

MJF-210 Low-Profile High-Power Stage Monitor  
MJF-208 Compact Stage Monitor



MJF-208



MJF-210

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MJF-208 and MJF-210 Operating Instructions, PN 05.235.005.01 A

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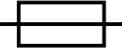
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## IMPORTANT SAFETY INSTRUCTIONS

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

### SYMBOLS USED

				
<b>Dangerous voltages: risk of electric shock</b>	<b>Important operating instructions</b>	<b>Replaceable Fuse</b>	<b>Protective earth ground</b>	<b>Hot surface: do not touch</b>
<b>Gefährliche Spannungen: Stromschlaggefahr</b>	<b>Hinweis auf wichtige Punkte der Betriebsanleitung</b>	<b>Austauschbare Sicherung</b>	<b>Schutzerde</b>	<b>Heiße Oberfläche: nicht berühren</b>
<b>Pour indiquer les risques résultant de tensions dangereuses</b>	<b>Instructions d'utilisation importantes</b>	<b>Fusible remplaçable</b>	<b>Terre de protection</b>	<b>Surface chaude: ne pas toucher</b>
<b>Para indicar voltajes peligrosos</b>	<b>Instrucciones importantes de funcionamiento y/o Mantenimiento</b>	<b>Fusible reemplazable</b>	<b>Toma de tierra de protección</b>	<b>Superficie caliente: no tocar</b>

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:** 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 loud-speaker.

## 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, Neutraleiter, 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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## CHAPTER 1: 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 [meyersound.com](http://meyersound.com).

Meyer Sound Technical Support is available at:

- **Tel:** +1 510 486.1166 (Monday through Friday 9:00 am to 5:00 pm PST)
- **Tel:** +1 510 486.0657 (after hours support)
- **Web:** [meyersound.com/support](http://meyersound.com/support)

### MJF-210 LOW-PROFILE HIGH-POWER STAGE MONITOR

The MJF-210 low-profile high-power stage monitor reproduces audio faithfully with high intelligibility at high output levels with ample low-frequency headroom. The self-powered MJF-210 exceeds the stringent requirements of today's touring applications, withstanding the rigors of road and stage while occupying a small, lightweight footprint and a fraction of the truck space of similar monitors requiring external amplification.



*MJF-210 Stage Monitor*

The MJF-210's phase-corrected 55 Hz to 18 kHz frequency range ensures that vocals and instruments are reproduced accurately with low distortion and no signal coloration. Exhibiting flat phase and frequency responses, as well as exceptional impulse response, the MJF-210 surpasses the sonic capabilities of conventional stage monitors while offering the simplicity of self-powered setup and operation.

The MJF-210's durable, vented enclosure houses two high-power, long-excursion, 10-inch low-frequency drivers, as well as a 4-inch diaphragm compression driver coupled to a 50° horizontal by 70° vertical constant directivity horn. The face of the low-profile cabinet slopes 35° from the stage, ensuring optimal monitoring for the performer, permitting freedom to move upstage and downstage while remaining within the horn's consistent, wide vertical coverage.

Drivers are powered by a three-channel, class D amplifier. The Intelligent AC™ power supply provides automatic voltage selection, EMI filtering, soft current turn-on, and surge suppression.

The optional RMS™ remote monitoring system module provides comprehensive monitoring of loudspeaker parameters from a Mac® or Windows®-based computer. Optional XLR 5-pin connectors support use of composite cables to carry both RMS and balanced audio.

Constructed of premium birch plywood, the MJF210's cabinet is coated with a slightly textured black finish and includes protective rubber strips on the bottom of the unit that prevent changes in position due to vibrations. A hex-stamped steel grille lined with acoustical black mesh protects the drivers.

## MJF-208 COMPACT STAGE MONITOR

The MJF-208 compact stage monitor brings the same high intelligibility and low-frequency headroom of Meyer Sound's acclaimed MJF line of stage monitors to a lighter, more portable cabinet. The MJF-208 is ideal for monitoring applications with minimal stage space that do not require the higher output of the MJF-210. Both stage monitors offer the self-powered advantages of simplified setup, operation, and consistent stage-to-stage sound, while occupying a fraction of the truck space of similar monitors that require external amplification.

The MJF-208's 55 Hz to 18 kHz frequency range is phase corrected, ensuring that vocals and instruments are reproduced accurately with low distortion and no signal coloration. The flat phase and frequency response yield exceptional pattern control, minimizing interactions with nearby microphones and providing high gain before feedback.

The MJF-208's durable, vented enclosure houses two 8-inch high-power low-frequency drivers, as well as a 3-inch diaphragm compression driver coupled to a constant-directivity horn. The dual-driver design with optimized crossover and extremely accurate horn delivers extended headroom and symmetrical coverage not possible with other wedge monitor designs. The MJF-208 need not be purchased in matched pairs when deploying left-right configurations. The 70° horizontal by 50° vertical horn provides optimal coverage in smaller spaces that cannot accommodate a large number of monitors. The low-profile cabinet slopes 35° from the stage to preserve audience sight lines.



*MJF-208 Compact Monitor*

Drivers are powered by a three-channel, class D amplifier. The Intelligent AC™ power supply provides automatic voltage selection, EMI filtering, soft current turn-on, and surge suppression.

