

1100-LFC Low-Frequency Control Element



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1100-LFC Operating Instructions, PN 05.220.005.01 B4



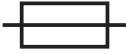


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IMPORTANT SAFETY INSTRUCTIONS

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
Gefährliche Spannungen: Stromschlaggefahr	Hinweis auf wichtige Punkte der Betriebsanleitung	Austauschbare Sicherung	Schutzerde	Heiße Oberfläche: nicht berühren
Pour indiquer les risques résultant de tensions dangereuses	Instructions d'utilisation importantes	Fusible remplaçable	Terre de protection	Surface chaude: ne pas toucher
Para indicar voltajes peligrosos	Instrucciones importantes de funcionamiento y/o Mantenimiento	Fusible reemplazable	Toma de tierra de protección	Superficie caliente: no tocar

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.

PowerCon Use



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 apparatus.
- To reduce the risk of overheating the apparatus, avoid exposing it to direct sunlight. Do not install the apparatus 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 apparatus. The only user-serviceable part is the fuse if so equipped. 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, falls vorhanden. 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
- Branchez l'enceinte sur une prise murale à deux fiches et trois conducteurs avec terre. Cette prise doit être reliée à une ligne électrique protégée par un fusible ou un court-circuit. Utiliser une prise murale de type différent crée des risques d'électrocution, et peut enfreindre des réglementations électriques locales.
- 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. La seule pièce pouvant être réparée par l'utilisateur est le fusible, s'il en est équipé. Toutes les autres réparations doivent être effectuées uniquement par du personnel de maintenance formé en usine.

Todas las demás reparaciones deben ser realizadas únicamente por personal de servicio capacitado de fábrica.

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 dos polos y tres hilos 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 si equipado con él.

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CHAPTER 1: INTRODUCTION

HOW TO USE THIS MANUAL

Make sure to 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 www.meyersound.com.

Meyer Sound Technical Support is available at:

- **Tel:** +1 510 486.1166
- **Tel:** +1 510 486.0657 (after hours support)
- **Web:** www.meyersound.com/support

1100-LFC LOW-FREQUENCY CONTROL ELEMENT

The 1100-LFC low-frequency control element (Figure 1) is a self-powered loudspeaker defined by its sonic linearity in reproducing low-frequency transients at high, continuous output levels with very low distortion. This ultralow distortion, coupled with exceptional headroom and optimized rigging options, makes the 1100-LFC a flexible tool for low-end directional applications for large-scale tours and installations.

To guarantee optimum performance, 1100-LFC systems must be designed with Meyer Sound's MAPP™ prediction software. The intuitive, cross-platform application accurately predicts directional patterns, frequency and impulse responses, and maximum peak SPL for 1100-LFC systems, ensuring that systems deliver the required coverage and SPL.



Figure 1: 1100-LFC Low-Frequency Control Element

An optimally tuned, vented cabinet houses the 1100-LFC's two linear, high-excursion 18-inch cone drivers. The loudspeaker's 28 Hz to 100 Hz operating frequency range complements LEO-M™, LYON™, and other Meyer Sound loudspeakers, allowing it to integrate seamlessly with line arrays and curvilinear arrays.

The unit's onboard power amplifier operates at nominal voltages from 165–264 V AC at 50–60 Hz. TruPower® limiting ensures maximum driver protection, minimizing power compression while yielding high constant output under high continuous and peak power conditions. The amplifier, control electronics, and power supply are contained in a single field-replaceable module located on the rear of the cabinet.

Protective plastic skids are included on the bottom of the 1100-LFC cabinet that securely align with the cabinet's top slots. Units can be stacked normally or reversed for cardioid configurations.

The optional MRK-1100 rigging kit, available as a factory-installed option or field upgrade, includes captive GuideALinks that allow the loudspeaker to be flown from the MTG-1100 top grid (Figure 2). The GuideALinks, located at the front and rear of the cabinet, are easily set with convenient, pinned handles and slots. The GuideALinks also accommodate reversed units for flown cardioid arrays.

With some restrictions, the optional MTG-1100 top grid can suspend line arrays comprised of up to 16 cabinets at a 5:1 safety factor, or up to 12 cabinets at a 7:1 safety factor. The optional MAS-1100 array spacer can be placed between cabinets to lengthen 1100-LFC arrays, improving vertical directionality.



Figure 2: MTG-1100 Top Grid with 1100-LFC Array

For touring and portable systems, the 1100-LFC can travel securely in stacks of three units with the optional MCF-1100 caster frame (Figure 3). Durable nylon covers, accommodating stacks of two or three units, are optionally available to ensure the 1100-LFC is completely road ready.



Figure 3: MCF-1100 Caster Frame with 1100-LFC Stack

Meyer Sound's RMS™ remote monitoring system comes standard with all 1100-LFC loudspeakers and provides comprehensive monitoring of system parameters on a Mac® or Windows®-based computer. Convenient XLR 5-pin connectors allow the use of composite cables carrying both RMS and balanced audio. XLR 3-pin audio connectors are also available.

The 1100-LFC cabinet is constructed of premium multi-ply birch and coated with a slightly textured black finish. A powder-coated, 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.

CHAPTER 2: POWER REQUIREMENTS

The 1100-LFC combines advanced loudspeaker technology with equally advanced power capabilities. Understanding power distribution, voltage and current requirements, and electrical safety guidelines is critical to the safe operation of the 1100-LFC.

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 1100-LFC remains within its 165–264 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 (Two Lines)

Line-Line-Earth/Ground

Figure 4 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 the 1100-LFC tolerates elevated voltages from the ground line and does not require a neutral line. This system delivers 208 V AC to each loudspeaker.

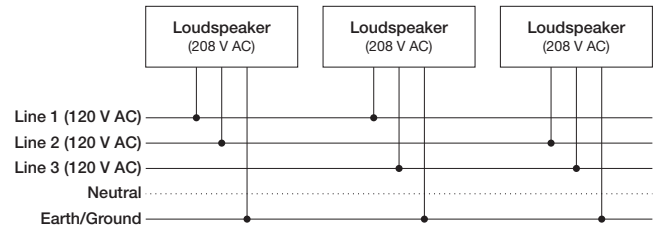


Figure 4: 120 V AC, 3-Phase Wye System (Two Lines to Loudspeakers)

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 5 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.

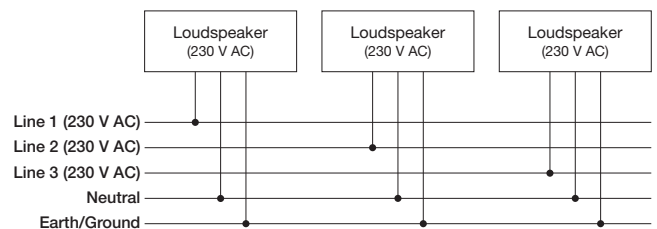


Figure 5: 230 V AC, 3-Phase Wye System (Single Line to Loudspeakers)

CAUTION: For 230 V AC, 3-phase Wye systems, never connect two lines to the AC input of the 1100-LFC, as the resulting voltage would exceed the upper voltage limit (275 V AC) and will damage the loudspeaker.

AC INPUT

The 1100-LFC user panel includes an AC Input connector that supplies power to the loudspeaker. The 3-conductor PowerCON 32 (see Figure 6) is rated at 32 A and uses a locking connector that prevents accidental disconnections.

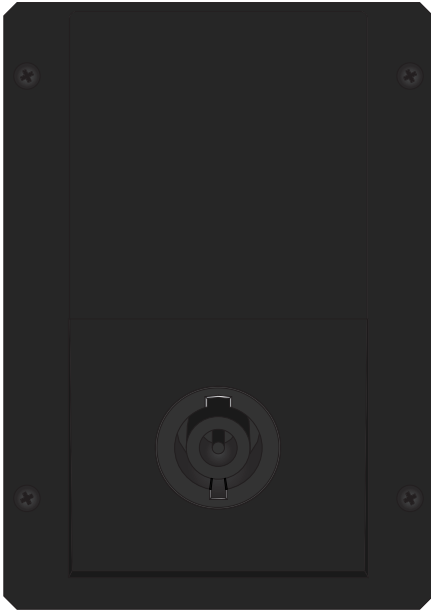


Figure 6: PowerCON 32 AC Input Connector

The 1100-LFC ships with a black powerCON 32 cable mount connector, rated at 32 A, for assembling AC power cables. Make sure to use an AC power cable that is wired correctly (see “Wiring AC Power Cables” on page 13) and equipped with the appropriate power plug (on the other end) for the area in which you will operate the unit.

