

## LEOPARD™ Compact Linear Line Array Loudspeaker



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LEOPARD Operating Instructions, PN 05.243.005.01 A

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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](http://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](http://www.meyersound.com/support)
- **Email:** [techsupport@meyersound.com](mailto:techsupport@meyersound.com)

### LEOPARD COMPACT LINEAR LINE ARRAY LOUDSPEAKER

The LEOPARD™ compact linear line array loudspeaker is a member of Meyer Sound's award-winning LEO® Family of loudspeakers, designed to reproduce audio faithfully with tremendous power, superior intelligibility, and extremely low distortion. Like its bigger siblings LEO-M™ and LYON™, LEOPARD delivers the advantages of self-powered design, linear response, and precise directional control.



*LEOPARD Compact Linear Line Array Loudspeaker*

LEOPARD breaks new ground in loudspeaker array performance, providing exceptional phase coherence and consistent coverage in a light, compact cabinet, making it extremely versatile. Its innovative amplifier, driver, and horn designs ensure that LEOPARD systems reproduce any sound source with linearity over a wide dynamic range, from speech and classical music to rock and EDM. LEOPARD loudspeakers are optimized for use with minimal processing, yielding excellent performance right out of the box.

LEOPARD is portable and easy to configure. Its low weight and narrow profile make it well-suited for small- to medium-sized touring acts and fixed installations, where scalability and ease of rigging are essential. A newly-designed class D amplifier affords unprecedented efficiency to LEOPARD, significantly lowering distortion while reducing power consumption and operating temperature. The onboard amplifier and control circuitry are contained in a single, field-replaceable module.

For low-frequency enhancement, LEOPARD pairs with Meyer Sound's 900-LFC low-frequency control element, which can be flown as part of LEOPARD arrays without transition hardware. The 900-LFC shares with LEOPARD the advantages of excellent power-to-size ratio, improved efficiency, and versatility.



*MG-LEOPARD/900 Multipurpose Grid with Mixed Array*

In addition to working as a standalone system, LEOPARD can also be used as a supplemental fill loudspeaker in LEO-M and LYON systems.

LEOPARD systems can be driven by Meyer Sound's Galileo Callisto™ 616 array processor, which provides matrix routing, alignment, and processing for array components. To guarantee optimum performance, LEOPARD systems should be designed with Meyer Sound's MAPP™ software. LEOPARD and 900-LFC loudspeakers work with Meyer Sound's RMS™ remote monitoring system, which provides comprehensive monitoring of system parameters from a Mac® or Windows®-based computer.

LEOPARD includes Meyer Sound's QuickFly® rigging with captive GuideALinks™, which allows easy setting of splay angles from 0.5 to 15 degrees. Rigging options include the MG-LEOPARD/900 multipurpose grid, MCF-LEOPARD caster frame, PBF-LEOPARD pull-back frame, and MTF-LYON/LEOPARD transition frame.



*MCF-LEOPARD Caster Frame with LEOPARD Stack*



## NATIVE MODE

LEOPARD and 900-LFC loudspeakers are optimized for use in certain flown and groundstacked configurations without any array compensation or other signal processing. This capability, called *Native mode*, allows LEOPARD/900-LFC systems to be deployed quickly with excellent results, without equalization, tuning, or use of presets.

To use LEOPARD and 900-LFC loudspeakers in Native mode, send an identical, unmodified signal to each element in the array. The simplest way to accomplish this is by looping the same, unprocessed source signal through all array elements.

The following coplanar configurations can be used in Native mode (without any signal processing):

- Flown mixed arrays of LEOPARDS and 900-LFCs (Figure 1)
- Flown separate arrays of LEOPARDS and 900-LFCs (Figure 2)
- Mixed groundstacks of LEOPARDS and 900-LFCs (Figure 3)