An optional RMS™ remote monitoring system module enables comprehensive monitoring of loudspeaker parameters from a Mac® or Windows®-based computer running Compass® control software. Optional XLR 5-pin connectors for the MJF-208 support use of composite cables to carry both balanced audio and RMS signals.

The optional MDM-832 distribution module routes AC power, balanced audio, and RMS to multiple MJF stage monitors, further enhancing portability and ease of use. The MDM-832 simplifies distribution with composite cables carrying AC power, balanced audio and RMS—streamlining setups and tear-downs and reducing onstage cable clutter.

The MJF-208's cabinet is constructed of premium multi-ply birch, coated with a durable, slightly textured black finish, and includes protective rubber strips on the bottom of the unit that prevent changes in position due to vibrations. A hex-stamped steel grille lined with acoustical black mesh protects the drivers.

## CHAPTER 2: POWER REQUIREMENTS

The MJF-208 and MJF-210 loudspeakers combine advanced loudspeaker technology with equally advanced power capabilities. Understanding power distribution, voltage and current requirements, and electrical safety guidelines is critical to their safe operation.

### AC POWER DISTRIBUTION

All components in an audio system (self-powered loudspeakers, mixing consoles, and processors) 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 (or larger) as the neutral and line cables.

**CAUTION:** Make sure the voltage received by the MJF-208/MJF-210 loudspeaker remains within its 90–264 V AC operating range. In addition, the ground line must always be used for safety reasons and the line-to-ground voltage should never exceed 250 V AC (typically 120 V AC from line to ground).

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

**NOTE:** Improper grounding of 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.

### 120 V AC, 3-Phase Wye System (Single Line)

#### Line-Neutral-Earth/Ground

Figure 1 illustrates a basic 120 V AC, 3-phase Wye distribution system with the loudspeaker load distributed across all three phases, with each loudspeaker connected

to a single line and common neutral and earth/ground lines. This system delivers 120 V AC to each loudspeaker.

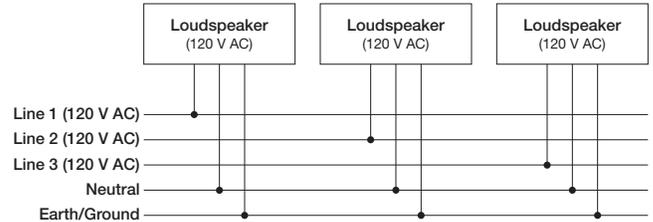


Figure 1: 120 V AC, 3-Phase Wye System (Single Line to Loudspeakers)

### 120 V AC, 3-Phase Wye System (Two Lines)

#### Line-Line-Earth/Ground

Figure 2 illustrates a 120 V AC, 3-phase Wye distribution system with each loudspeaker connected to two lines and a common earth/ground line. This configuration is possible because MJF-208/MJF-210 tolerates elevated voltages from the ground line and does not require a neutral line. This system delivers 208 V AC to each loudspeaker.

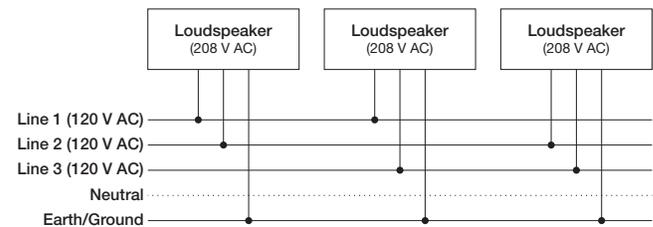


Figure 2: 120 V AC, 3-Phase Wye System (Two Lines to Loudspeakers)

**TIP:** The 120 V AC, 3-phase Wye system with two lines is recommended because it allows loudspeakers to draw less current than with single-line systems, thereby reducing voltage drop due to cable resistance. It also excludes the potential of varying ground to neutral voltages producing an audible hum.

### 230 V AC, 3-Phase Wye System (Single Line)

#### Line-Neutral-Earth/Ground

Figure 3 illustrates a basic 230 V AC, 3-phase Wye distribution system with the loudspeaker load distributed across all three phases, with each loudspeaker connected

to a single line and common neutral and earth/ground lines. This system delivers 230 V AC to each loudspeaker.

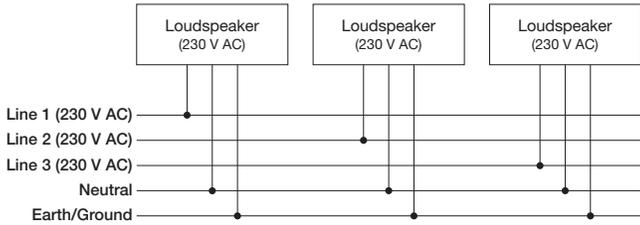


Figure 3: 230 V AC, 3-Phase Wye System (Single Line to Loudspeakers)

**CAUTION:** For 230 V AC, 3-phase Wye systems, never connect two lines to the AC input of MJF-208/MJF-210, as the resulting voltage would exceed the upper voltage limit (275 V AC) and will damage the loudspeaker.

### AC CONNECTORS

The MJF-208 and MJF-210 user panels include two powerCON 20 connectors (Figure 4), one for AC Input (blue) and one for AC Loop Output (gray).

