible.

CAUTION: The heat sink for the JM-1P can reach temperatures of up to 85° C (185° F) during extreme operation. Use extreme caution when approaching the rear of the loudspeaker.

CAUTION: To keep the JM-1P from getting too hot, allow for proper ventilation around the loudspeaker, especially when it is operated in tightly packed conditions.

CAUTION: In the unlikely event that the heat sink temperature for the JM-1P reaches 95° C (203° F), the loudspeaker will automatically shut down until AC power is removed to allow the heat sink to cool. If after cooling and reapplying AC power the loudspeaker shuts down again, contact Meyer Sound for repair information.

ADDING SUBWOOFERS TO A JM-1P LOUDSPEAKER SYSTEM

700-HP subwoofers can be added to JM-1P loudspeaker systems to enhance the low-frequency response and increase the overall acoustic power of the system in the lowest frequencies. The ideal ratio of JM-1P loudspeakers to 700-HP subwoofers depends on the frequency content of the source material and headroom required for low frequencies.

Table 3: Recommended Ratio of JM-1Ps to Subwoofers

Sub-woofer	Frequency Response	Recommended Ratio (Number of JM-1Ps per Subwoofer)
700-HP	30 Hz – 125 Hz ±4 dB	2 x 1 for normal applications 3 x 2 for bass-heavy applications requiring additional low-frequency headroom

700-HPs can be added to JM-1P systems by daisy-chaining them to JM-1P loudspeakers. Full-range signals can be connected directly to Meyer Sound self-powered loudspeakers because the loudspeakers have built-in active crossovers. In more complex systems, subwoofers should be integrated using line drivers or digital signal processor to send multiple outputs to each sub-system. In addition, you can use low-cut filters to flatten the overall frequency response of the system while increasing the JM-1P headroom in the lower frequencies.



NOTE: When JM-1P loudspeakers and 700-HP subwoofers are daisy-chained using the JM-1P's Loop connector, the result is a fairly flat frequency response. However, the response will show an increase in the 60 Hz – 200 Hz range where the loudspeaker and subwoofer overlap at certain ratios (see Table 3).



NOTE: If the 700-HP exhibits limiting (its Limit LED lights) before reaching the required SPL, consider adding more subwoofers to meet the SPL requirements without exposing the drivers to excessive heat and excursion.



TIP: MAPP can be used to accurately predict the appropriate loudspeaker and subwoofer integration in systems, complete with coverage data, system delay and equalization settings, rigging information, and detailed design illustrations. For more information, see “MAPP System Design Tool” on page 31.

USING DIGITAL SIGNAL PROCESSORS

Full-range signals can be connected directly to Meyer Sound self-powered loudspeakers because the loudspeakers have built-in active crossovers. External crossovers and digital signal processors are optional and should be used with caution as they can introduce phase shifts that cause destructive cancellations.

If a digital signal processor is used, both the JM-1P loudspeakers and subwoofer should be driven from the same processor to keep their delay times the same. Otherwise a phase shift between the JM-1Ps and subwoofer may be encountered. In addition, you should verify the delay time between channels: some digital signal processors may incur channel-to-channel delays when the processor is near maximum throughput, which becomes more likely as the number of filters in use by the processor is increased.

Third-order filters (and higher) are not recommended. If they must be used, they should be used cautiously, since they may cause phase shifts that deteriorate the impulse response; in addition, their higher roll-off may also interfere with crossover interaction.



TIP: To address the collective concerns of system design verification, subwoofer integration, digital signal processors, delay systems, and acoustical conditions, a measurement system such as Meyer Sound's SIM is strongly recommended.

QUICKFLY RIGGING

The JM-1P loudspeaker is compatible with Meyer Sound's QuickFly system, a comprehensive collection of custom-designed rigging, flying, and mounting options. Comprised of rugged, reliable, and easy-to-configure components, QuickFly lets you deploy JM-1P loudspeakers as arrays at precise angles to take full advantage of their directional components. The top and bottom plates for the JM-1P cabinets are constructed of heavy-duty, high-strength, corrosion-resistant 6061-T6 aluminum and include threaded metric holes (for M10 screws) for easy connection to QuickFly rigging and third-party mounting options.

Important Safety Considerations!

When installing Meyer Sound loudspeakers, the following precautions should always be observed:

- All Meyer Sound products must be used in accordance with local, state, federal, and industry regulations. It is the owner's and user's responsibility to evaluate the reliability of any rigging method for their application. Rigging should only be carried out by experienced professionals.
- Use mounting and rigging hardware that has been rated to meet or exceed the weight being hung.
- Make sure to attach mounting hardware to the building's structural components (studs or joists), and not just to the wall surface. Verify that the building's structure and the anchors used for the installation will safely support the total weight of the mounted loudspeakers.
- Use mounting hardware appropriate for the surface where the loudspeaker will be installed.
- Make sure bolts and eyebolts are tightened securely. Meyer Sound recommends using Loctite® on eyebolt threads and safety cables.
- Inspect mounting and rigging hardware regularly. Immediately replace any worn or damaged components.

THE JM-1P GUIDEALINKS

The JM-1P is equipped with GuideALinks on its four right corners that attach to an adjacent JM-1P with the links inserted in the left corner slots of the linked unit. GuideALinks are extended and retracted with front and rear knobs. The links are secured to the linked JM-1P with the quick-release pins included with each loudspeaker. GuideALinks are also used when flying JM-1Ps from the MTG-JM1 vertical grid.

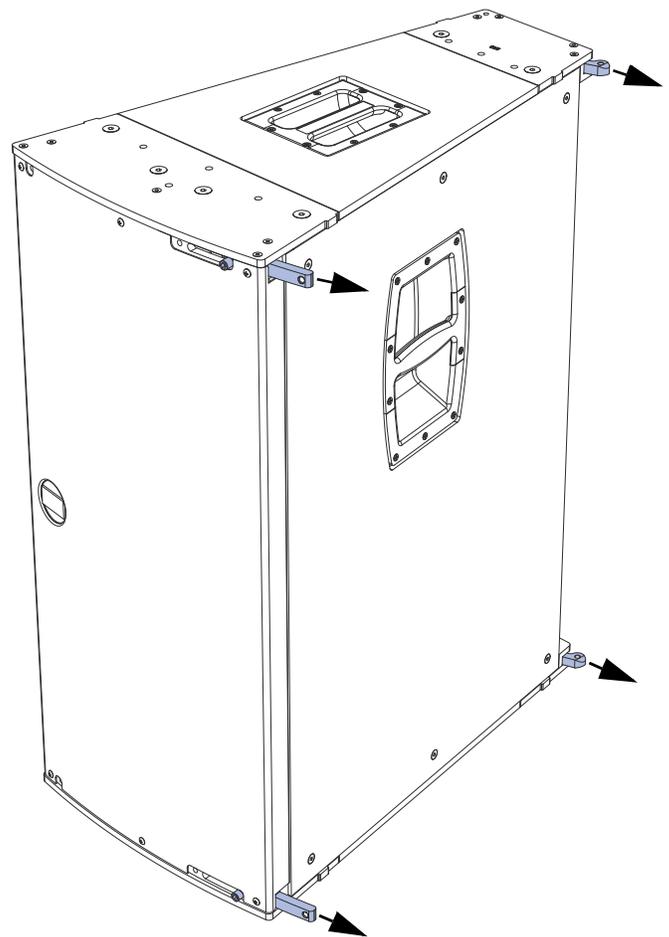


Figure 6: JM-1P GuideALinks

CAUTION: When moving and linking JM-1Ps, avoid placing fingers between the units to prevent injury.

The JM-1P Quick-Release Pins

Each JM-1P ships with four quick-release pins that secure the units when they are linked. When inserting and removing the pins, press the button at the top of the pin to disengage it. When inserted in the GuideALink holes (in the front left corners and rear right corners), the pins latch and lock to the links inserted into the corner slots.

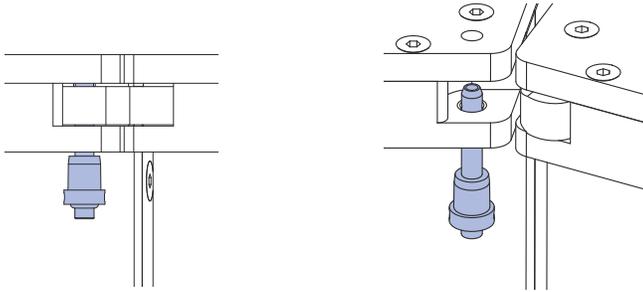


Figure 7: Rear Quick-Release Pin, GuideALink Inserted (Left); GuideALink Not Present (Right)

When the GuideALinks are not present in the corner slots, the quick-release pins should be removed from the corner link holes and placed in their stowed location: in the front, just to the left of the top and bottom GuideALink knobs; and in the rear, in the top and bottom center holes.