The 1100-LFC requires a grounded outlet. To operate safely and effectively, it is extremely important that the entire system be properly grounded.

WIRING AC POWER CABLES

The 1100-LFC ships with a black powerCON 32 cable mount connector (Figure 7), rated at 32 A, for assembling AC power cables. The pins on the powerCON 32 cable mount connector are labeled as follows:

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

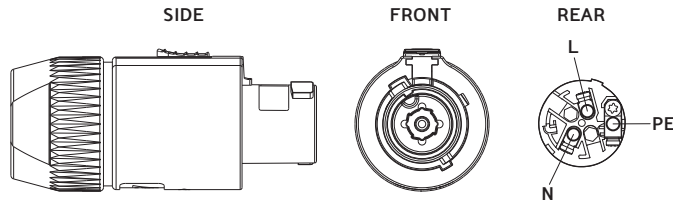


Figure 7: PowerCON 32 Cable Mount Connector

How AC power cables are wired is determined by the type of AC power distribution system used (“AC Power Distribution” on page 11). When wiring AC power cables for single-line systems, use one of the wiring schemes described in Table 1 and illustrated in Figure 8:

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)

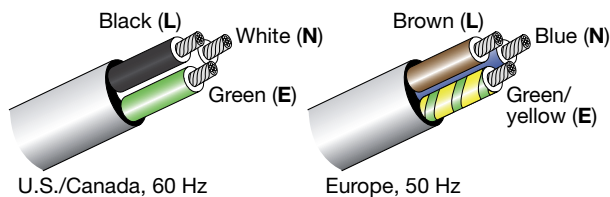


Figure 8: AC Wiring Scheme, illustrated

CAUTION: When wiring 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 1100-LFC 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.

Supported PowerCON 32 Cable Gauges

While the powerCON 32 connector supports cable gauges of 14–10 AWG (2.5–6.0 mm²), because of the 1100-LFC’s current draw, 10 AWG (6.0 mm²) should be used whenever possible.

1100-LFC VOLTAGE REQUIREMENTS

CAUTION: Due to its expanded power capabilities, the 1100-LFC was engineered to operate only at 230 V AC (208–235 V AC) to reduce current draw. Make sure to use AC power cables with sufficient gauge to operate with stable voltages during peaks and that the AC power source is capable of providing enough power.

The 1100-LFC operates as intended when receiving AC voltage within the following range:

- 165–264 V AC, 50–60 Hz

If the voltage drops below 165 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: To ensure that the 1100-LFC performs as specified, without interruption, and without damage to its power supply:

1. Its power source must operate within the required voltage window (208–235 V AC).
2. Its AC cable length and gauge must be such that peak voltage drops do not exceed 5 percent of the supplied voltage.

NOTE: When voltage fluctuates within the loudspeaker’s operating ranges, automatic tap selection stabilizes the voltage. Tap selection is instantaneous with no audible artifacts, allowing continuous operation.

1100-LFC CURRENT REQUIREMENTS

Current draw for loudspeakers 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 to ensure that the size and gauge of the cables conform to electrical code standards. The current rating is also used to select appropriately rated, slow-reacting thermal breakers, which are recommended for loudspeaker power distribution.
- **Burst Current** — The maximum rms current during a period of around 1 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 fast-reacting magnetic breakers.
- **Inrush Current** — The spike of initial current encountered when powering on.

Use the information provided in Table 2 as a guide for selecting the gauge of cables and the circuit breaker ratings for the system’s operating voltage.


Table 2: 1100-LFC Current Draw

Current Draw	230 V AC
Idle	0.6 A rms
Maximum Long-Term Continuous	10.5 A rms
Burst	18 A rms
Maximum Instantaneous Peak	53 A peak
Inrush	<30 A peak

The minimum electrical service amperage required by a loudspeaker system is the sum of the maximum long-term continuous current for all loudspeakers. An additional 30 percent above the combined Maximum Long-Term Continuous amperages 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 (5 percent at 230 V). This ensures that the AC voltage variations from the service entry—or peak voltage drops due to longer cable runs—do not cause the amplifier to cycle on and off.

DO NOT RESET CIRCUIT BREAKERS!

 **CAUTION:** In the unlikely event that one of the 1100-LFC’s circuit breakers trips (the center button disengages), disconnect the AC power cable and contact Meyer Sound for repair information. DO NOT attempt to reset the breaker or reconnect the AC power cable.


INTELLIGENT AC POWER SUPPLY

The 1100-LFC’s Intelligent AC™ power supply 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 on the 1100-LFC

When powering on the 1100-LFC, the following startup events take place over several seconds.

1. Audio output is muted.
2. The primary fan turns on.
3. The power supply ramps up.
4. On the user panel, the Active LED turns solid green, indicating the loudspeaker is unmuted and ready to output audio.

 **CAUTION:** If the Active LED does not turn solid green, or the 1100-LFC does not output audio after 10 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 32 connector should not be engaged or disengaged when under load or energized. Either de-energize or disconnect the other end of the cable.
- The 1100-LFC 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.

- 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.
- Do not operate the loudspeaker if the power cable is frayed or broken.
- Keep all liquids away from 1100-LFC loudspeakers to avoid hazards from electrical shock.
- Use the cable rings (see “Cable Rings” on page 18) on the rear of the the 1100-LFC cabinet to reduce strain on the AC power cable (and audio cables). Do not use the cable rings for any other purpose.

CHAPTER 3: AMPLIFICATION AND AUDIO

The 1100-LFC's drivers are powered by a proprietary two-channel amplifier with bridged MOSFET output stages. The audio signal is processed with correction filters for flat phase and frequency responses and by driver protection circuitry. Each channel has peak and rms limiters that prevent driver over-excursion and regulate voice coil temperatures.

The 1100-LFC user panel (Figure 9) includes Input and Loop output connectors for audio, Limit and Active LEDs, and RMS connectors and controls (see Chapter 5, "RMS Remote Monitoring System").

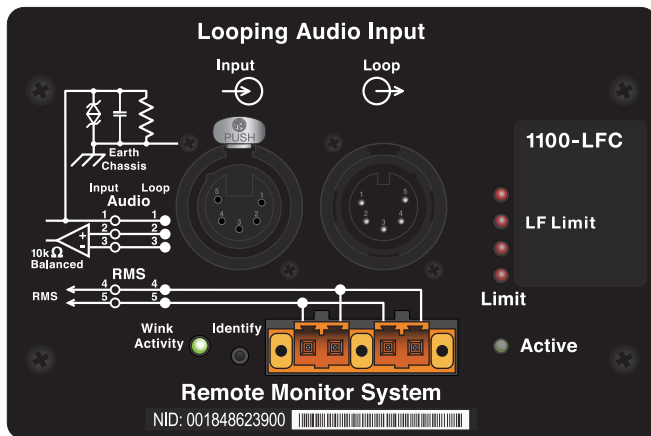


Figure 9: 1100-LFC User Panel

AUDIO CONNECTORS

The 1100-LFC is available with XLR 3-pin or 5-pin connectors for audio Input and audio Loop output (Figure 10 and Figure 11). XLR 5-pin connectors accommodate both balanced audio and RMS signals.

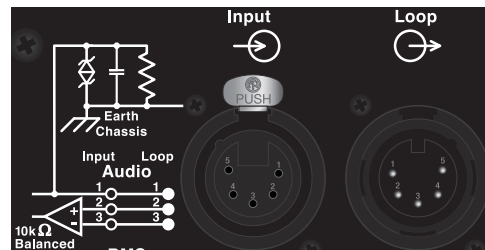


Figure 10: XLR 5-Pin Audio Connectors, Input and Loop Output

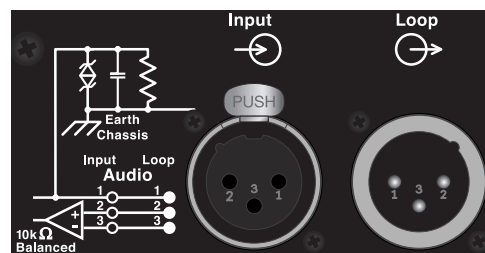



Figure 11: XLR 3-Pin Audio Connectors, Input and Loop Output


Audio Input (XLR 3-Pin or 5-Pin Female)

The XLR 3-pin or 5-pin female Input connector accepts balanced audio signals with an input impedance of 10 kOhm. The connector uses the following wiring scheme:

- **Pin 1** — 1 kOhm 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


 **NOTE:** Pins 4 and 5 (RMS) are included only with XLR 5-pin connectors.

Pins 2 and 3 carry the input as a differential signal. Pin 1 is connected to earth through a 1 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 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, AC power, and electrical ground.