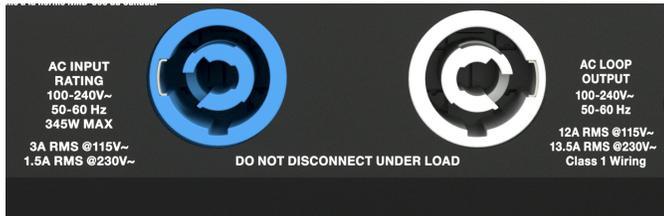


Figure 4: AC Input (Left) and AC Loop Output (Right) Connectors

### AC Input Connector (Blue)

The blue AC Input connector supplies power to the loudspeaker. The connector is rated at 20 amps and uses a powerCON 20 AC mains locking connector that prevents accidental disconnections. A 10-foot AC power cable, rated at 15 amps, is included with each loudspeaker. If the included AC power cable is replaced, make sure to use a cable with the appropriate power plug (on the other end) for the region where the unit will be operated. The MJF-208 and MJF-210 require a grounded outlet. To operate safely and effectively, it is extremely important that the entire system be properly grounded.

The AC Input connector also supplies power to any additional loudspeakers connected to the loudspeaker's gray Loop Output connector.

**CAUTION:** When looping AC power for loudspeakers, do not exceed the current capability of the AC Input connector (20 A) or the included AC power cable (15 A). Consider the total current draw for all loudspeakers on the circuit, including the first loudspeaker.

### AC Loop Output Connector (Gray)

The gray AC Loop Output connector allows multiple MJF-208 or MJF-210s to be looped and powered from a single power source. The three-conductor powerCON 20 is rated at 20 A and uses a locking connector that prevents accidental disconnections. For applications that require multiple MJF-208 or MJF-210, connect the AC Loop Output of the first loudspeaker to the AC Input of the second loudspeaker, and so forth.

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

Table 1: Maximum Looped Number of MJF-208s with AC Power

Circuit Breaker/ Connector Ratings	115 V AC	230 V AC	100 V AC
15 amps	8 looped (9 total)	15 looped (16 total)	6 looped (7 total)
20 amps	11 looped (12 total)	21 looped (22 total)	9 looped (10 total)

Table 2: Maximum Looped Number of MJF-210s with AC Power

Circuit Breaker/ Connector Ratings	115 V AC	230 V AC	100 V AC
15 amps	6 looped (7 total)	11 looped (12 total)	4 looped (5 total)
20 amps	9 looped (10 total)	15 looped (16 total)	5 looped (6 total)

**i** Current draw for the MJF-208 and MJF-210 is dynamic and fluctuates as operating levels change. The number of loudspeakers that can be looped assumes that operating levels are normal and not such that loudspeakers are constantly limiting.

Each MJF-208/MJF-210 ships with one AC looping connector for making AC looping cables. Assembled 1-meter AC looping cables (PN 28.115.032.03) are also available from Meyer Sound.

## WIRING AC POWER CABLES

MJF-208/MJF-210 ships with a gray powerCON 20 cable mount connector, rated at 20 A, for assembling AC looping cables (Figure 5). The pins on the powerCON 20 cable mount connector are labeled as follows:

- L (Line)
- N (Neutral)
- PE (Protective Earth or Ground)

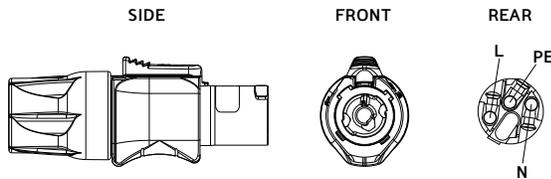


Figure 5: powerCON 20 Cable Mount Connector

How AC power cables are wired is determined by the type of AC power distribution system used (see “AC Power Distribution” on page 3). When wiring AC power cables for single-line systems, use one of the wiring schemes shown in Figure 6 and described in Table 1:

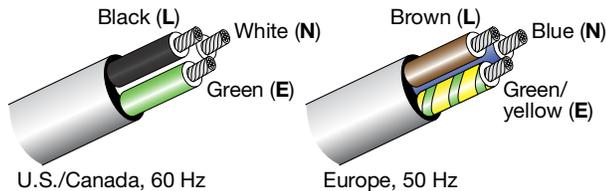


Figure 6: AC Wiring Scheme

Table 1: AC Wiring Scheme

Wire Color		Attach to the Following Terminal
U.S. / Canada 60 Hz	European 50 Hz	
Black	Brown	Hot or live (L)
White	Blue	Neutral (N)
Green	Green and Yellow	Protective earth / ground (E or PE)

**CAUTION:** When wiring AC power cables and distribution systems, it is important to preserve AC line polarity and connect the earth ground at both ends of the cable. MJF-208/MJF-210 requires a grounded connection. Always use a grounded outlet and plug. It is extremely important that the system be properly grounded to operate safely and properly. Do not ground-lift the AC cable.

## VOLTAGE REQUIREMENTS

The MJF-208 and MJF-210 operate as intended when receiving AC voltage within the following range:

- 90–264 V AC, 50–60 Hz

If the voltage drops below 90 V, the loudspeaker uses stored power to continue operating temporarily; the loudspeaker powers off if the voltage does not return to its operating range.

If the voltage rises above 275 V, the power supply could become damaged.

**CAUTION:** The power source for MJF-208/MJF-210 should always operate within the required operating range, at least a few volts from the upper and lower limits. This approach ensures that AC voltage variations from the service entry—or peak voltage drops due to cable runs—will not cause the loudspeaker’s amplifier to cycle on and off or cause damage to the power supply.