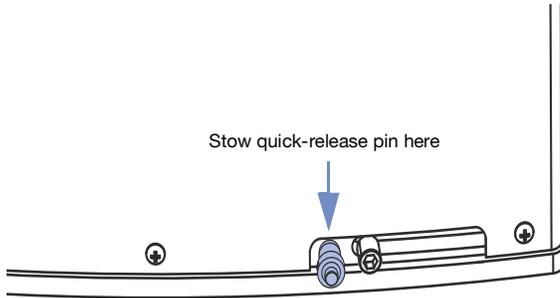


Figure 8: Stowed Quick-Release Pin, Front Bottom

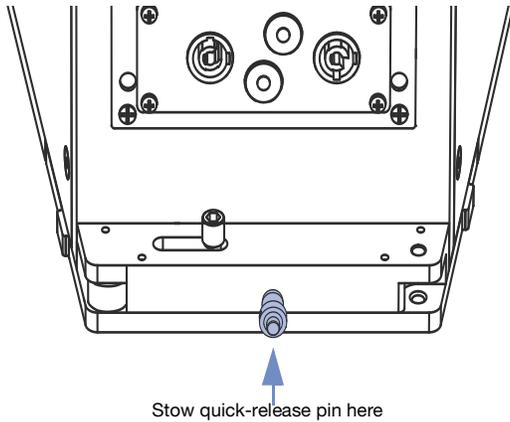


Figure 9: Stowed Quick-Release Pin, Rear Bottom

Linking JM-1Ps

To link JM-1Ps:

1. Place the JM-1Ps next to each other on a flat surface and align the adjacent back corners so they are as close as possible to each other.

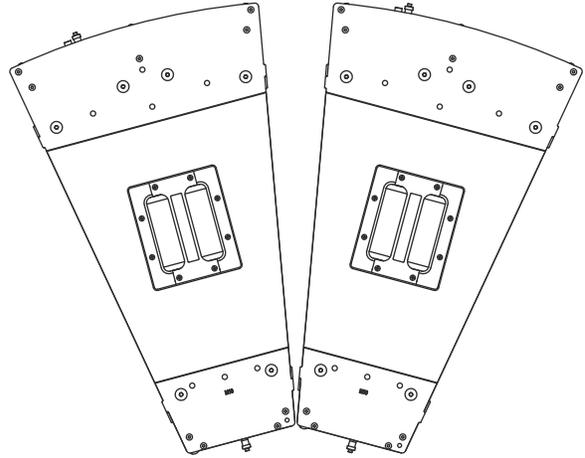


Figure 10: Linking JM-1P Loudspeakers

2. Face the rear of the loudspeakers and slide the top and bottom rear GuideALink knobs to the left to insert the links into the corner slots of the adjacent loudspeaker.

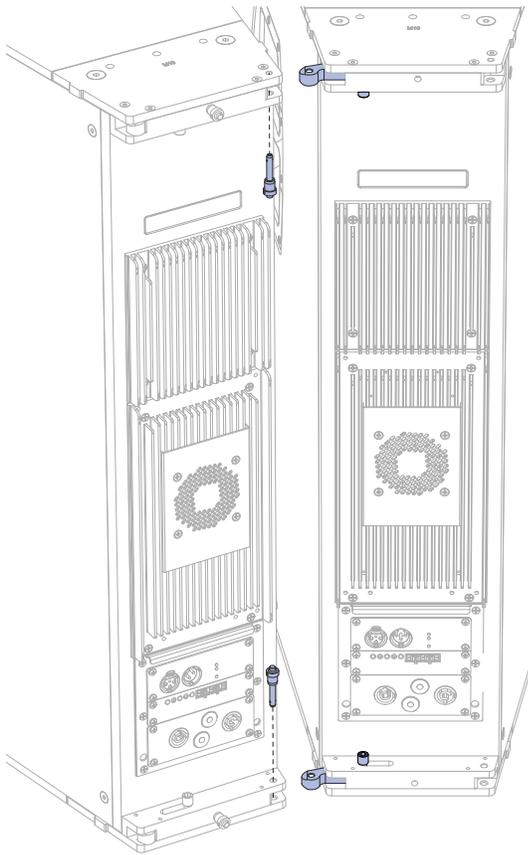


Figure 11: Inserting Rear GuideALinks

3. Secure the rear GuideALinks with the quick-release pins stored at the center top and center bottom of the loudspeaker. The pins can be inserted top down or bottom up.
4. Face the front of the loudspeakers and position the loudspeakers so their adjacent front corners are as close as possible to each other. The previously attached rear GuideALinks act as a hinge.
5. Slide the top and bottom front GuideALink knobs to the right to insert the links into the corner slots of the adjacent loudspeaker.

6. Secure the front GuideALinks with the quick-release pins stored at the right top and right bottom of the loudspeaker. The pins are inserted from the front (Figure 12).

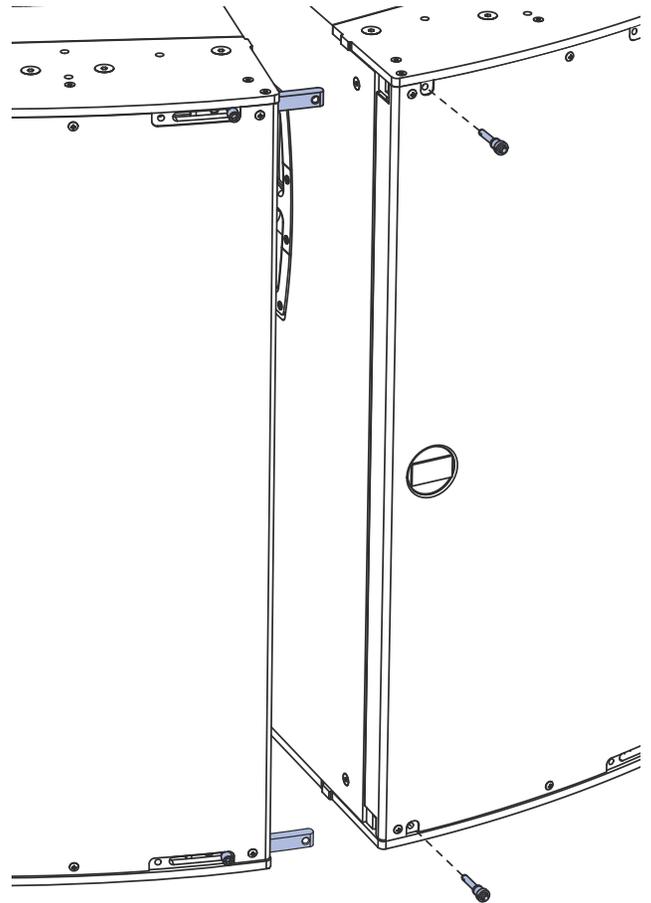


Figure 12: Inserting Front GuideALinks

CAUTION: Routine maintenance inspections of the JM-1P should include a check of all GuideALink knobs. Rotate each knob counterclockwise to make sure they are tight. If a knob turns, reset it in the link with Loctite® 290 and let it cure for 48 hours. Retest the link before the unit is flown.

THE MPA-JM1 PICKUP PLATE

The optional MPA-JM1 pickup plate suspends JM-1P horizontal arrays with uptilt or downtilt. A single pickup plate supports 1–4 loudspeakers. Two pickup plates support 5–6 loudspeakers. The pickup plate comes with M10 knobs, bolts, and washers for securing the plate to the JM-1P. Bolts are recommended for fixed installations, while knobs are recommended for touring and portable applications.

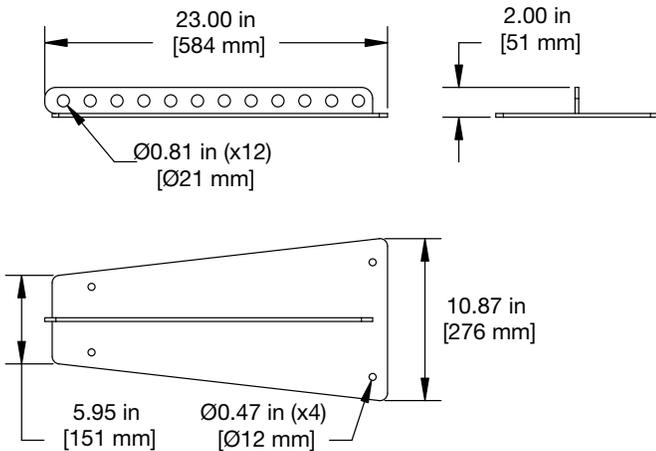


Figure 13: MPA-JM1 Pickup Plate Dimensions; Weight, 16 lbs (7.26 kg)

The MPA-JM1 has a row of 12 hanging points in the center of the plate. When suspending the pickup plate from a single hanging point, the location of the hanging point determines the uptilt or downtilt of the suspended JM-1P. For greater control, two or more hanging points can be used.