Audio Loop Output (XLR 3-Pin or 5-Pin Male)


The XLR 3-pin or 5-pin male Loop output connector allows multiple loudspeakers to be looped from a single audio source. The Loop output connector uses the same wiring scheme as the Input connector (see “Audio Input (XLR 3-Pin or 5-Pin Female)” on page 17). For applications that require multiple 1100-LFCs, connect the Loop output of the first loudspeaker to the Input of the second loudspeaker, and so forth.


 **NOTE:** The Loop output connector is wired in parallel to the Input connector and transmits the unbuffered source signal even when the loudspeaker is powered off.


Calculating Load Impedance for Looped Audio Signals

To avoid distortion when looping multiple 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 approximately 20 dBV (10 V rms into 600 ohms) to yield the maximum SPL over the operating bandwidth of the loudspeakers.

To calculate the load impedance for the looped loudspeakers, divide 10 kOhms (the input impedance for a single loudspeaker) by the number of looped loudspeakers. For example, the load impedance for ten 1100-LFCs 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 1100-LFCs with other Meyer Sound self-powered loudspeakers.

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

 **TIP:** Audio outputs from Meyer Sound’s Galileo GALAXY Network Platform have an output impedance of 50 ohms. Each output can drive up to 20 Meyer Sound (10 kOhm) loudspeakers without distortion.

 **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.

CABLE RINGS

Two cable rings are provided on the rear of the 1100-LFC cabinet (Figure 12). Power and audio cables should be tied off to the rings to reduce strain on the cables and prevent damage to them during installation. The cable rings should not be used for any other purpose.

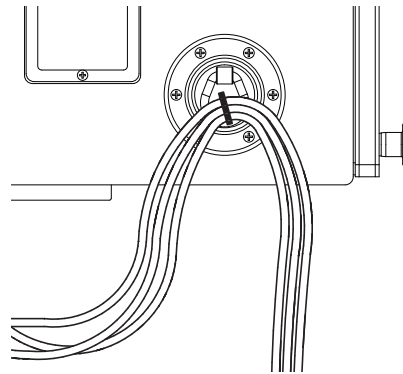



Figure 12: Cables Tied Off to Cable Ring

 **CAUTION:** The 1100-LFC cable rings should only be used to reduce strain on cables. The cable rings should not be used for any other purpose.

TRUPOWER LIMITING

The 1100-LFC employs Meyer Sound’s advanced TruPower® limiting. Conventional limiters assume a constant driver impedance and set the limiting threshold by measuring voltage alone. This method is inaccurate because driver impedances change as frequency content in

the source material changes and as thermal values for the driver’s voice coil and magnet vary. Consequently, conventional limiters often begin limiting prematurely, which reduces system headroom and dynamic range.

In contrast, TruPower limiting anticipates varying driver impedances by measuring both current and voltage to compute the actual power dissipation in the voice coil. This approach improves performance, both before and during limiting, by allowing the driver to produce the maximum SPL across its entire frequency range, while also retaining signal peaks. TruPower limiting also eliminates power compression at high levels over lengthy periods, which helps regulate voice coil temperatures, thereby extending the life of the driver.

LF Limit LED

The two low-frequency drivers for the 1100-LFC are powered by separate amplifier channels that are routed to a single limiter. When a safe power level is exceeded in either channel, limiting is engaged for both channels and the LF Limit LED lights (Figure 13) on the user panel.

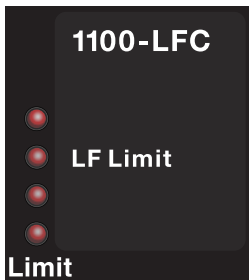


Figure 13: 1100-LFC Limit LEDs

When engaged, the limiter not only protects the drivers but also prevents signal peaks from causing excessive distortion in the amplifier channels, thereby preserving headroom and maintaining smooth frequency response at high levels. When levels return to normal, below the limiter threshold, limiting ceases.

The 1100-LFC performs within its acoustical specifications at normal temperatures when the LF Limit LED is unlit, or when the LED is lit for 2 seconds or less and then turns off for at least 1 second. If the 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
- Drivers are subjected to excessive heat and excursion, thereby compromising their lifespan

CAUTION: The Limit LEDs indicate when a safe, optimum level is exceeded. If an 1100-LFC loudspeaker system begins to limit before reaching the desired SPL, consider adding more loudspeakers to the system.

NOTE: The 1100-LFC uses an optical limiter that adds no noise and has no effect on the signal when limiting is not engaged.

AMPLIFIER COOLING SYSTEM

The 1100-LFC employs forced-air cooling with six ultra high-speed fans (three primary, and three reserve) to prevent the amplifier and power transformer from overheating (see Table 3 for details). The fans draw air in through ducts on the rear of the cabinet, over the heat sinks, and out the rear of the cabinet. Because dust does not accumulate in the amplifier and power circuitry, their lifespans are increased significantly.

CAUTION: To keep the 1100-LFC from overheating, allow at least 6 inches behind the cabinet for proper ventilation.

Table 3: 1100-LFC Fans

	Primary Fans		Reserve Fans	
Type	Ultrahigh-speed		Ultrahigh-speed	
Number	3		3	
Location	1 for each heat sink (2); 1 for power transformer		1 for each heat sink (2); 1 for power transformer	
Fan speeds and heat sink temp.	<34 °C	Half speed	<52 °C	Off
	34–50 °C	Ramps up	>52 °C	Full speed
	50–84 °C	Full speed		
	>95 °C	Audio muted, fans continue at full speed	>95 °C	Audio muted, fans continue at full speed
	<86 °C	Audio unmuted, fans continue at full speed	<86 °C	Audio unmuted, fans continue at full speed

CAUTION: If an 1100-LFC loudspeaker system consistently overheats before reaching the desired SPL, consider adding more loudspeakers to the system.



NOTE: In the unlikely event that the 1100-LFC power transformer reaches a temperature of 127 °C, the limiter threshold is reduced by 3 dB. When the temperature cools to 107 °C, the limiter threshold returns to normal.



TIP: When the 1100-LFC is connected to an RMS network, the Compass RMS software provides additional feedback on the loudspeaker's hardware status and operating temperature. For more information, see Chapter 5, "RMS Remote Monitoring System."

CHAPTER 4: QUICKFLY RIGGING

IMPORTANT SAFETY CONSIDERATIONS!

When installing Meyer Sound loudspeakers and subwoofers, 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 (roof truss), and not just to the wall surface.
- Make sure bolts and eyebolts are tightened securely. Meyer Sound recommends using Loctite® on all threaded fasteners.
- Inspect mounting and rigging hardware regularly. Immediately replace any worn or damaged components.

1100-LFC RIGGING OPTIONS

Table 4 summarizes the available rigging options for the 1100-LFC. For complete information about rigging hardware, including dimensions, weight, configuration, and load ratings, refer to the MTG-1100 Assembly Guide (PN 05.220.030.01) available at www.meyersound.com.