## CURRENT REQUIREMENTS

The MJF-208/MJF-210 loudspeaker current draw is dynamic and fluctuates as operating levels change. Because 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 and to ensure that the size and gauge of each cable conforms to electrical code standards. This current rating is also used to select appropriately rated, slow-reacting thermal breakers, which are recommended for loudspeaker power distribution. In addition, the maximum long-term continuous current can be used to calculate the AC looping capability for MJF-208 or MJF-210 loudspeakers.
- **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:

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

- **Maximum Instantaneous Peak Current** — A rating for magnetic breakers.
- **Inrush Current** — The spike of initial current encountered when powering on.

Use the information in Table 3 and Table 4 as a guideline for selecting cable gauge and circuit breaker ratings for the system’s operating voltage.

**Table 3: MJF-208 Current Draw**

Current Draw	115 V AC	230 V AC	100 V AC
Idle Current	0.26 A rms	0.25 A rms	0.28 A rms
Maximum Long-Term Continuous Current	1.4 A rms	0.8A rms	1.7 A rms
Burst Current	2.2 A rms	1.1 A rms	2.6 A rms
Maximum Instantaneous Peak Current	6.0 A peak	2.9 A peak	6.9 A peak
Inrush Current	< 20.0 A peak		

**Table 4: MJF-210 Current Draw**

Current Draw	115 V AC	230 V AC	100 V AC
Idle Current	0.26 A rms	0.25 A rms	0.28 A rms
Maximum Long-Term Continuous Current	1.8 A rms	1.1 A rms	2.6 A rms
Burst Current	3.5 A rms	1.8 A rms	4.2 A rms
Maximum Instantaneous Peak Current	8.1 A peak	3.9 A peak	9.3 A peak
Inrush Current	< 20.0 A peak		

The minimum electrical service amperage required by an MJF-208 or MJF-210 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.

## INTELLIGENT AC POWER SUPPLY

The MJF-208/MJF-210 Intelligent AC™ power supply automatically selects the correct operating voltage (allowing the loudspeaker to be used internationally without manually setting voltage switches), eliminates high inrush currents with soft-start power up, 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.

## Powering Up the MJF-208 or MJF-210

When powering up the MJF-208/MJF-210, 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. The power supply ramps up.
3. During the power up sequence, the On/Status LED flashes multiple colors successively.
4. After the power up sequence and system check have completed, the ON/Status LED turns solid green, indicating the loudspeaker is ready to reproduce audio.

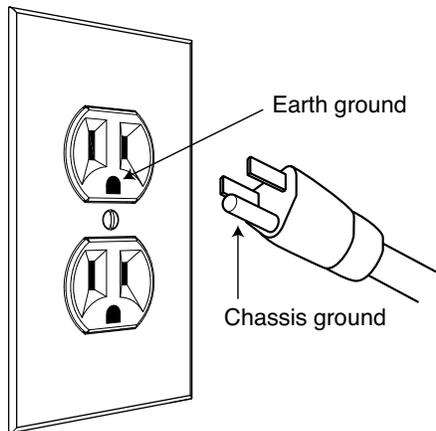


**CAUTION:** If the On/Status LED does not turn green, or the MJF-208/MJF-210 does not output audio after ten seconds, remove AC power immediately and verify that the voltage is within the required range. If the problem persists, contact Meyer Sound Technical Support.

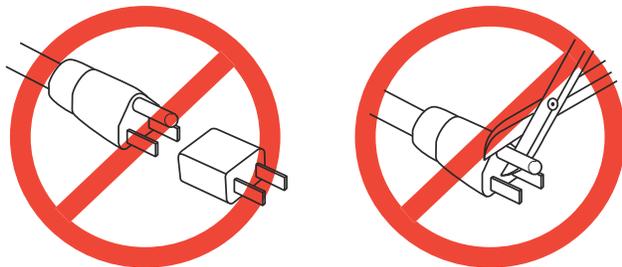
## ELECTRICAL SAFETY GUIDELINES

Make sure to observe the following important electrical and safety guidelines.

- The powerCON 20 connector should not be engaged or disengaged when under load or energized. Either de-energize or disconnect the other end of the cable.
- MJF-208/MJF-210 loudspeakers require 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 A 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 cable is frayed or broken.
- Keep all liquids away from MJF-208/MJF-210 loudspeakers to avoid hazards from electrical shock.



## CHAPTER 3: AMPLIFICATION AND AUDIO

The MJF-208 and MJF-210's low- and high-frequency drivers are powered by an extremely efficient onboard three-channel, class D amplifier that uses minimal AC power when idle. Internal signal processing includes a complex crossover, frequency and phase correction, and limiters that prevent driver overexcursion and regulate voice coil temperatures, ensuring maximum driver lifespan.