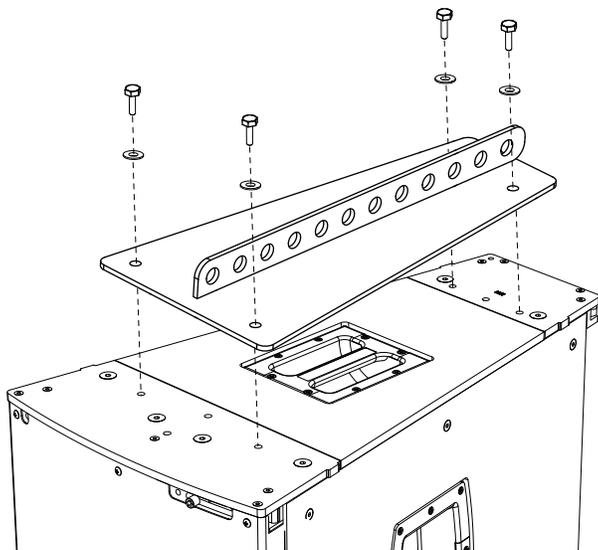


Figure 14: MPA-JM1 Pickup Plate with JM-1P

NOTE: When using M10 knobs to secure the MPA-JM1 pickup plate to the JM-1P, the second hanging point from the rear is inaccessible.

JM-1P Arrays with a Single Pickup Plate

A single MPA-JM1P pickup plate can suspend arrays of 2–4 loudspeakers:

- For arrays of two JM-1Ps (with 40 degrees of horizontal coverage), attach the single pickup plate between the two loudspeakers.

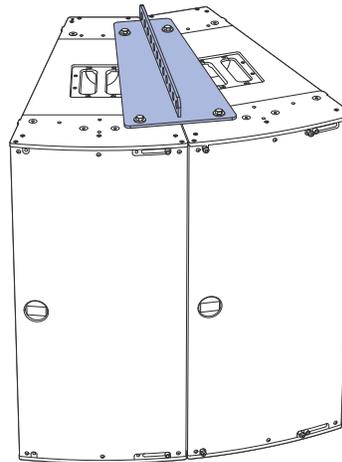


Figure 15: MPA-JM1 Pickup Plate with Two JM-1Ps

- For arrays of three JM-1Ps (with 60 degrees of horizontal coverage), attach the single pickup plate to the second loudspeaker.

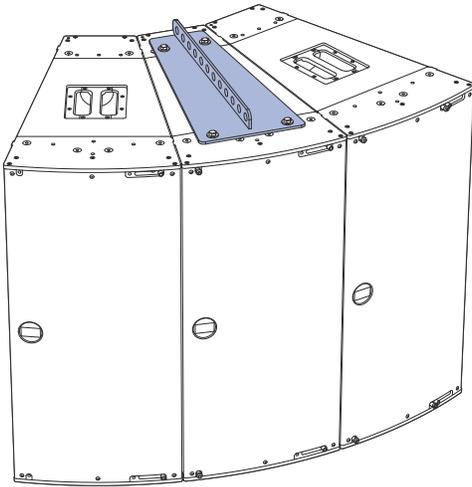


Figure 16: MPA-JM1 Pickup Plate with Three JM-1Ps

- For arrays of four JM-1Ps (with 80 degrees of horizontal coverage), attach the single pickup plate between the third and fourth loudspeaker.

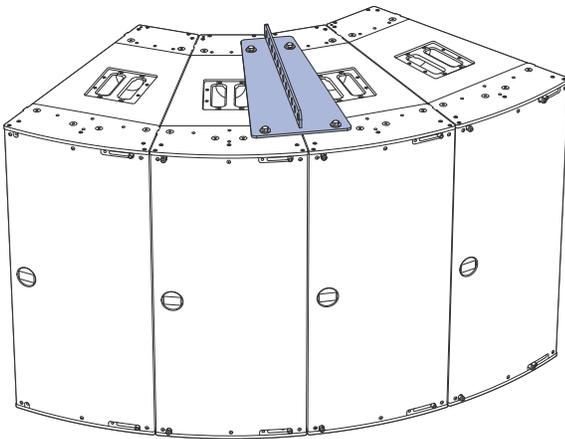


Figure 17: MPA-JM1 Pickup Plate with Four JM-1Ps



TIP: For greater control and stability, use two MPA-JM1 pickup plates for arrays of four JM-1Ps.

JM-1P Arrays with Two Pickup Plates

Two MPA-JM1 pickup plates can suspend arrays of 4–6 loudspeakers:

- For arrays of four JM-1Ps (with 80 degrees of horizontal coverage), attach the two pickup plates between the first and second, and third and fourth loudspeakers.

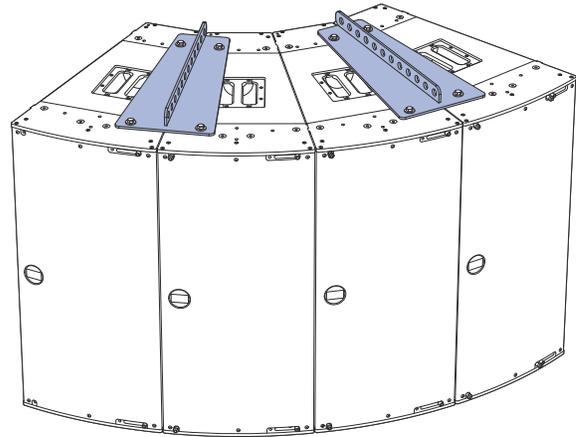


Figure 18: Two MPA-JM1 Pickup Plates with Four JM-1Ps

- For arrays of five JM-1Ps (with 100 degrees of horizontal coverage), attach the two pickup plates to the second and fourth loudspeakers.

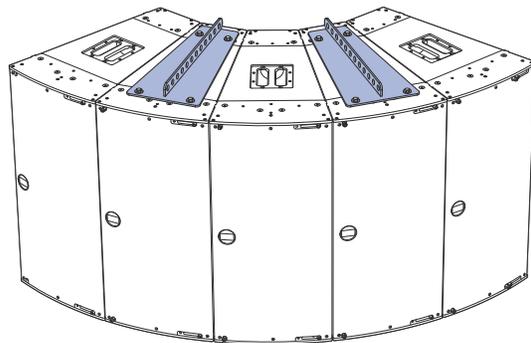


Figure 19: Two MPA-JM1 Pickup Plates with Five JM-1Ps

- For arrays of six JM-1Ps (with 120 degrees of horizontal coverage), attach the two pickup plates to the second and fifth loudspeakers.

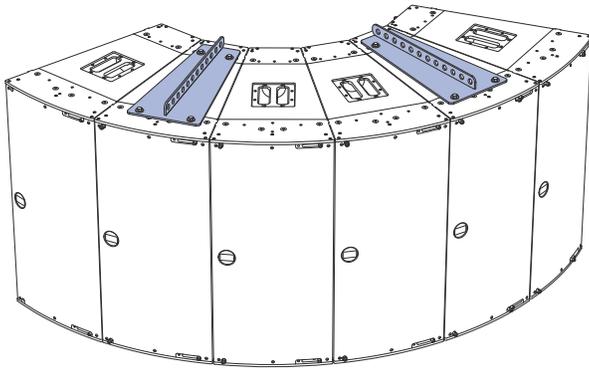


Figure 20: Two MPA-JM1 Pickup Plates with Six JM-1Ps

The MTGSB-4B Spreader Bar

The optional MTGSB-4B spreader bar can suspend two MPA-JM1P pickup plates from a single motor point. Six hanging points are provided at each end of the spreader bar to adjust the spread between the pickup plates. The MTGSB-B spreader bar includes shackles and connecting links.

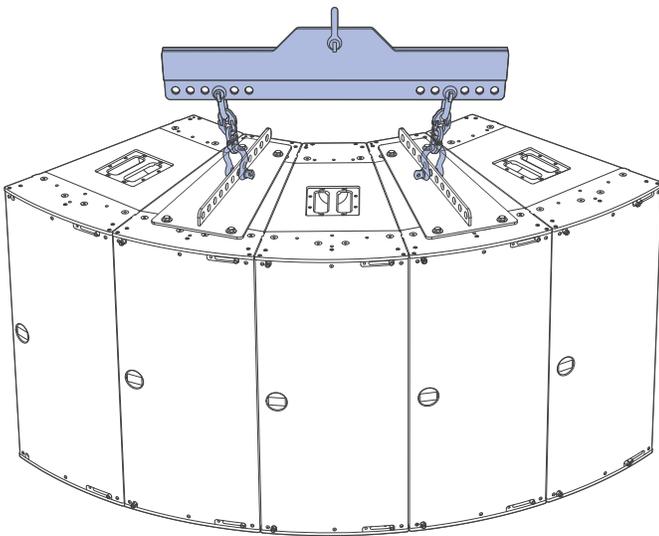


Figure 21: Two MPA-JM1 Pickup Plates with Five JM-1Ps Suspended from the MTGSB-4B Spreader Bar Using 3rd Spreader Bar Hole and 7th MPA-JM1 Pickup Plate Hole

ANGLES ACHIEVABLE WITH MPA-JM1 PICKUP PLATE—HORIZONTAL ARRAYS

The uptilt and downtilt angles achievable with the JM-1P are determined by the number of pickup points, the MPA-JM1 pickup hole(s) used and the vertical orientation of the loudspeaker (horn on top or “up” versus horn on bottom or “down”— see Figure 22). These angles differ also depending on the number of loudspeakers suspended and the number of MPA-JM1 pickup plates required to suspend them. Table 4 provides a list of resulting angles using a single pickup point. Table 5 provides a list of resulting angles using two pickup points. Table 6 provides a list of resulting angles using the MGTSB-4B Spreader Bar and a single pickup point.