Table 4: 1100-LFC Rigging Options

Model	Weight	Features	Required Quick-Release Pins	Required Shackles
MRK-1100 rigging kit (PN 40.220.027.01)	—	Allows the 1100-LFC to be flown from the MTG-1100 grid; includes four captive GuideALinks and eight quick-release pins	0.5 x 1.25-inch (blue button), PN 134.044, qty 8 included	—
MTG-1100 top grid (PN 40.220.030.01)	195 lbs (88.5 kg)	With some restrictions, flies up to 16 1100-LFCs at a 5:1 safety factor, or up to 12 1100-LFCs at a 7:1 safety factor; accommodates a variety of pickup configurations with six pickup points; includes attachment points to accommodate brackets and adapters for lasers and inclinometers	0.5 x 1.50-inch (red button), PN 134.045, qty 4 included	7/8-inch
MVP motor Vee plate (PN 40.215.184.01)	20 lb (9.1 kg)	Fine tunes the horizontal aim of arrays; compatible with MTG-LEO-M, MTG-LYON, MTG-1100, and MG-LEOPARD/900 grids	—	3/4-inch or 7/8-inch
MAS-1100 array spacer (PN 40.220.080.01)	82 lbs (37.2 kg)	Placed between cabinets in 1100-LFC arrays to lengthen the array and improve vertical directionality; includes four captive GuideALinks and eight quick-release pins	0.5 x 1.25-inch (blue button), quantity 8, PN 134.044	—
MCF-1100 caster frame (PN 40.220.039.01)	138 lbs (62.6 kg)	Safely transports up to three 1100-LFC cabinets, making it easy to assemble and disassemble arrays in blocks of three cabinets	0.5 x 1.25-inch (blue button), PN 134.044, qty 0 included	—



NOTE: The MCF-1100 caster frame does not include quick-release pins because it is secured with the quick-release pins included with the loudspeaker.

GROUNDSTACKING 1100-LFC LOUSPEAKERS

1100-LFCs can be groundstacked up to four cabinets high, with or without the MRK-1100 rigging kit (Figure 14). Protective plastic skids are included on the bottom of the 1100-LFC cabinet that align with the slots on the cabinet top. Loudspeakers can be stacked normally or reversed for cardioid configurations. When groundstacking 1100-LFCs, make sure the skids for each cabinet align with the slots in the cabinet tops.

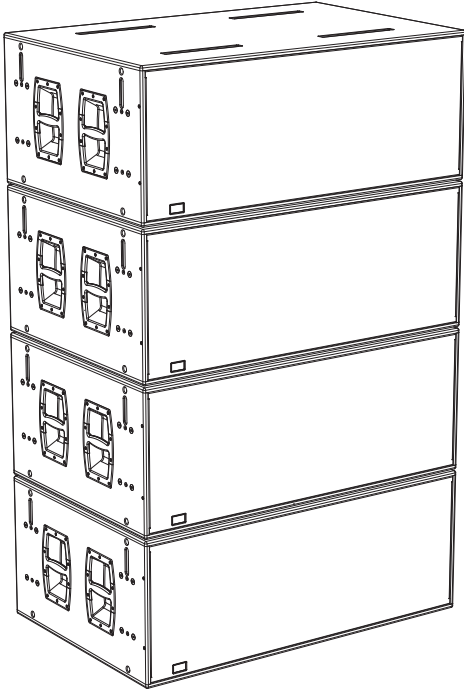


Figure 14: 1100-LFC Groundstack (Without Rigging)

CAUTION: As a safety precaution, to avoid tipping, a maximum of four cabinets is supported for groundstacked 1100-LFCs.

NOTE: 1100-LFCs need not be equipped with the MRK-1100 rigging kit for secure groundstacking of up to four cabinets.

1100-LFC CARDIOID ARRAYS

The 1100-LFC can be configured in cardioid arrays to reduce output heard behind the loudspeakers (Figure 15). The loudspeaker's linearity ensures that cardioid patterns behave accurately even at very high levels. Cardioid arrays are achieved by placing three loudspeakers coplanar to each other (in either a groundstacked or flown array) with one loudspeaker facing the opposite direction. Polarity and delay processing is applied to the rear-facing loudspeaker, which

yields output that cancels the output of the front-facing loudspeakers behind the array. Example: for the rear-facing loudspeaker, reverse the polarity relative to the front-facing loudspeakers and add 5.2 ms of delay relative to the front-facing loudspeakers.

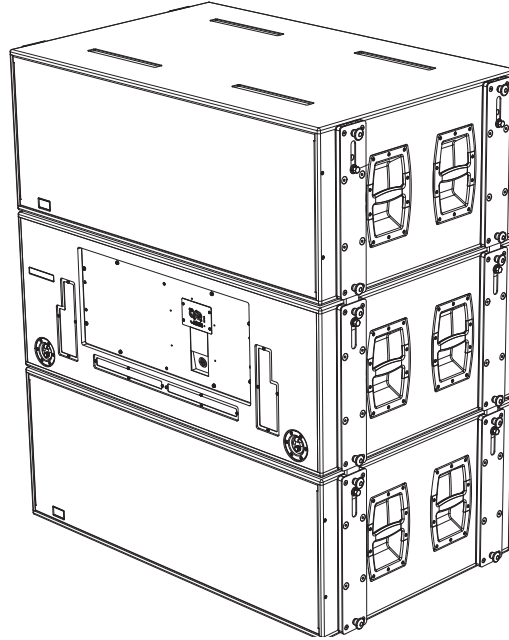


Figure 15: 1100-LFC Cardioid Groundstack (With Rigging)

NOTE: 1100-LFCs need not be equipped with the MRK-1100 rigging kit for groundstacked cardioid configurations of up to three cabinets.


NOTE: 1100-LFC cardioid arrays can also be flown from the MTG-1100 grid. For more information, refer to the MTG-1100 Assembly Guide (PN 05.220.030.01) available at www.meyer-sound.com.

NOTE: To achieve an accurate cardioid pattern, Meyer Sound's MAPP prediction software and the Galileo® GALAXY Network Platform are required. Use MAPP to calculate the appropriate ratio of forward to rear-facing loudspeakers. A myriad of cardioid and directional configurations are possible and can be calculated and predicted with MAPP. For more information, contact Meyer Sound Technical Support.

MRK-1100 RIGGING KIT

The optional MRK-1100 allows the 1100-LFC to be flown from the MTG-1100 top grid. The rigging kit is available as a factory-installed option or as a field upgrade and uses rugged GuideALinks and intuitive quick-release pins to securely link

adjacent loudspeakers in flown and groundstacked array configurations.

 **NOTE:** For more information about the MRK-1100 rigging kit, including its kit contents, weight, and installation instructions, refer to the MTG-1100 Assembly Guide (PN 05.220.030.01) available at www.meyersound.com.

1100-LFC GUIDEALINKS

When equipped with the MRK-1100 rigging kit, the 1100-LFC includes four captive GuideALinks and four mating link slots that link to adjacent loudspeakers in flown and groundstacked arrays. Located at the top corners of the cabinet, GuideALinks extend up and into the link slots of the cabinet above it (Figure 16 and Figure 17), or into the link slots of the MTG-1100 grid, making it easy to link cabinets when they are stacked. GuideALinks extend and retract with knobs and are secured with two quick-release pins (one each in the top and bottom cabinets). GuideALinks accommodate reversed loudspeakers for cardioid arrays. The MRK-1100 rigging kit includes eight 0.5 x 1.25-inch quick-release pins (blue button) (PN 134.044).