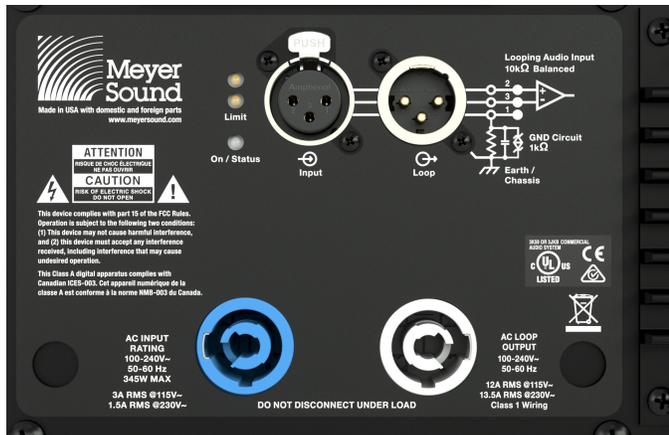


Figure 7: MJF-208/MJF-210 Rear Panel with 3-Pin XLR Connectors

The MJF-208/MJF-210 rear panel includes a slot for the optional RMS module, used for connecting to the RMS remote monitoring system (see Chapter 4, “RMS Remote Monitoring System”).

## AUDIO CONNECTORS

The MJF-208/MJF-210 comes standard with 3-pin XLR connectors for audio Input and audio Loop output. The 5-pin XLR connectors are optionally available.

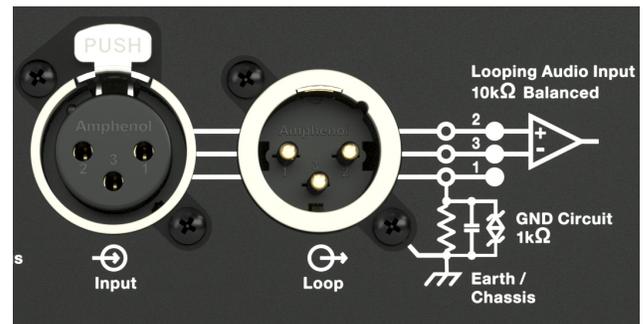


Figure 8: MJF-208/MJF-210 XLR Audio Connectors, Input and Loop Output

### Input Connector (XLR 3-Pin Female)

The audio Input is an 3-pin XLR female connector and accepts balanced audio signals with an input impedance of 10 k $\Omega$ . The connector uses the following wiring:

- **Pin 1** — 1 k $\Omega$  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 1 k $\Omega$ , 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 pins 1–3 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 Output Connector (3-Pin XLR Male)

The audio Loop output is a 3-pin XLR male connector. It allows loudspeakers to be looped from a single audio source. For applications that require multiple MJF-208/MJF-210s, connect the Loop output of the first unit to the Input of the second, and so forth.



**NOTE:** The Loop connector is wired in parallel to the Input connector and transmits the unbuffered source signal even when the MJF-208/MJF-210 is powered off.

To avoid distortion when looping multiple MJF-208/MJF-210s, 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 approximately 20 dBV (10 V rms into 600  $\Omega$ ) to yield the maximum peak SPL over the entire operating bandwidth of the loudspeakers. Most professional audio equipment can transmit these source levels.

To calculate the load impedance for the looped loudspeakers, divide 10 k $\Omega$  (the input impedance for a single MJF-208/MJF-210) by the number of looped loudspeakers. For example, the load impedance for ten MJF-208/MJF-210 loudspeakers is 1000  $\Omega$  (10 k $\Omega$  / 10). To drive this number of looped loudspeakers, the source device should have an output impedance of 100  $\Omega$  or less. This same rule applies when looping MJF-208/MJF-210 loudspeakers with other self-powered Meyer Sound loudspeakers.



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



**CAUTION:** 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 will be significantly degraded.

## Optional 5-pin XLR Audio Connectors

The MJF-208/MJF-210 is optionally available with 5-pin XLR connectors for audio Input and audio Loop output. The connectors accept balanced audio signals with an input impedance of 10 k $\Omega$  and use the following wiring:

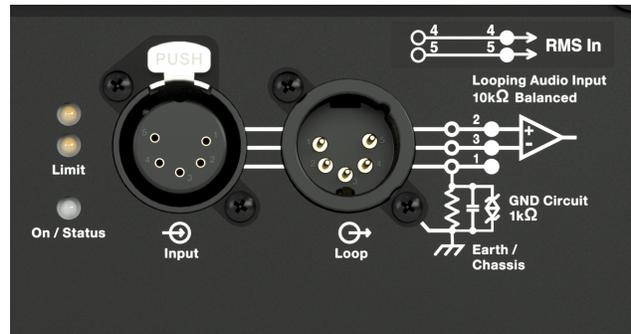


Figure 9: MJF-208/MJF-210 5-Pin XLR Connectors, Input and Loop Output

- **Pin 1** — 1 k $\Omega$  to chassis and earth ground (ESD clamped)
- **Pin 2** — Signal (+)
- **Pin 3** — Signal (-)
- **Pin 4** — RMS (polarity insensitive)
- **Pin 5** — RMS (polarity insensitive)
- **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 1 k $\Omega$ , 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 cables that have pins 1–3 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.

## LIMITING

When source levels for the MJF-208/MJF-210 exceed optimum input levels for its drivers, limiting is engaged and is indicated by the two Limit LEDs on the user panel. The bottom LED indicates limiting for the low-frequency channels. The top LED indicates limiting for the high-frequency channel. When engaged, limiting not only protects the drivers, but also prevents signal peaks from causing excessive distortion in the amplifier's channels, thereby preserving headroom and maintaining smooth frequency responses at high levels. When source levels return to normal, below the limiter's threshold, limiting ceases.