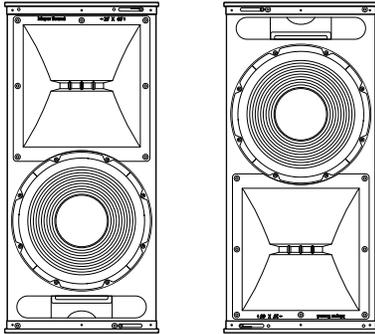


Figure 22: Horn Up (left), Horn Down (right)

Table 4: Resulting Angles using Single Pickup Point

Horn Orientation	Number of JM-1P	Number of MPA-JM1	Reference	MPA-JM1 Pickup Plate Hole (counting from front of loudspeaker cabinet)											
				1	2	3	4	5	6	7	8	9	10	11	12
Up	1	1	Figure 14	24.1	19.0	13.3	7.8	1.8	-4.2	-10.0	-15.4	-21.0	-26.0	-30.5	-34.7
Down	1	1	Figure 14	24.0	19.1	13.7	8.2	2.1	-3.8	-9.7	-15.4	-20.8	-25.8	-30.2	-34.8
Up	2	1	Figure 15	24.5	19.5	14.7	9.2	3.6	-2.0	-7.6	-13.2	-18.4	-23.4	-27.8	-32.2
Down	2	1	Figure 15	24.7	19.7	14.7	9.2	3.6	-2.0	-7.6	-13.4	-18.6	-23.6	-28.2	-32.5
Up	3	1	Figure 16	26.3	21.6	16.8	11.5	6.1	0.4	-5.0	-10.4	-15.8	-21.0	-25.4	-29.9
Down	3	1	Figure 16	26.4	21.6	16.8	11.5	6.3	0.8	-4.9	-10.5	-15.6	-20.8	-25.5	-29.9
Up	4	1	Figure 17	29.1	24.6	19.8	14.7	9.4	4.1	-1.4	-7.0	-12.4	-17.6	-22.3	-26.9
Down	4	1	Figure 17	28.7	24.6	19.9	14.9	9.6	4.2	-1.4	-7.0	-12.3	-17.6	-22.5	-26.9

Table 5: Resulting Angles using Two Pickup Points

Number of JM-1P	Number of MPA-JM1	Figure	MPA-JM1 Pickup Plate Hole (counting from front of loudspeaker)											
			1	2	3	4	5	6	7	8	9	10	11	12
4	2	Figure 18	22.9	18.1	13.2	8.0	2.8	-2.4	-7.7	-12.9	-17.7	-22.3	-26.7	-30.7
5	2	Figure 19	26.4	21.8	17.1	12.4	7.3	2.2	-3.0	-8.2	-12.9	-18.0	-22.5	-26.3
6	2	Figure 20	30.2	26.2	21.8	17.2	12.5	7.1	2.6	-2.5	-7.5	-12.5	-17.6	-22.2

Table 6: Using the Spreader Bar and a Single Pickup Point

Number of JM-1P	Number of MPA-JM1	Figure	Spreader Bar Hole (counting from inside, same on each side)/ MPA-JM1 Pickup Plate Hole (counting from front of loudspeaker)		
			SB Hole: 4/MPA-JM1 Hole: 1	SB Hole: 3/MPA-JM1 Hole: 7	SB Hole: 1/MPA-JM1 Hole: 12
5	2	Figure 21	SB Hole: 4/MPA-JM1 Hole: 1	SB Hole: 3/MPA-JM1 Hole: 7	SB Hole: 1/MPA-JM1 Hole: 12

THE MTG-JM1 VERTICAL GRID

The optional MTG-JM1 vertical grid suspends JM-1P vertical arrays of up to six units. The grid was designed specifically for the JM-1P and is compatible with the GuideALinks and quick-release pins included with the JM-1P.

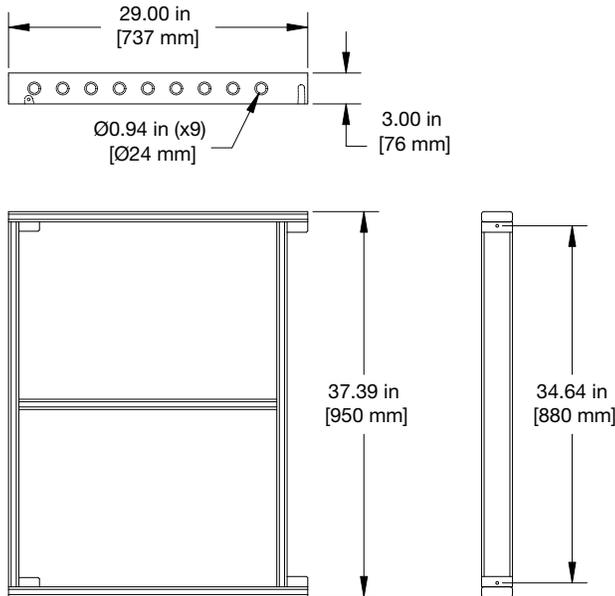


Figure 23: MTG-JM1 Vertical Grid Dimensions; Weight, 47 lbs (21.32 kg)

The MTG-JM1 vertical grid comes with four quick-release pins for securing the JM-1P connected directly to the grid. To secure the front GuideALinks, the quick-release pins are inserted at the front of the grid. To secure the rear GuideALinks, the pins are inserted from the inside of the grid. Additional JM-1Ps in the array are secured with the quick-release pins included with each loudspeaker.

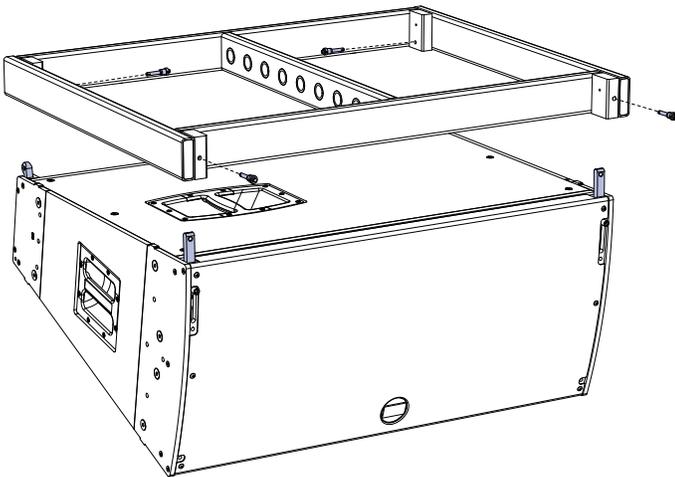


Figure 24: MTG-JM1 Vertical Grid with JM-1P

The MTG-JM1 vertical grid has a row of nine hanging points in the center of the grid. Two additional attachment points are located at the left and right rear corners of the grid to provide additional control and stability.

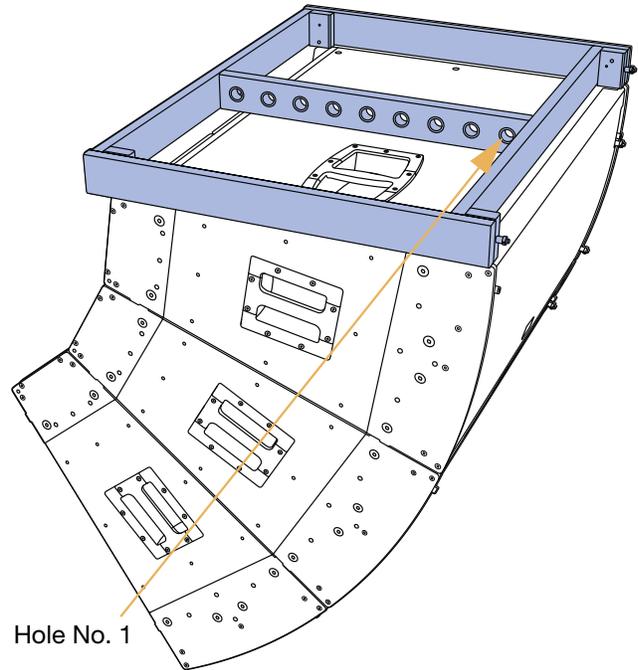


Figure 25: MTG-JM1 Vertical Grid with Three JM-1Ps

Rotating the Meyer Sound Logo

To accommodate the orientation of the JM-1P, the Meyer Sound logo on the unit's grille frame can be rotated.