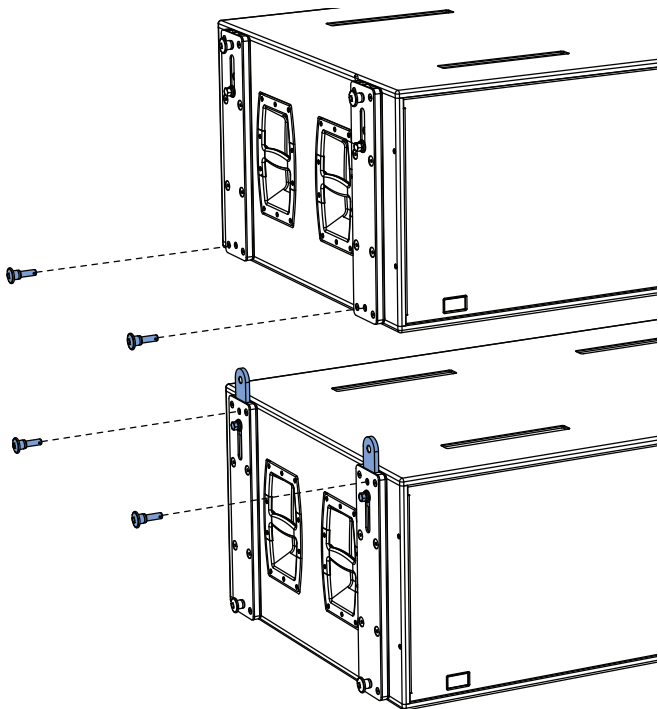



Figure 16: 1100-LFCs with MRK-1100 Rigging Kit, GuideALinks, Exploded View

 **NOTE:** refer to the MTG-1100 Assembly Guide (PN 05.220.030.01) available at www.meyersound.com.

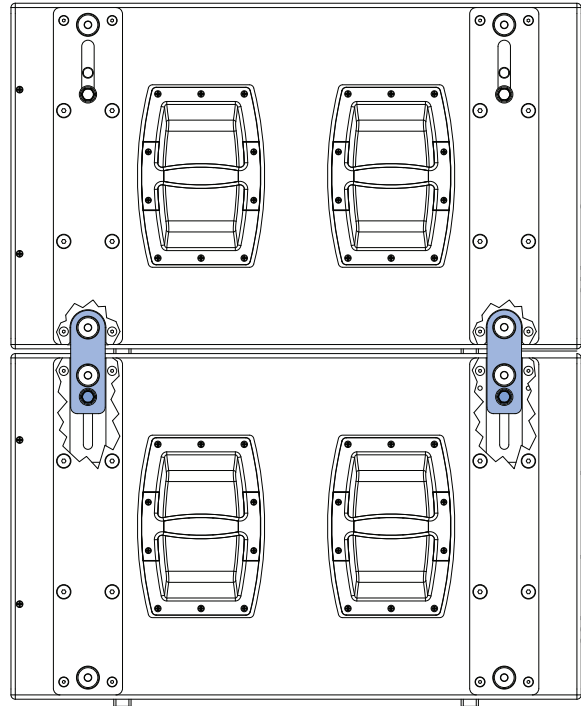


Figure 17: 1100-LFCs with MRK-1100 Rigging Kit, GuideALinks Exposed

MAS-1100 ARRAY SPACER

THE MAS-1100 array spacer improves subwoofer array performance by adding significant line length with minimal weight gain, cost or sidelobes. Myer Sound sized the MAS-1100 to provide the maximum increase in line length without compromising structural integrity or acoustical performance. For more details, see both the MAS-1100 Array Spacer Application Note (PN 18.220.087.01) and the MTG-1100 Assembly Guide (PN 05.220.030.01) available at <https://meyersound.com/product/1100-lfc/>

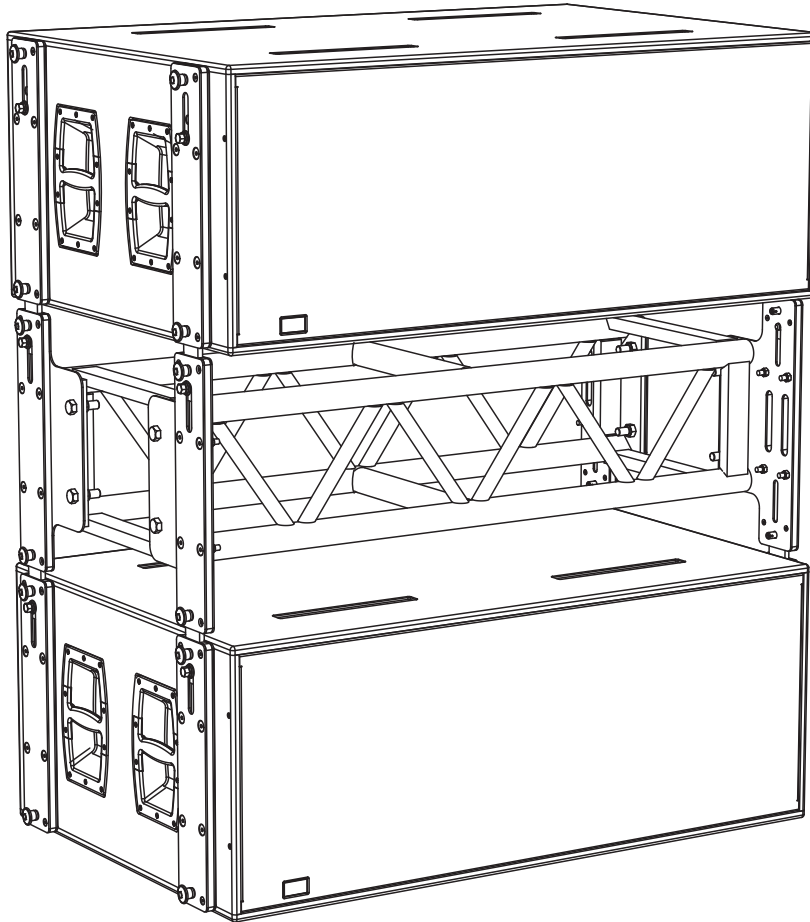





Figure 18: Two 1100-LFC with MAS-1100 Array Spacer

CHAPTER 5: RMS REMOTE MONITORING SYSTEM

The 1100-LFC includes an RMS remote monitoring system module, allowing the loudspeaker 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 RMS host computer communicates with Meyer Sound loudspeakers (equipped with RMS modules) via RMsServer™, a compact, Ethernet-based hardware unit with two FT-10 RMS dataports. 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 the Meyer Sound website (<http://www.meyersound.com>).

 **NOTE:** The 1100-LFC includes an internal Mute Jumper that enables RMS mute and solo capability. The loudspeaker currently ships with the Mute Jumper installed. Compass RMS also allows you to disable Mute and Solo functions to eliminate any possibility of accidentally muting loudspeakers.

 **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. After loudspeakers are identified on the RMS network, they appear in Compass RMS as icons that can be customized to suit your needs (Figure 19).

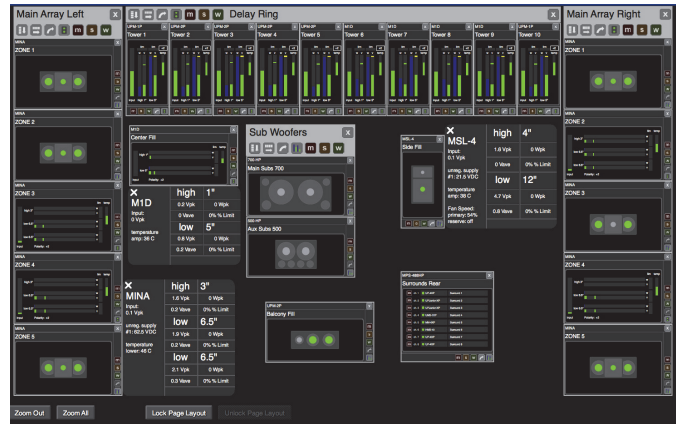


Figure 19: Compass RMS Window

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 Identify 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.

RMS MODULE

The 1100-LFC RMS user panel includes an Identify button, Wink/Activity LED, and two Network connectors (Figure 20).



Figure 20: 1100-LFC 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 26).
- To *wink* a discovered loudspeaker, press the Identify button. The Wink 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, either by clicking the Wink button in Compass RMS or by pressing the Identify button on the RMS user panel, 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.

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

Use the Identify button to reset the 1100-LFC 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/Status LED flashes on and off, release the Identify button. The RMS module is reset and the loudspeaker is removed from the RMS network.

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 RMS blocks allow Weidmuller connectors to be securely attached to the RMS module with screws.

CHAPTER 6: SYSTEM DESIGN AND INTEGRATION TOOLS

This chapter introduces MAPP, Meyer Sound's patented system design tool, and SIM, a comprehensive system for measurement and analysis.

MAPP SYSTEM DESIGN TOOL

The MAPP System Design Tool (Figure 21) is a powerful, cross-platform application for accurately predicting the coverage pattern, frequency response, phase response, impulse response, and SPL capability of single or arrayed Meyer Sound loudspeakers.

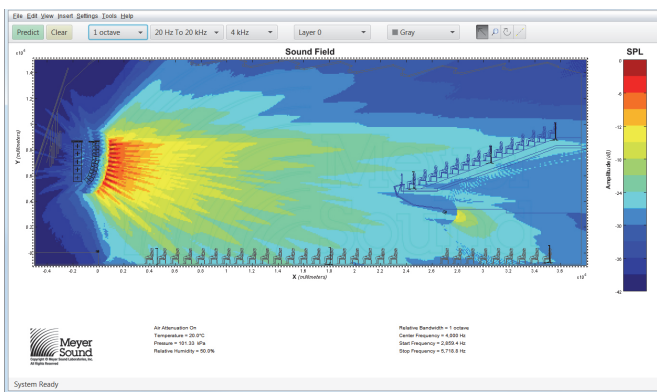


Figure 21: MAPP System Design Tool

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 expected, 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 720 1/48th-octave-band measurements taken with a SIM audio analyzer 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 client software lets you configure Meyer Sound loudspeaker systems and define the environment in which they operate, including air temperature, pressure, humidity, and even the location and composition of surfaces. You can also import CAD (.DXF) files containing detailed venue information to act as a visual aid.