Figure 10: Limit LEDs

The MJF-208/MJF-210 performs within its acoustical specifications at normal temperatures when the Limit LEDs are unlit, or if the LEDs are lit for 2 seconds or less and then turn off for at least 1 second. If an LED remains lit for longer than 3 seconds, the loudspeaker enters hard limiting where:

- Increases to the input level have no effect.
- Distortion increases due to clipping and nonlinear driver operation.
- Drivers are subjected to excessive heat and excursion, compromising their life span.

## ON/STATUS LED

During normal operation, the MJF-208/MJF-210's On/Status LED is green. If the loudspeaker's internal temperature reaches 75° C (167° F), the LED turns solid yellow and the loudspeaker's gain is reduced by 3 dB. Although the MJF-208/MJF-210 will continue to operate normally with the lower gain, the On/Status LED illuminating yellow indicates that the loudspeaker is reaching its maximum heat dissipation and a reduction in SPL is recommended. When the loudspeaker's internal temperature cools to 60° C (140° F), the amplifier returns to normal operation.

**CAUTION:** If the loudspeaker's internal temperature reaches 125° C (257° F), gain is reduced by 6 dB to avoid damage to the loudspeaker.

**TIP:** When the MJF-208/MJF-210 is connected to an RMS network, the RMS software provides additional feedback on the loudspeaker's operating temperature. For more information, see Chapter 4, "RMS Remote Monitoring System."

## AMPLIFIER COOLING SYSTEM

The MJF-208/MJF-210 amplifier relies solely on natural convection for cooling from air flowing over its heat sink. The efficient amplifier and heat sink design keeps temperatures low, even when the unit is operated at high ambient temperatures, in tightly packed configurations, and driven continuously at high output levels.

**CAUTION:** The MJF-208/MJF-210's heat sink can reach very high temperatures during extreme operation. Use utmost caution when approaching the rear of the loudspeaker.



## CHAPTER 4: RMS REMOTE MONITORING SYSTEM

The MJF-208/MJF-210 loudspeaker optionally includes an RMS remote monitoring system module, allowing them 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](http://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 (Figure 11).



Figure 11: 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. 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.

### RMS MODULE

The MJF-208 and MJF-210 RMS user panels (Figure 12) includes an Identify button, Remote Mute switch, Wink Activity LED and two Network connectors.



Figure 12: MJF-210 RMS Module

 **NOTE:** The Identify button and Wink Activity LED on the RMS user panel are used exclusively by RMS and have no effect on the acoustical or electrical activity of the loudspeaker.

### Identify Button

The Identify button serves the following functions:

- If the loudspeaker has not yet been discovered on the RMS network (Wink Activity LED not lit), press the Identify button to discover it.
- To remove the loudspeaker from the RMS network, press and hold the Identify button during startup (see “Resetting the RMS Module” on page 14).
- To *wink* a discovered loudspeaker, press the Identify button. The Wink Activity LED on the loudspeaker icon in Compass RMS lights up and the Wink Activity LED on the loudspeaker’s RMS user panel turns solid green. Press the Identify button again to unwink the loudspeaker.

 **TIP:** The loudspeaker can also be winked by clicking the Wink button on the loudspeaker icon in Compass RMS.

## Wink/Activity LED (Green)

The green Wink Activity LED indicates the status of the loudspeaker:

- During startup, the LED flashes green 10 times.
- If the loudspeaker has not yet been discovered on the RMS network, the LED is not lit after startup.
- If the loudspeaker has been successfully discovered on the RMS network, the LED flashes green continuously and flashes more rapidly with increased data activity.
- When the loudspeaker is winked, by clicking the Wink button in Compass RMS, the LED is solid green. The LED remains solid green until the loudspeaker is unwinked.



**TIP:** The Wink function is useful for identifying the physical loudspeaker corresponding to a loudspeaker icon in Compass RMS.

## Remote Mute Switch

The recessed Remote Mute switch on the MJF-208/MJF-210 RMS module (Figure 13) determines whether Compass RMS can control muting and soloing of the loudspeaker. The MJF-208/MJF-210 ships from the factory with the switch enabled.

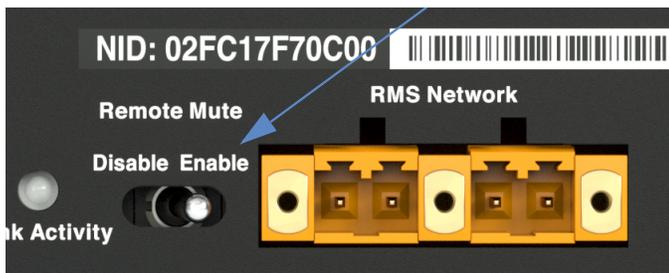


Figure 13: Remote Mute Switch

- **Disable:** When the Remote Mute switch is set to Disable (to the left), the loudspeaker cannot be muted or soloed from Compass RMS.
- **Enable:** When the Remote Mute switch is set to Enable (to the right), the loudspeaker can be muted and soloed from Compass RMS.



**NOTE:** Compass RMS has a preference that can be set to disable Mute and Solo functions, eliminating any possibility of accidentally muting loudspeakers.

## 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 above the Wink Activity LED.

## RESETTING THE RMS MODULE

The Identify button can be used to reset the MJF-210 RMS module when powering on the loudspeaker. This action will cause the module to be removed from the RMS network.