To rotate the Meyer Sound logo on the JM-1P grille frame:

- Pull up on the logo, rotate it to the desired position, and release.

ANGLES ACHIEVABLE WITH MTG-JM1 VERTICAL GRID—VERTICAL ARRAYS

The uptilt and downtilt angles achievable with the JM-1P are determined by the MTG-JM1 pickup hole used and the number of loudspeakers suspended. Table 7 provides a list of resulting angles using a single pickup point.

Table 7: Resulting Angles using Single Pickup Point

Number of JM-1P	Vertical Grid Hole (counting from front of loudspeaker cabinet, see Figure 25)								
	1	2	3	4	5	6	7	8	9
1	NA	NA	34.2	12.7	-13.6	-34.6	NA	NA	NA
1	NA	NA	24.2	2.7	-23.6	-44.6	NA	NA	NA
2	NA	36	26.5	14.8	1.6	-11.7	-23.9	-34	NA
2	NA	26	16.5	4.8	-8.4	-21.7	-33.9	-44	NA
3	NA	34.9	28	20.1	11.4	2.1	-7.1	-16.3	-24.7
3	NA	24.9	18	10.1	1.4	-7.9	-17.1	-26.3	-34.7
4	NA	NA	31.9	26.1	19.6	12.6	5.2	-2.4	-10.2
4	NA	NA	21.9	16.1	9.6	2.6	-4.8	-12.4	-20.2
5	NA	NA	NA	31.8	27.1	21.4	15.7	9.2	2.7
5	NA	NA	NA	21.8	17.1	11.4	5.7	-0.8	-7.3
6	NA	NA	NA	NA	34.4	29.9	24.8	19.5	13.3
6	NA	NA	NA	NA	24.4	19.9	14.8	9.5	3.3

THE MDB-JM1 DOLLY BOARD

The optional MDB-JM1 dolly board transports the JM-1P on caster wheels. Up to three dolly boards can be interlocked for transporting up to three linked JM-1Ps. The interlocked dolly boards can be oriented normally with all three units facing the same direction, or they can be staggered to occupy less space during transport.

Figure 26:

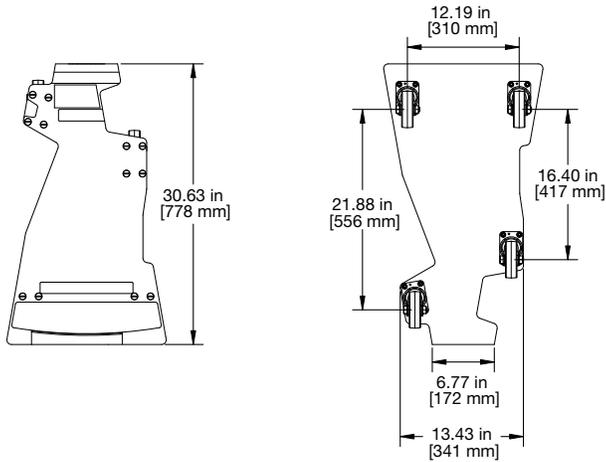


Figure 27: MDB-JM1 Dolly Board Dimensions

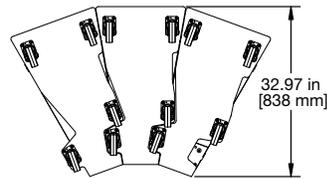
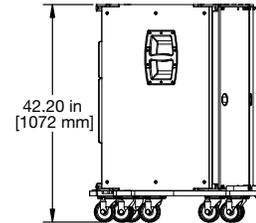
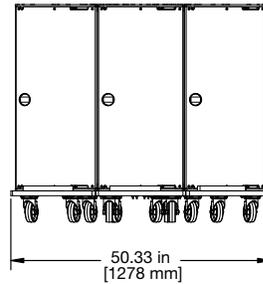
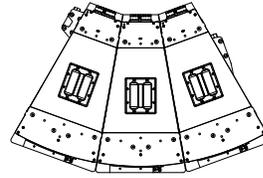


Figure 29: Dimensions for Three MDB-JM1 Dolly Boards, Normal

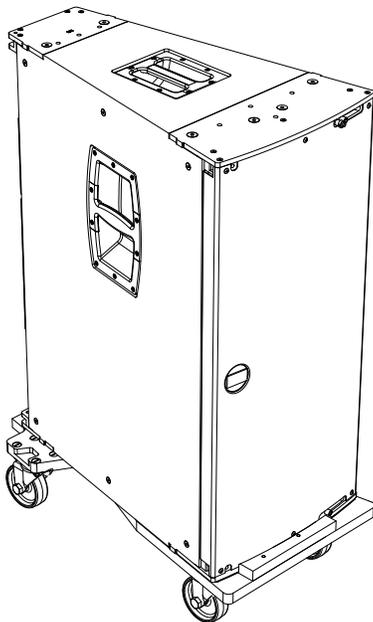


Figure 28: MDB-JM1 Dolly Board with JM-1P



TIP: The JM-1Ps can remain in their MDB-JM1 dolly boards during performances. When doing so, make sure the boards' wheels are securely blocked so the units will not move.

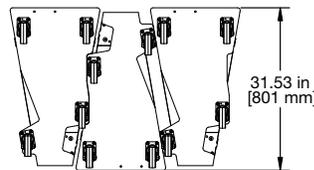
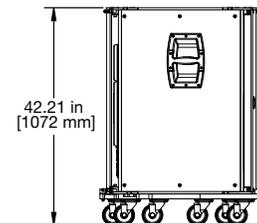
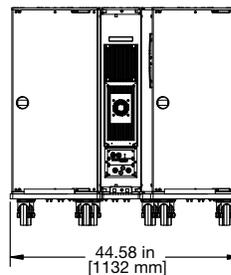
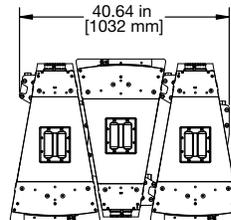


Figure 30: Dimensions for Three MDB-JM1 Dolly Boards, Staggered

RMS REMOTE MONITORING SYSTEM

The JM-1P loudspeaker optionally includes an RMS remote monitoring system module, allowing it to be connected to an RMS network. RMS reports, in real time, the status and power usage of multiple Meyer Sound loudspeakers from a Mac® or Windows®-based computer. The RMsServer™ communicates with Meyer Sound loudspeakers equipped with RMS modules. RMsServer is a compact, Ethernet-based hardware unit with two FT-10 RMS data ports. RMsServer stores system configurations internally, eliminating most manual data entry. Systems can be monitored from a computer at front-of-house or backstage, or from a laptop anywhere within the venue over WiFi.

 **NOTE:** For the latest RMS system requirements, visit meyersound.com.

 **NOTE:** RMS does not control AC power.

COMPASS RMS SOFTWARE

Compass RMS™ software provides extensive system status and performance data for each loudspeaker, including amplifier voltage, limiting activity, power output, fan and driver status, as well as mute and solo capability. Loudspeakers are added to the RMS network and assigned a node name during a one-time discovery procedure. Once loudspeakers are identified on the RMS network, they appear in Compass RMS as icons that can be customized to suit your needs (Figure 31).



Figure 31: Compass RMS Window

Individual loudspeakers can be physically identified with the Wink option in RMS, which lights the Wink LED on the RMS module of that particular loudspeaker. Conversely, a loudspeaker can be identified in Compass RMS by pressing the Service button on the loudspeaker’s RMS module.

Loudspeaker icons can be arranged in Compass RMS and saved as pages to represent how the loudspeakers have been deployed in the system. Multiple pages can be saved and recalled for specific performances and venues.

 **NOTE:** When the heat sink for the JM-1P reaches 85° C (185° F), the On/Temp LED turns red, while its loudspeaker icon in the Compass software turns yellow — indicating the loudspeaker is running hot, but still within safe operating limits. Make sure that the loudspeaker is properly ventilated.

RMS MODULE

The RMS module is installed in the bottom slot of the user panel on the back of the Meyer Sound loudspeaker. The RMS user panel has three LEDs, two buttons, and two Network connectors.



Figure 32: RMS Module

 **NOTE:** The LEDs and buttons on the RMS user panel are used exclusively by RMS and have no effect on the acoustical or electrical activity of the JM-1P loudspeaker.

Service LED (Red)

The red Service LED provides the following feedback:

- When unlit, the loudspeaker is successfully connected to the network and commissioned.
- When blinking once every two seconds, the loudspeaker is connected to the network but not yet commissioned in the RMS software.
- When lit continuously, the loudspeaker’s RMS hardware has failed and may indicate that the module has been damaged (contact Meyer Sound Technical Support).