MAPP prediction requests are sent by the client software to Meyer Sound servers, where complex, high-resolution (magnitude and phase) polar data is processed with sophisticated acoustical prediction algorithms. The resulting predictions are then displayed in the MAPP client software.



TIP: Meyer Sound offers seminars and webinars on using MAPP. For more information, visit www.meyersound.com.

MAPP Capabilities

With MAPP, you 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 sound field 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 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 full-system PDF reports for client presentations

SIM MEASUREMENT SYSTEM

The SIM audio analyzer is a high-resolution audio measurement system comprising software, hardware, microphones, and accessory cables. SIM presents measured audio frequencies at a resolution of 48 points per octave, where the 48 points per octave are arranged in even frequency increments in each octave group, equal to the total frequencies in that octave divided by 48. This resolution allows application of precise corrections to balance system response using frequency and phase domain information.

Source Independent Measurement Technique

The SIM audio analyzer implements Meyer Sound's source independent measurement technique. This dual-channel method makes analysis of statistically unpredictable excitation signals possible. Any excitation signal, within the desired frequency range, can be used to obtain highly accurate measurements for acoustical or electronic systems.

For example, during a performance, both the input signal and the measured output of the loudspeaker system can be analyzed by SIM and the results can be used to:

- View measurement data as amplitude versus time (impulse response) or amplitude and phase versus frequency (frequency response)
- View single-channel frequency domain data with a logarithmic frequency axis
- Determine and internally compensate for propagation delays using the SIM Delay Finder

SIM Applications

SIM's main applications are testing and aligning loudspeaker systems, which entails:

- Measuring propagation delays between subsystems to determine appropriate delay times
- Verifying correct polarity
- Measuring and comparing phase responses of subsystems
- Measuring variations in frequency response caused by the acoustical environment and the placement and interaction of loudspeakers to determine corrective equalization
- Optimizing subwoofer integrations
- Optimizing loudspeaker arrays

SIM can also be used in the following applications:

- Microphone calibration and equalization
- Transducer evaluation and correction
- Echo detection and analysis
- Vibration analysis
- Architectural acoustics

APPENDIX A: MEYER SOUND WEATHER PROTECTION

The Weather Protection option from Meyer Sound is intended to increase the useful life of Meyer Sound loudspeakers when they are installed outdoors and exposed to different and often harsh weather conditions. Our Weather Protection includes a penetrating treatment to raw wood, use of special primers, and plating on all steel parts used (or alternatively, the use of stainless steel hardware). Weather Protection is designed to prevent malfunctions caused by harsh operating environments and slows the accelerated wear and tear that occurs in outdoor environments.

When Is Weather Protection Advisable?

Weather Protection is strongly recommended for all permanent outdoor installations where loudspeakers are directly exposed to the elements. This includes desert and semi-arid climates, where protection against dust and sand is important, and where infrequent rainstorms can contribute to deterioration of loudspeaker components.

Weather Protection is also recommended when the loudspeakers are sheltered from direct exposure to precipitation but are nevertheless exposed to prolonged high humidity, fog or mist. Examples would be installations on covered outdoor terraces or pavilions.

Weather Protection is further advisable for portable or touring systems when any significant outdoor use is anticipated. Even though standard procedures may call for using external protective measures, these are often not implemented in time to prevent moisture intrusions that could lead to premature performance degradation of the loudspeaker.

Climate Variation and Owner Maintenance

The wear and tear on a loudspeaker will vary significantly with different climatic conditions. For example, a weather-protected loudspeaker installed in a sunlight-exposed location on an ocean pier will experience much harsher conditions than a loudspeaker in a similar installation that is shaded by trees and exposed only to rainfall. The constant exposure to direct UV radiation and salt air environment will cause a loudspeaker to wear more quickly than one with partial UV shielding and exposed only to freshwater moisture.

Wear can eventually affect the performance of the loudspeaker. It also affects aesthetics. For example, in salt

air environments, the exterior grille can quickly show signs of oxidation, causing unsightly discoloration.


Apart from selecting suitable weather protection, the progress of wear and tear on the loudspeaker can be slowed by a regular schedule of inspection and cleaning. This maintenance is particularly necessary in harsh environments. Inspection and cleaning should include routine removal of any visible oxidation or environmental particulates, as these can accelerate metal corrosion or decay of the cabinet. If installed loudspeakers are not in use for an extended period, exterior protection or temporary removal and storage of the loudspeakers should be considered.

Benefits of Weather Protection

There are several benefits to selecting the Meyer Sound Weather Protection option:

Functionality - Weather Protection prolongs the service life of the loudspeaker by preventing premature degradation of internal components.

Safety - Weather Protection lessens the chance of electrical malfunctions or structural failures.

 **WARNING:** IT IS THE RESPONSIBILITY OF PURCHASERS/USERS/OPERATORS TO SELECT WEATHER PROTECTION WHEN APPROPRIATE FOR THEIR USE AND TO PERIODICALLY INSPECT THEIR LOUDSPEAKER INSTALLATIONS FOR ANY DETERIORATION THAT MAY LEAD TO SAFETY CONCERNS.

Aesthetics - Weather Protection slows wear and tear on the exterior of the loudspeaker in harsh conditions. Early signs of wear and tear on the exterior of the loudspeaker indicate over-exposure to the elements.

Standards Compliance - Weather Protection helps in meeting IP ratings for loudspeakers. IP ratings are an internationally recognized standard often used in installations involving our products. A further explanation of IP ratings is given in the "IP Ratings" Section on page 31.

WEATHER PROTECTION COMPONENTS

Standard Weather Protection

Meyer Sound designs toward an IP rating of IPX4 (see “IP Ratings” on page 31) for Standard Weather Protection, which includes the following components:

- Wood treatment—Prior to cabinet manufacturing, the raw wood receives a special treatment that penetrates and stabilizes the wood fibers to withstand a wide range of temperatures and exposure to extreme humidity.
- Cabinet finishing—The assembled cabinets receive a highly impervious finish that includes a sealing primer and a finishing topcoat. The coatings are applied on both surfaces, with one coat on the interior and two on the exterior. The final step is a two-part modified acrylic urethane similar to that used in military applications.
- Driver treatment—All cone drivers are coated with a water-resistant sealant.
- Exterior protection—Grille frames are coated to resist corrosion, and all components that mount to the cabinet use custom gaskets and stainless steel fasteners.
- Removable rain hood—The rain hood is designed to shield connectors even in wind-driven rain.

If in doubt about an installation method, contact Meyer Sound Technical Support for assistance.

Always discuss the environmental conditions of your Meyer Sound installation with your Sales Manager, and verify the availability of Weather Protection for your selected loudspeaker models. The Sales Manager, together with Technical Support, will verify the appropriate level of weather protection for the loudspeakers and related rigging hardware.

INSTALLATION PRACTICES

Meyer Sound assumes normal and accepted installation practices are used when installing Meyer Sound Loudspeakers outdoors. Deviation from such practices may cause weather protection to be ineffective and void the warranty for the loudspeaker.

Examples of unacceptable and acceptable installation practices include:

- Loudspeakers installed outdoors should not face upward.
- Loudspeakers with a rain hood should be installed in such a way that the rain hood opening is not facing any direction but down.
- Meyer Sound-supplied rigging components should not be modified (for example, by drilling additional holes in a MUB for mounting to a wall). When an installer/integrator modifies a Meyer Sound supplied rigging component to support their installation method, it is considered compromised and out of warranty.
- All loudspeaker cabling must be installed with a "drip-loop" or equivalent method to ensure that rain/water is NOT wicked toward the loudspeaker.