To reset the RMS module:

1. Power down the loudspeaker.
2. Press and hold the Identify button.
3. While continuing to hold down the Identify button, power on the loudspeaker.
4. After the Wink Activity LED flashes on and off, release the Identify button. The RMS module is reset and the loudspeaker is removed from the RMS network.

## CHAPTER 5: 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 14) 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.

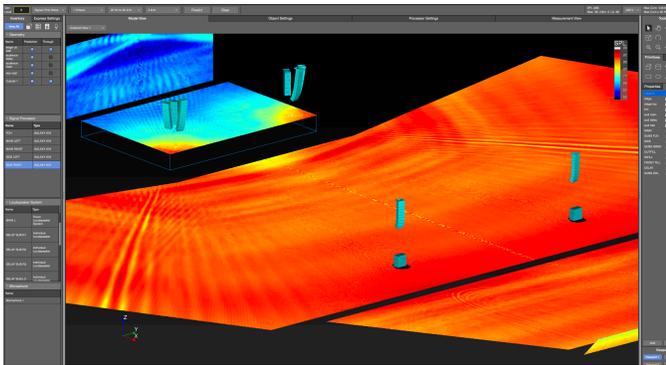


Figure 14: MAPP System Design Tool

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](http://meyersound.com) for more information about and support for 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 [www.meyersound.com](http://www.meyersound.com) to locate their datasheets for more information.

## APPENDIX A: MJF-208/MJF-210 SPECIFICATIONS

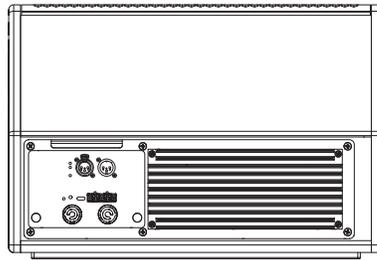
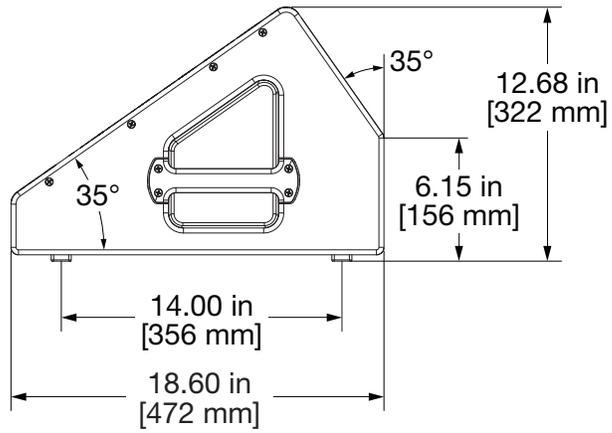
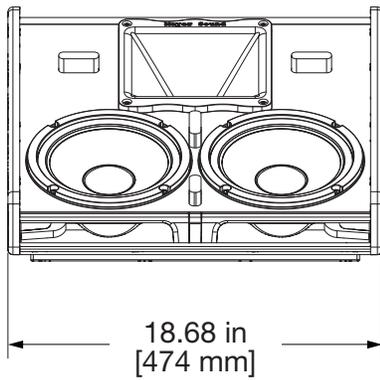
### ACOUSTICAL, ELECTRICAL, AND PHYSICAL SPECIFICATIONS

	MJF-208	MJF-210
<b>ACOUSTICAL</b>		
Operating Frequency Range	55 Hz – 18 kHz	55 Hz – 18 kHz
	<b>Note:</b> Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.	
Frequency Response	60 Hz – 18 kHz $\pm 4$ dB	60 Hz – 16 kHz $\pm 4$ dB
	<b>Note:</b> Measured 1 m on axis with typical boundary loading.	
Phase Response	230 Hz to 16 kHz $\pm 45^\circ$	200 Hz to 16 kHz $\pm 45^\circ$
Linear Peak SPL	<b>129 dB with crest factor &gt;16 dB (M-noise)</b> , 128 dB (Pink noise), 129 dB (B-noise)	<b>134 dB with crest factor &gt;17 dB (M-noise)</b> , 132.5 dB (Pink noise), 132.5 dB (B-noise)
	<b>Note:</b> Linear Peak SPL is measured 1 m on axis with typical boundary loading. Loudspeaker SPL compression measured with M-noise at the onset of limiting, 2-hour duration, and 50 °C ambient temperature is < 2 dB. <b>M-noise</b> 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. <b>Pink noise</b> is a full bandwidth test signal with Peak to RMS ratio of 12.5 dB. <b>B-noise</b> 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.	
Coverage	70° horizontal x 50° vertical	50° horizontal x 70° vertical
<b>TRANSDUCERS</b>		
Low Frequency	Two 8-inch high-power cone drivers; 4 $\Omega$ nominal impedance	Two 10-inch high-power cone drivers; 4 $\Omega$ nominal impedance
High Frequency	One 3-inch diaphragm compression driver; 16 $\Omega$ nominal impedance	One 4-inch diaphragm compression driver; 8 $\Omega$ nominal impedance
<b>AUDIO INPUT</b>		
Type	Differential, electronically balanced	
Maximum Common Mode Range	$\pm 5$ V DC, clamped to earth for voltage transient protection	
Connectors	XLR 3-pin female input with XLR male loop output; optional XLR 5-pin connector to accommodate both balanced audio and RMS signals.	
Input Impedance	10 k $\Omega$ differential between pins 2 and 3	
Wiring	Pin 1: Chassis/earth through 1 k $\Omega$ , 1000 pF, 15 V clamped network to provide virtual ground lift at audio frequencies Pin 2: Signal (+) Pin 3: Signal (-) Pin 4: RMS Pin 5: RMS Case: Earth ground and chassis	
	<b>Note:</b> Pins 4 and 5 (RMS) included only with XLR 5-pin connectors.	
Nominal Input Sensitivity	0 dBV (1.0 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 $\Omega$ to produce the maximum peak SPL over the operating bandwidth of the loudspeaker	