NOTE: The Service LED on the RMS user panel is used exclusively by RMS and has no effect on the acoustical or electrical activity of the JM-1P loudspeaker.

Service Button

Pressing the Service button identifies the loudspeaker on the RMS network and notifies the RMS software that the loudspeaker is connected. You can simultaneously press the Reset and Service buttons to reset the RMS module and decommission the loudspeaker from the network (see “Resetting the RMS Module” on page 22).

Wink LED (Green)

The green Wink LED lights when a signal is sent from the RMS software by clicking the Wink button on the loudspeaker’s icon or on its Text view. This is useful for identifying the physical loudspeaker corresponding to a loudspeaker icon in the RMS software.

Reset Button

Pressing the Reset button causes the RMS module’s firmware to reboot; this will not affect whether the loudspeaker is commissioned (which is stored in flash memory). You can simultaneously press the Reset and Service buttons to reset the RMS module and decommission the loudspeaker from the network (see “Resetting the RMS Module” on page 22).

Activity LED (Green)

The green Activity LED flashes continuously when the loudspeaker has been successfully commissioned.

RMS Network Connectors

The Weidmuller 2-conductor, locking connectors transfer data to and from the RMS network. Two connectors are provided to allow for easy connection of multiple (daisy-chained) loudspeakers on the network. Included with each RMS-equipped loudspeaker are RMS cable connectors and mounting blocks for constructing RMS cables. The mounting blocks allow the Weidmuller connectors to be securely attached to the RMS module with screws.

NEURON ID FOR RMS MODULE

Each RMS module has a unique 12-character Neuron ID (NID) that identifies the loudspeaker on the network. The NID is automatically detected by RMServer but can also be entered manually, if necessary, when configuring RMS systems in Compass RMS without loudspeakers present. The NID label is located on the RMS user panel near the orange Network connectors.

RESETTING THE RMS MODULE

You can use the Reset and Service buttons to reset the RMS module, which will cause the module to be decommissioned from the network.

To reset the RMS module:

1. Press and hold the Service button for 10 seconds.
2. While continuing to hold down the Service button, press and hold the Reset button for 5 seconds.
3. After releasing the Reset button, continue holding down the Service button for 5 seconds. The RMS module is reset and the loudspeaker is decommissioned. The RMS module’s red Service LED blinks.

SYSTEM DESIGN AND INTEGRATION TOOLS

This chapter introduces MAPP, Meyer Sound's patented system design tool and the Galileo GALAXY Network Platform.

MAPP SYSTEM DESIGN TOOL

The MAPP System Design Tool (Figure 33) is a powerful, cross-platform application for accurately predicting the coverage pattern, frequency response, phase response, impulse response, and SPL capability of individual or arrayed Meyer Sound loudspeakers.

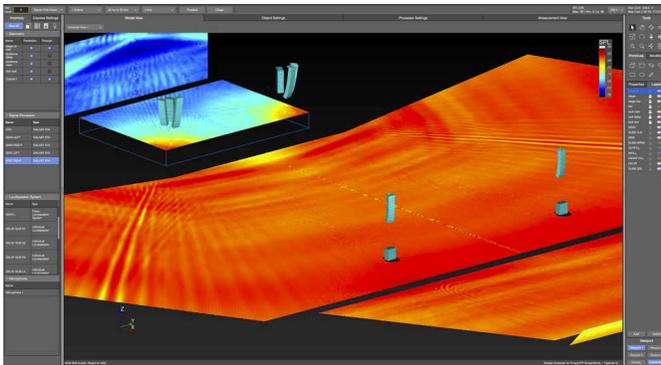


Figure 33: MAPP System Design Tool

Whether planning for fixed installations or for tours with multiple venues, use MAPP to accurately predict the appropriate loudspeaker deployment for each job, complete with coverage data, system delay and equalization settings, rigging information, and detailed design illustrations. MAPP's accurate, high-resolution predictions ensure that systems will perform as intended, thereby eliminating unexpected coverage problems and minimizing onsite adjustments.

The key to the accuracy of MAPP's predictions is Meyer Sound's exhaustive database of loudspeaker measurements. Performance predictions for each loudspeaker are based on 3-dimensional, 65,000+ 1/48th-octave-band measurements taken in the Meyer Sound anechoic chamber. The extraordinary consistency between Meyer Sound loudspeakers guarantees that predictions from MAPP will closely match their actual performance.

MAPP software allows for configuration of Meyer Sound loudspeaker systems and definition of the environment in which they operate, including air temperature, pressure, humidity, and the location of prediction surfaces. Importing both CAD (.DXF) and Sketchup (.SKP) files containing detailed venue information to act as an anchor model to the prediction surfaces and a visual aid to facilitate prediction data interpretation is also possible.



TIP: See meyersound.com for support and more information about MAPP.

MAPP Capabilities

With MAPP, the user can:

- Simulate different loudspeaker configurations to refine system designs and determine the best coverage for intended audience areas
- Model loudspeaker interactions to locate constructive and destructive interferences so that loudspeakers can be re-aimed and repositioned as necessary
- Place microphones anywhere in the Model View space and predict loudspeaker frequency response, phase response, and sound pressure levels at each microphone position
- Determine delay settings for fill loudspeakers using the Inverse Fast Fourier Transform and phase response feature
- Preview the results of signal processing to determine optimum settings for the best system response
- Automatically calculate load information for arrays to determine necessary minimum rigging capacity, front-to-back weight distribution, and center of gravity location
- Generate and export system images and system PDF reports for client presentations
- Synchronize GALAXY processor output channel settings in real time with virtual or real GALAXY units, allowing in-the-field changes to be predicted during system alignments.

GALILEO GALAXY NETWORK PLATFORM

The Galileo GALAXY Network Platform is a sophisticated loudspeaker management tool for controlling all Meyer Sound speaker types. The GALAXY loudspeaker processor extends a high level of audio control in driving and aligning loudspeaker systems with multiple zones. It provides a powerful tool set for corrective equalization (EQ) and creative fine-tuning for a full range of applications from touring to cinema.

Users can readily program the GALAXY processor using Compass software running on a host computer or via the Compass Go application for the iPad. Connecting MAPP to the GALAXY processor will also allow the user to push output channel settings created in MAPP as a starting point. Compass Control Software includes custom-designed settings for each family of speakers, as well as to integrate families together. For example, the Product Integration feature matches the phase characteristics between Meyer speaker families to ensure the most coherent summation.

Processing tools for inputs and outputs include delay, parametric EQ and U-Shaping EQ. Output processing also includes polarity reversal, Low-Mid Beam Control (LMBC), atmospheric correction, and All Pass filters.

The built-in summing and delay matrices allow a user to easily assign gain and delay values, respectively, at each cross point. This capability greatly facilitates using one loudspeaker to satisfy multiple purposes.

Front panel controls let a user intuitively and quickly operate a GALAXY processor without a computer during live use.

The GALAXY 408, GALAXY 816 and GALAXY 816-AES3 processor versions have the same audio processing capability with different I/O.

See meyersound.com/documents to locate their datasheets and operating instructions for more information.

OPTIONAL RAIN HOODS

A weather-protected version of the JM-1P is available with rain hood kits that safeguard the loudspeaker's electronics from the elements in fixed, outdoor installations. The rain hood is available in both vertical (PN 40.185.038.01) and horizontal (PN 40.185.084.02) versions. The rain hood kits are comprised of an upper rain hood that protects the heat sink, and a lower rain hood that protects the user panel and connectors. The rain hoods are made of a durable, high-impact polycarbonate that is also transparent, allowing the loudspeaker's connections and LEDs to be visible.