IP RATINGS

IP stands for "Ingress Protection." The current format for expressing an IP rating is a 2-digit code. The first digit of an IP rating represents protection from solid objects. The second digit of an IP rating represents protection from water or moisture. Table 5 provides a chart of IP ratings and the corresponding definitions of the rating.



NOTE: IP ratings only apply to the "ENCLOSURE." A loudspeaker is considered an enclosure and as such we can apply an IP rating to it. Rigging hardware is not an enclosure and therefore IP ratings do not apply. Also, cable and cable-mount connectors used to connect to the loudspeaker are NOT part of the enclosure and therefore not part of the IP rating. Only the chassis-mounted part of the connector is considered part of the enclosure.

Table 5: 1100-LFC IP Ratings Definition Chart

First Digit (Protection against solid objects)	Definition	Second Digit (Protection against liquids)	Definition
X	Characteristic numeral is not required to be specified.	X	Characteristic numeral is not required to be specified.
0	No protection	0	No protection
1	Protected against solid objects over 50mm.	1	Protected against vertically falling drops of water.
2	Protected against solid objects over 12 mm.	2	Protected against direct sprays up to 15° from the vertical.
3	Protected against solid objects over 2.5mm.	3	Protected against direct sprays up to 60° from the vertical
4	Protected against solid objects over 1 mm.	4	Protected against direct sprays from all directions. Limited ingress permitted
5	Protected against dust. Limited ingress permitted.	5	Protected against low-pressure jets of water from all directions. Limited ingress permitted.
6	Totally protected against dust.	6	Protected against strong jets of water from all directions. Limited ingress permitted.
		7	Protected against the effect of temporary immersion between 15cm and 1m.
		8	Protected against the effect of long-term submersion of 1m or more.

APPENDIX B: RAIN HOODS

The 1100-LFC is optionally available with weather protection for fixed, outdoor installations. Weather-protected units include a collapsible rain hood that protects the loudspeaker's connectors from water intrusion.

EXPANDING THE 1100-LFC COLLAPSIBLE RAIN HOOD

To expand the 1100-LFC collapsible rain hood:

1. Remove the rain hood's Velcro straps.
2. Expand the rain hood's fabric fully upward and outward.
3. Reach inside the rain hood and free the two struts (Figure 22) from the top corner pockets nearest the loudspeaker.

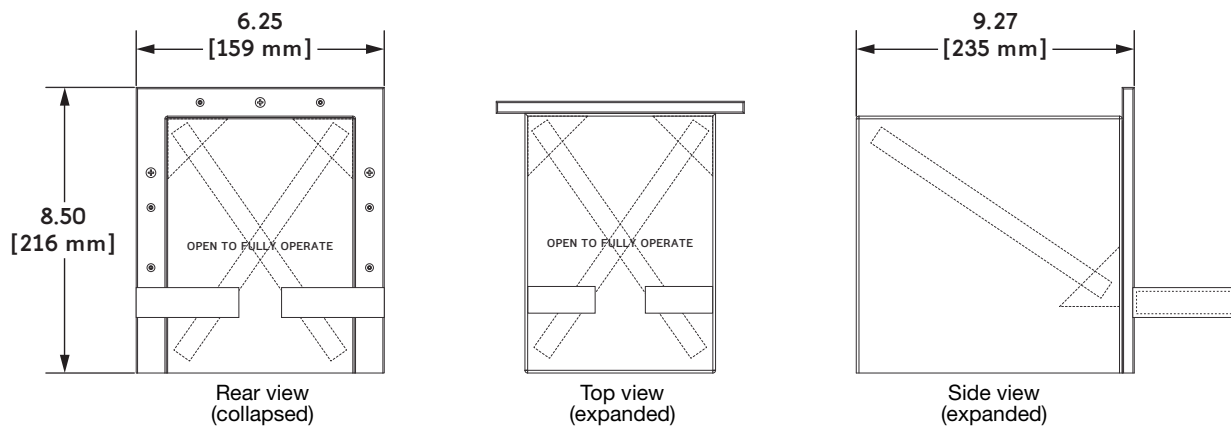


Figure 22: Rain Hood Struts

4. Fold the two struts downward and outward and insert them into the two side pockets to expand the rain hood (Figure 23).

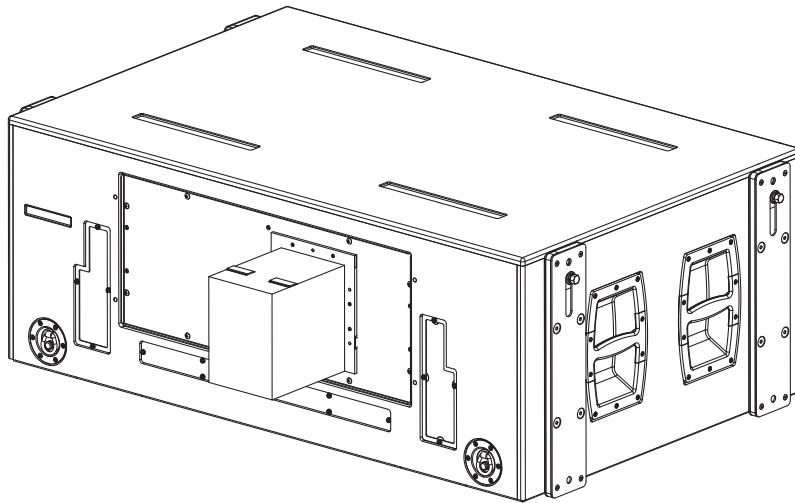


Figure 23: 1100-LFC with Rain Hood Expanded



NOTE: For 1100-LFC dimensions with the rain hood expanded, see “1100-LFC Dimensions with Rain Hood Expanded” on page 38.

APPENDIX C: SPECIFICATIONS




NOTE: Loudspeaker system predictions for coverage and SPL are available in Meyer Sound's MAPP prediction software.

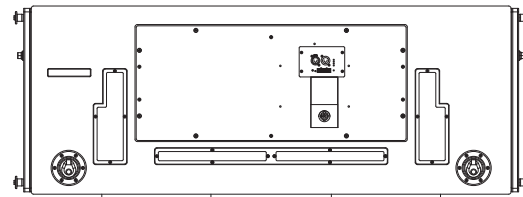
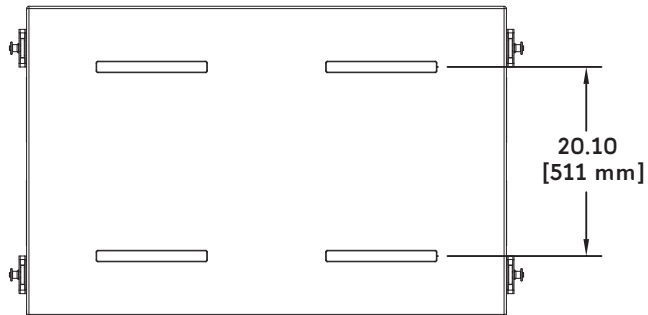
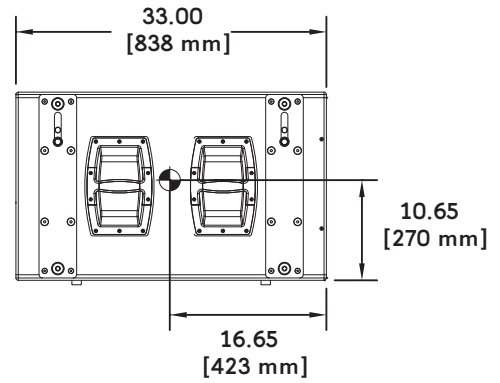
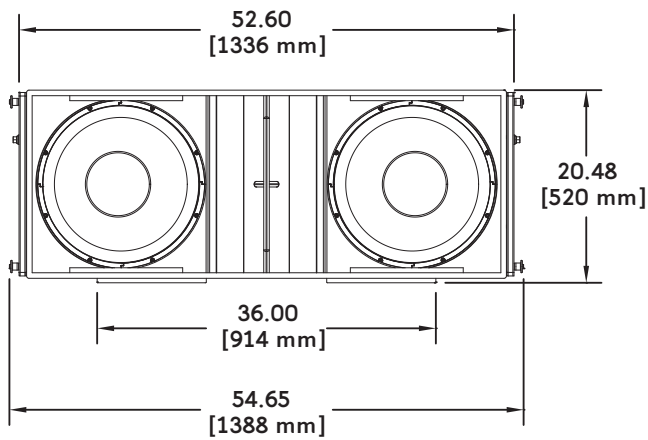
1100-LFC Specifications