**ACOUSTICAL, ELECTRICAL, AND PHYSICAL SPECIFICATIONS**

AMPLIFIER	MJF-208	MJF-210
Type	Three-channel, class D	
Total Output Power	1770 W peak	1950 W peak
	<b>Note:</b> Peak power based on the maximum unclipped peak voltage the amplifier will produce into the nominal load impedance.	
THD, IM, TIM	< 0.02%	
Cooling	Convection	
<b>AC POWER</b>		
Connector	powerCON 20 with loop output	
Automatic Voltage Selection	90–265 V AC	
Safety Agency Rated Voltage Range	100–240 V AC, 50–60 Hz	
Turn-on and Turn-off Points	90 V AC turn-on, no turn-off; internal fuse-protection above 265 V AC	
<b>Current Draw</b>		
Idle Current	0.26 A rms (115 V AC); 0.25 A rms (230 V AC); 0.28 A rms (100 V AC)	0.26 A rms (115 V AC); 0.25 A rms (230 V AC); 0.28 A rms (100 V AC)
Maximum Long-Term Continuous Current	1.4 A rms (115 V AC); 0.8 A rms (230 V AC); 1.7 A rms (100 V AC)	1.8 A rms (115 V AC); 1.1 A rms (230 V AC); 2.6 A rms (100 V AC)
Burst Current	2.2 A rms (115 V AC), 1.1 A rms (230 V AC), 2.6 A rms (100 V AC)	3.5 A rms (115 V AC); 1.8 A rms (230 V AC); 4.2 A rms (100 V AC)
	<b>Note:</b> 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.	
Maximum Instantaneous Peak Current	6.0 A peak (115 V AC), 2.9 A peak (230 V AC), 6.9 A peak (100 V AC)	8.1 A peak (115 V AC); 3.9 A peak (230 V AC); 9.3 A peak (100 V AC)
Inrush Current	< 20.0 A peak	
<b>RMS (OPTIONAL)</b>		
	Two-conductor twisted-pair network that reports all operating parameters of amplifiers to system operator's host computer.	
<b>PHYSICAL</b>		
Dimensions	W: 18.68 in (474 mm) x H: 12.68 in (322 mm) x D: 18.60 in (472 mm)	W: 23.18 in (589 mm) x H: 13.89 in (353 mm) x D: 20.90 in (531 mm)
Weight	47 lb (21.3 kg)	67 lb (30.4 kg)
Enclosure	Premium multi-ply birch with slightly textured black finish	
Protective Grille	Powder-coated, hex-stamped steel with black mesh screen	
<b>ENVIRONMENTAL</b>		
Operating Temperature	0° C to +45° C	
Non Operating Temperature	–40° C to +75° C	
Humidity	to 95% at 45 °C	
Operating Altitude	to 5,000 m (16,404 ft)	
Non Operating Altitude	to 12,000 m (39,000 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)	

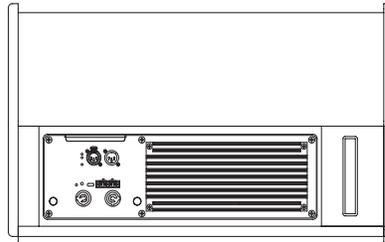
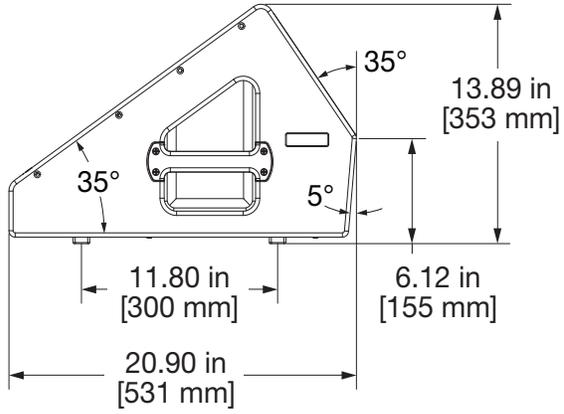
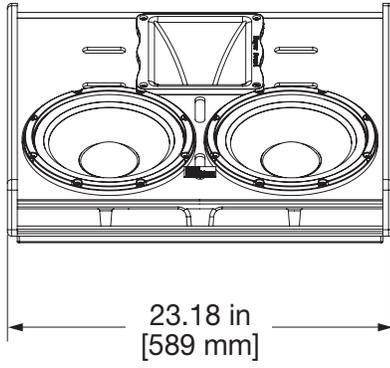
### MJF-208 DIMENSIONS



### MJF-208 Conformity



# MJF-210 DIMENSIONS



# MJF-210 Conformity



FCC Verified  
Class A









THINKING SOUND

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