VERTICAL RAIN HOOD KIT CONTENTS

The JM-1P vertical rain hood is used when the loudspeaker is oriented vertically. The JM-1P vertical rain hood kit (PN 40.185.084.01) includes the following parts:

Table 8: JM-1P Vertical Rain Hood Kit

Part	Part Number	Quant.
Upper rain hood assembly	45.185.084.02	1
Upper rain hood frame	45.185.084.01	1
Lower rain hood assembly	45.152.031.01	1
Flat head screws, 8-32 x 0.25 inch	101.838	4
Pan head screws, 8-32 x 0.50 inch	101.008	2
Lock pins, 5/16 inch x 0.63 inch	134.024	2

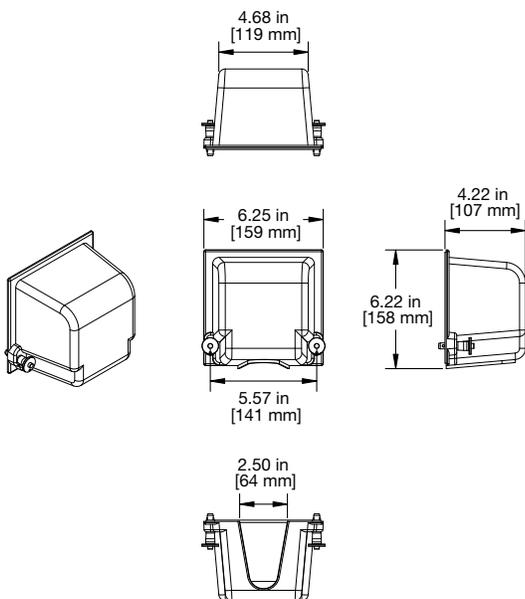


Figure 34: Vertical Rain Hood Dimensions: Lower Rain Hood Assembly

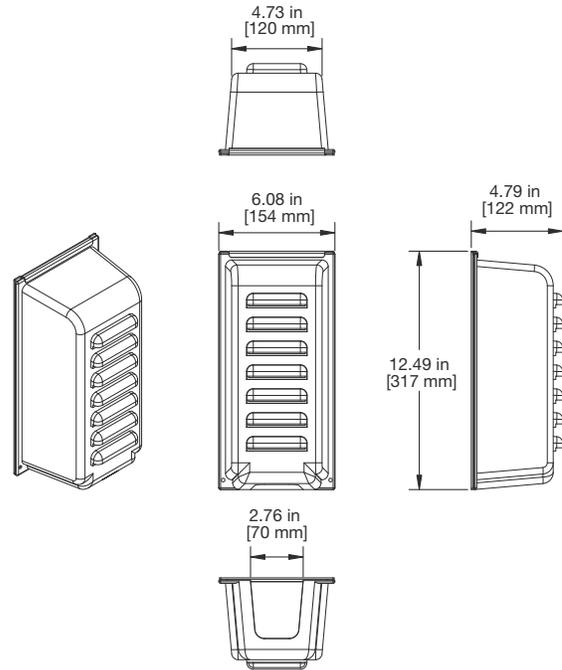


Figure 35: Vertical Rain Hood Dimensions: Upper Rain Hood Assembly (Right)

Installing the Vertical Rain Hood

To install the JM-1P vertical rain hood:

1. Attach any required cables to the loudspeaker and orient it vertically.
2. Remove the bottom two pan head screws from the amplifier face.

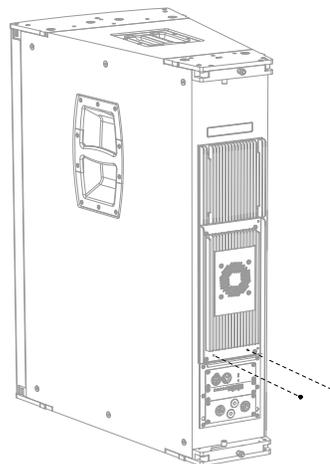


Figure 36: Removing Two Screws on Amplifier Face

- Secure the upper rain hood frame to the amplifier face with the four 8-32 x 0.25 flat head screws, two at the top and two at the bottom.

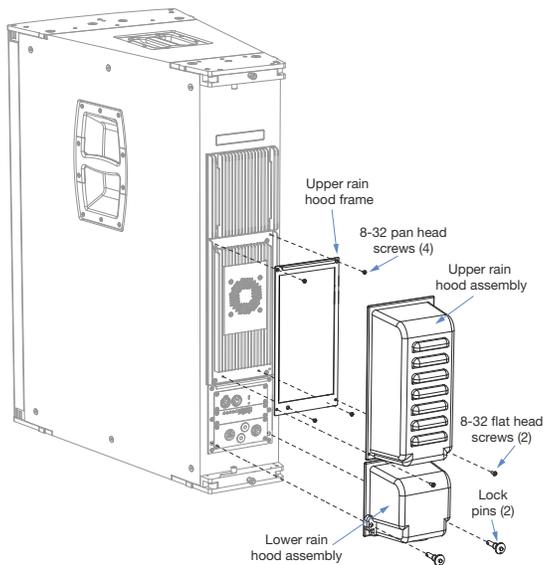


Figure 37: JM-1P Vertical Rain Hood Installation

- Attach the upper rain hood assembly to the upper rain hood frame, slipping it under the frame's top flange and securing it to the bottom of the frame with the two 8-32 x .50 pan head screws.
- Attach the lower rain hood assembly to the user panel, slipping it under the flange at the top of the user panel and securing it to the bottom of the panel with the two lock pins.

NOTE: The vertical rain hood should only be used when the loudspeaker is oriented vertically (see Figure 37).

NOTE: For permanent, fixed outdoor installations, both the lower and upper rain hood assemblies should be installed. For touring applications, the upper rain hood assembly can be removed, since the heat sinks and fan can be safely exposed to occasional rain. However, for all outdoor applications, the lower rain hood assembly should always be installed to shield the unit's connectors from rain.

HORIZONTAL RAIN HOOD KIT CONTENTS

The JM-1P horizontal rain hood is used when the loudspeaker is oriented horizontally. The JM-1P horizontal rain hood kit (PN 40.185.084.02) includes the following parts:

JM-1P Horizontal Rain Hood Kit

Part	Part Number	Quant.
Upper rain hood assembly	45.185.089.01	1
Upper rain hood frame	45.185.084.01	1
Lower rain hood assembly	45.185.090.01	1
Flat head screws, 8-32 x 0.25 inch	101.838	4
Pan head screws, 8-32 x 0.50 inch	101.008	2
Lock pins, 5/16 inch x 0.63 inch	134.024	2

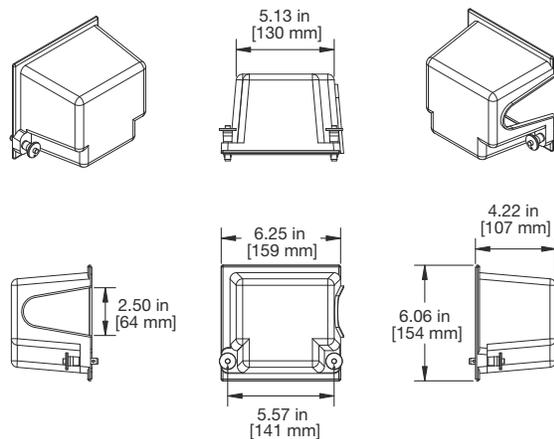


Figure 38: Horizontal Rain Hood Dimensions: Lower Rain Hood Assembly

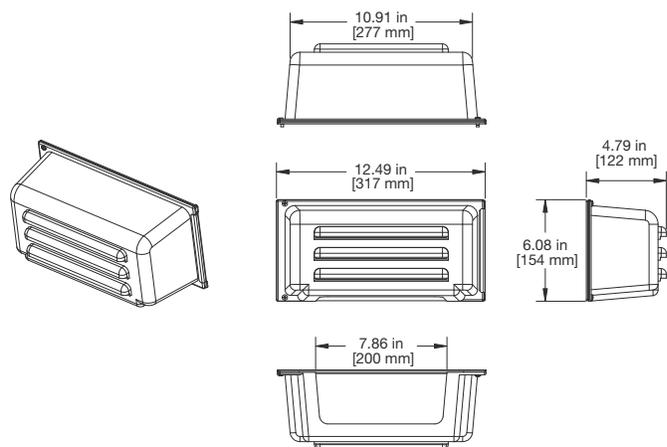


Figure 39: Horizontal Rain Hood Dimensions: Upper Rain Hood Assembly

Installing the Horizontal Rain Hood

To install the JM-1P horizontal rain hood:

1. Attach any required cables to the loudspeaker and orient it horizontally.
2. Remove the bottom two pan head screws from the amplifier face.

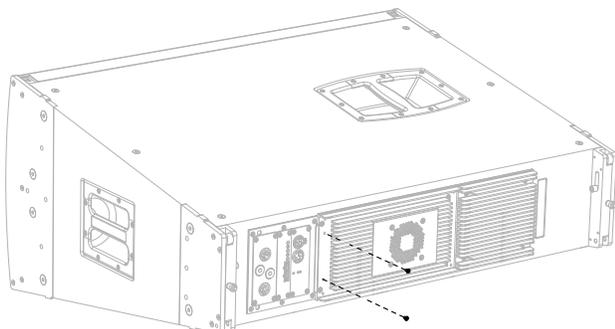


Figure 40: Removing Two Screws from Amplifier Face

3. Secure the upper rain hood frame to the amplifier face with the four 8-32 x 0.25 flat head screws, two at the top and two at the bottom.