ACOUSTICAL	
Operating Frequency Range	28 Hz – 100 Hz Note: Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
Frequency Response	30 Hz – 85 Hz \pm 4 dB Note: Measured in half-space with pink noise at 4 m, 1/3-octave frequency resolution.
Phase Response	34 Hz to 82 Hz \pm 30 degrees
Linear Peak SPL	140 dB with crest factor >9.5 dB (M-noise) , 140 dB (Pink Noise), 141 dB (B-noise) Note: Linear Peak SPL is measured in half-space 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.
COVERAGE	
	360° (single unit); Varies with number of units and configuration.
TRANSDUCERS	
Low Frequency	Two 18 in long-excursion cone drivers; 8 Ω nominal impedance
AUDIO INPUT	
Type	Differential, electronically balanced
Maximum Common Mode Range	\pm 15 V DC, clamped to earth for voltage transient protection
Connectors	XLR 5-pin female with male loop output; XLR 3-pin female connectors available to accommodate only balanced audio (no RMS signals)
Input Impedance	10 k Ω differential between pins 2 and 3
Wiring	Pin 1: Chassis/earth through 220 k Ω , 1000 pF, 15 V clamped network to provide virtual ground lift at audio frequencies Pin 2: Signal (+) Pin 3: Signal (-) Pin 4: RMS (polarity insensitive) Pin 5: RMS (polarity insensitive) Case: Earth ground and chassis Note: Pins 4 and 5 (RMS) included only with XLR 5-pin connector that accommodates both balanced audio and RMS signals.
Nominal Input Sensitivity	0.0 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 Ω to produce the maximum peak SPL over the operating bandwidth of the loudspeaker

1100-LFC Specifications

AMPLIFIER			
Type	2-channel, complementary MOSFET output stages (class AB/H bridged)		
Total Output Power	8100 W peak Note: Peak power based on the maximum unclipped voltage the amplifier will produce into the nominal load impedance.		
THD, IM, TIM	< 0.02%		
Cooling	Three ultra high-speed primary fans, three ultra high-speed reserve fans		
AC POWER			
Connector	powerCON 32 input		
Voltage Selection	Automatic with high-low voltage tap (uninterrupted)		
Safety Agency Rated Voltage Range	208-235 V AC, 50–60 Hz		
Turn-on/off Points	Turn-on: 165 V AC; Turn-off: 264 V AC		
CURRENT DRAW			
Idle	0.6 A rms (230 V AC)		
Maximum Long-Term Continuous (>10 sec)	10.5 A rms (230 V AC)		
Burst (<1 sec)	18 A rms (230 V AC) Note: AC power cabling must be of sufficient gauge so that under burst rms current conditions, cable transmission losses do not cause the loudspeaker's voltage to drop below the specified operating range.		
Maximum Instantaneous Peak	53 A peak (230 V AC)		
Inrush	< 30 A peak (230 V AC)		
RMS NETWORK			
	Equipped with two-conductor twisted-pair network, reporting all operating parameters of amplifiers to system operator's host computer.		
PHYSICAL			
Enclosure	Premium multi-ply birch		
Finish	Slightly textured black		
Protective Grille	Powder-coated, hex-stamped steel with acoustical black mesh		
Rigging	Optional MRK-1100 rigging kit that has endframes with captive GuideALinks secured with 0.5 in x 1.25 in quick release pins. Rigging supports ground-stacked, flown, and cardioid configurations.		
Dimensions	52.60 inches (1336 mm) W	20.48 inches (520 mm) H	33.00 inches (838 mm) D
Dimensions (w/Rigging)	54.65 inches (1388 mm) W	20.48 inches (520 mm) H	33.00 inches (838 mm) D
Weight	249 lb (112.9 kg)		
Weight (w/Rigging)	285 lb (129.3 kg)		
ENVIRONMENTAL			
Operating Temperature	0 °C to +45 °C		
Non Operating Temperature	–40 °C to +75 °C		
Humidity	To 95% at 45 °C (non-condensing)		
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)		
			 <p>3K59 OR 3JK8 COMMERCIAL AUDIO SYSTEM UL LISTED CE</p>

1100-LFC DIMENSIONS

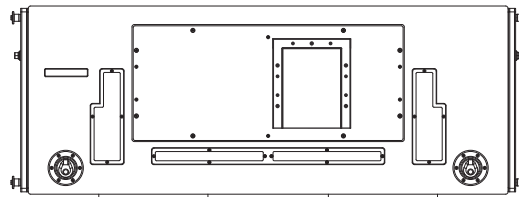
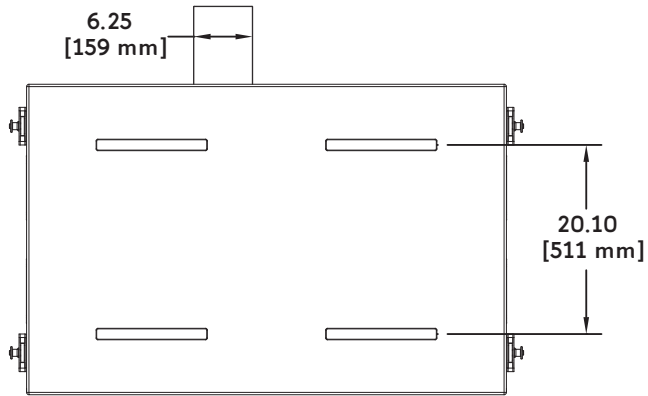
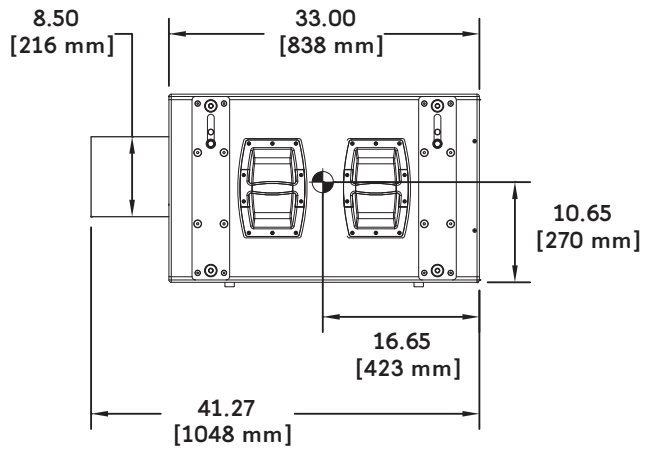
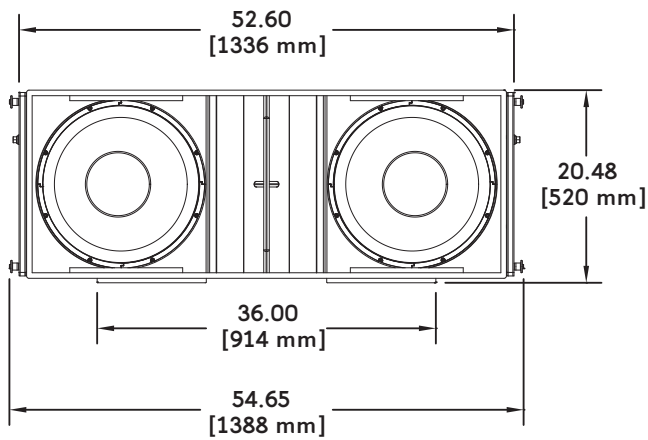


1100-LFC Dimensions



NOTE: For the dimensions and weight for the MTG-1100 top grid, MAS-1100 array spacer, and MCF-1100 caster frame, refer to the MTG-1100 Assembly Guide (PN 05.220.030.01) available at www.meyersound.com.

1100-LFC Dimensions with Rain Hood Expanded



1100-LFC Dimensions with Rain Hood Expanded

FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

INDUSTRY CANADA COMPLIANCE STATEMENT

This Class A digital apparatus complies with Canadian ICES-003.

AVIS DE CONFORMITÉ À LA RÉGLEMENTATION D'INDUSTRIE CANADA

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EN 55032 (CISPR 32) STATEMENT

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.



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1100-LFC Operating Instructions
PN 05.220.005.01 B4