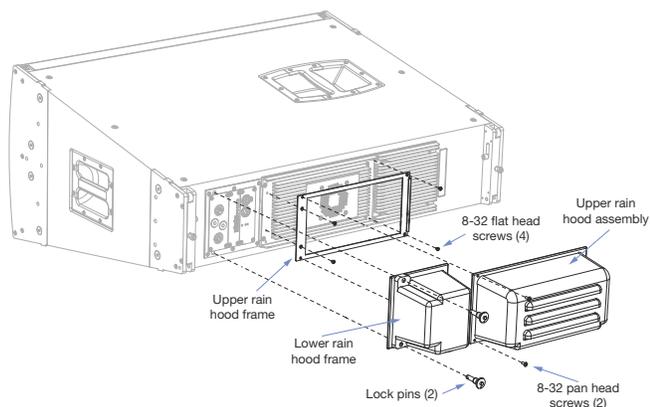


Figure 41: JM-1P Horizontal Rain Hood Installation

4. Attach the upper rain hood assembly to the upper rain hood frame, slipping it under the frame's top flange and securing it to the bottom of the frame with the two 8-32 x .50 pan head screws.

5. Attach the lower rain hood assembly to the user panel, slipping it under the flange at the top of the user panel and securing it to the bottom of the panel with the two lock pins.

 **NOTE:** The horizontal rain hood should only be used when the loudspeaker is oriented horizontally (see Figure 41).

 **NOTE:** For permanent, fixed outdoor installations, both the lower and upper rain hood assemblies should be installed. For touring applications, the upper rain hood assembly can be removed, since the heat sinks and fan and can be safely exposed to occasional rain. However, for all outdoor applications, the lower rain hood assembly should always be installed to shield the unit's connectors from rain.

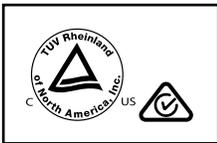
JM-1P SPECIFICATIONS

ACOUSTICAL	
Operating Frequency Range	53 Hz – 18 kHz Note: Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
Frequency Response	56 Hz – 16.5 kHz ± 4 dB Note: Measured free field with 1/3 octave frequency resolution at 4 meters.
Phase Response	580 Hz to 16 kHz $\pm 45^\circ$
Linear Peak SPL	132 dB with crest factor >15.5 dB (M-noise) , 133dB (Pink noise), 136 dB (B-noise) Note: Linear Peak SPL is measured in free-field at 4 m referred to 1 m. Loudspeaker SPL compression measured with M-noise at the onset of limiting, 2-hour duration, and 50-degree C ambient temperature is < 2 dB. M-noise is a full bandwidth (10 Hz–22.5 kHz) test signal developed by Meyer Sound to better measure the loudspeaker’s music performance. It has a constant instantaneous peak level in octave bands, a crest factor that increases with frequency, and a full bandwidth Peak to RMS ratio of 18 dB. The presence of a greater-than (>) symbol with regard to crest factor indicates it may be higher depending on EQ and boundary loading. Pink noise is a full bandwidth test signal with Peak to RMS ratio of 12.5 dB. B-noise is a Meyer Sound test signal used to ensure measurements reflect system behavior when reproducing the most common input spectrum, and to verify there is still headroom over pink noise.
Horizontal Coverage	20°
Vertical Coverage	60°
TRANSDUCERS	
Low Frequency	One 15-inch cone driver with neodymium magnet; 2 Ω nominal impedance
High Frequency	One 4-inch compression driver; 8 Ω nominal impedance
AUDIO INPUT	
Type	Differential, electronically balanced
Maximum Common Mode Range	± 15 V DC, clamped to earth for voltage transient protection
Connectors	XLR 3-pin female input with male XLR loop output; optional XLR 5-pin connector to accommodate both balanced audio and RMS signals
Input Impedance	10 k Ω differential between Audio(+) and Audio(-)
Wiring	Pin 1: Chassis/earth through 220 k Ω , 1000 pF, 15 V clamp network to provide virtual ground lift at audio frequencies Pin 2: Audio (+) Pin 3: Audio (-) Pin 4: RMS (polarity insensitive) Pin 5: RMS (polarity insensitive) Case: Earth ground and chassis Note: Pins 4 and 5 (RMS) only included with XLR 5-pin connector that accommodates both balanced audio and RMS signals.
Nominal Input Sensitivity	0 dBV (1 V rms) continuous is typically the onset of limiting for noise and music
Input Level	Audio source must be capable of producing +20 dBV (10 V rms) into 600 Ω to produce maximum peak SPL over the operating bandwidth of the loudspeaker

AMPLIFIER	
Type	Two-channel complementary MOSFET output stages (class AB/H)
Total Output	2550 W peak Note: Peak power based on the maximum unclipped peak voltage that the amplifier will produce into the nominal load impedance.
THD, IM TIM	<.02%
Cooling	QuietCool™ with convection cooling at low to mid audio levels; fan-assisted only at high audio levels Note: Fan controlled by audio level, remaining off at turn-on and at low to mid audio levels and operating only at high audio levels, making it virtually inaudible.
AC POWER	
Connectors	PowerCon 20 with loop output
Automatic Voltage Selection	Two ranges, each with high-low voltage tap (uninterrupted)
Safety Agency Rated Operating Voltage	95–125 V AC; 208–235 V AC; 50–60 Hz
Turn On/Turn Off Points	85–134 V AC; 165–264 V AC
Note: No automatic turn-off voltages. Voltages above 265 V AC are fuse protected but may cause permanent damage to the power supply. Voltages below 90 V AC may result in intermittent operation.	
Current Draw	
Idle Current	0.50 A rms (115 V AC); 0.28 A rms (230 V AC); 0.56 A rms (100 V AC)
Maximum Long-Term Continuous Current	4.55 A rms (115 V AC); 2.50 A rms (230 V AC); 5.25 A rms (100 V AC)
Burst Current	8.0 A rms (115 V AC); 4.1 A rms (230 V AC); 9.2 A rms (100 V AC) Note: AC power cabling must be of sufficient gauge so that under burst current rms conditions, cable transmission losses do not cause the loudspeaker's voltage to drop below the specified operating range.
Ultimate Short-Term Peak Current	20.8 A peak (115 V AC); 13.0 A peak (230 V AC); 21.6 A peak (100 V AC)
Inrush Current	7.1 A peak (115 V AC); 8.4 A peak (230 V AC); 7.1 A peak (100 V AC)
Note: Current draw for a single loudspeaker. Loop output not used.	
RMS NETWORK (OPTIONAL)	
	Two-conductor twisted-pair network that reports all operating parameters of amplifiers to system operator's host computer.
PHYSICAL	
Dimensions	W: 16.79 in (427 mm) x H: 36.08 in (916 mm) x D: 29.30 in (744 mm)
Weight	Weight 147 lb (66.68 kg)
Enclosure	Premium multi-ply birch with slightly textured black finish
Protective Grille	Powder-coated, hex-stamped steel with black mesh
Rigging	Aluminum end plates with side links for arraying units; threaded metric M10 points for rigging accessories; optional pickup plate and vertical grid for suspending arrays with uptilt or downtilt

ENVIRONMENTAL	
Operating Temperature	0 °C to +45 °C
Non Operating Temperature	-40 °C to +75 °C
Humidity	To 95% at 35 °C
Operating Altitude	To 5000 m (16,404 ft)
Non Operating Altitude	To 12,000 m (39,370 ft)
Shock	30 g 11 msec half-sine on each of 6 sides
Vibration	10 Hz – 55 Hz (0.010 m peak-to-peak excursion)
IP Rating	IP44 for weather-protected version with properly installed rain hood. (See "Optional Rain Hoods" on page 25.)

JM-1P COMPLIANCE



JM-1P DIMENSIONS

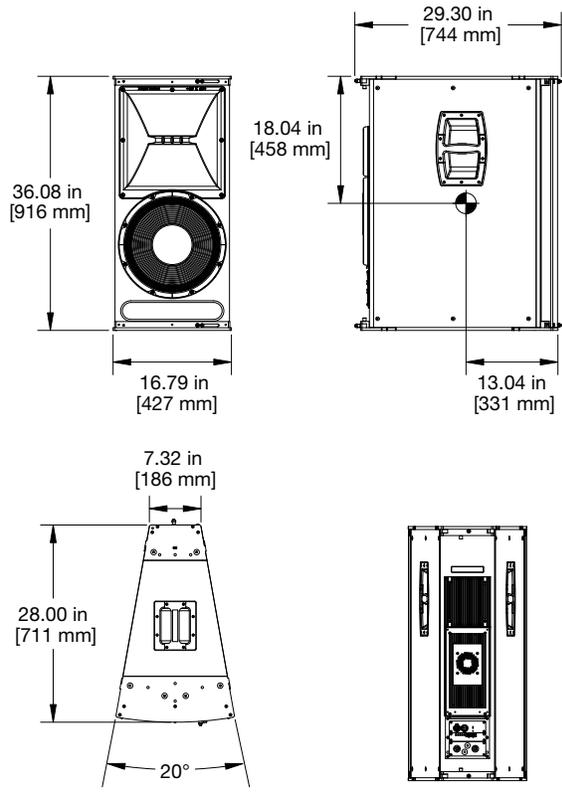


Figure 42: JM-1P Dimensions





THINKING SOUND

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JM-1P Operating Instructions PN 05.202.005.01 B