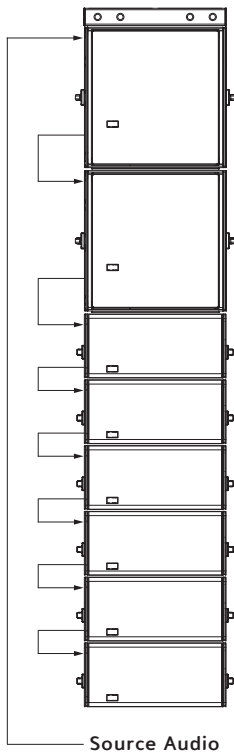


Figure 1: Flown Mixed Array

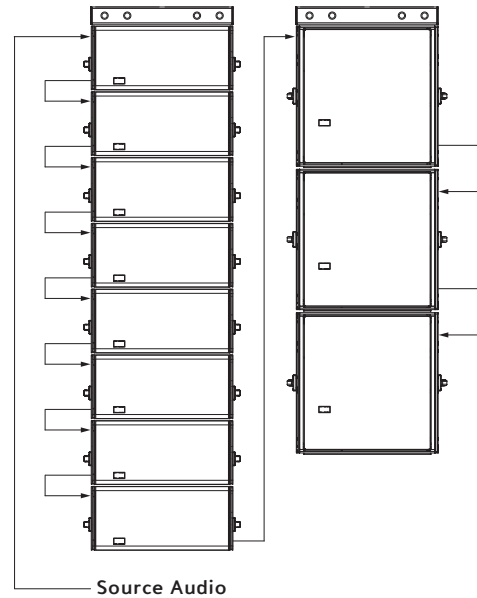


Figure 2: Flown Separate Arrays

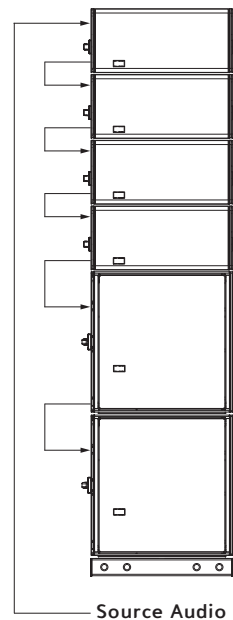


Figure 3: Mixed Groundstack



**NOTE:** Native mode should not be used with more advanced configurations, such as those where 900-LFCs and LEOPARDS are not coplanar, or those requiring delay offsets to align subsystems or to create directional low-frequency control. These systems require additional processing.



**NOTE:** For Native mode to work properly, the source signal must be correctly configured with the appropriate gain structure.



**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.



## CHAPTER 2: POWER REQUIREMENTS

LEOPARD 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 LEOPARD.

### 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.



**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.



**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.



**CAUTION:** Make sure the voltage received by LEOPARD 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).

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

#### Line-Neutral-Earth/Ground

Figure 4 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.

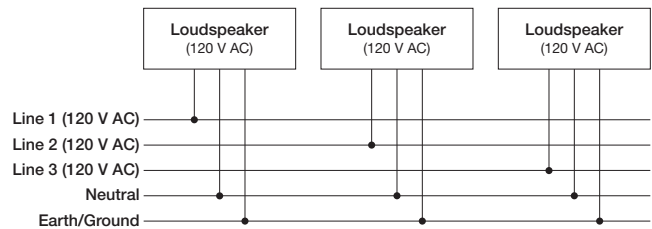


Figure 4: 120 V AC, 3-Phase Wye System (Single Line to Loudspeakers)

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

#### Line-Line-Earth/Ground

Figure 5 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 LEOPARD can tolerate elevated voltages from the ground line and does not require a neutral line. This system delivers 208 V AC to each loudspeaker.

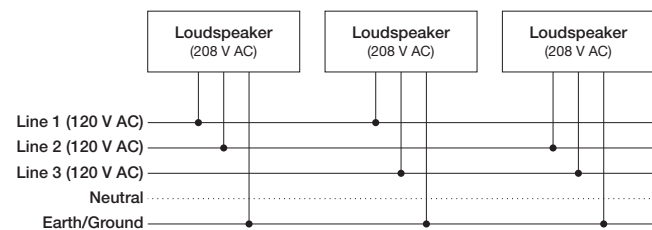


Figure 5: 120 V AC, 3-Phase Wye System (Two Lines to Loudspeakers)



**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.

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

Line-Neutral-Earth/Ground

Figure 6 illustrates a basic 220 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 220 V AC to each loudspeaker.

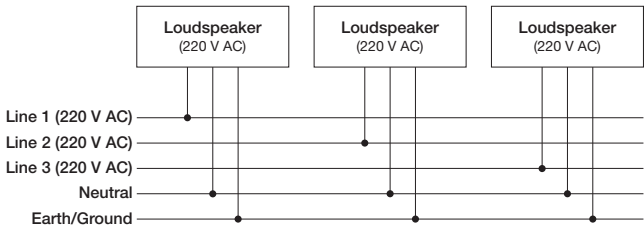
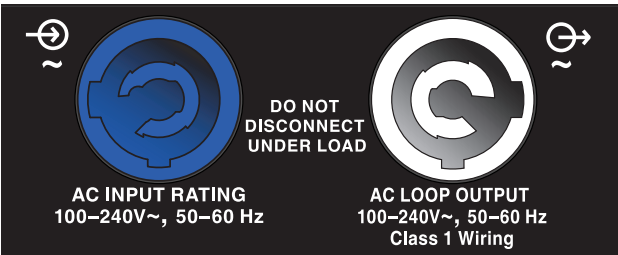


Figure 6: 220 V AC, 3-Phase Wye System (Single Line to Loudspeakers)

**CAUTION:** For 220 V AC, 3-phase Wye systems, never connect two lines to the AC input of LEOPARD, as the resulting voltage would be higher than the allowable upper voltage range (275 V AC) and would damage the loudspeaker.

AC CONNECTORS

The LEOPARD user panel includes two powerCON 20 connectors, one for AC Input (blue) and one for AC Loop Output (gray).



AC Input (Left) and AC Loop Output (Right) Connectors

AC Input (Blue)

The blue AC Input connector supplies power to LEOPARD. The 3-conductor powerCON 20 is rated at 20 A and uses a locking connector that prevents accidental disconnections. A 10-foot AC power cable, rated at 15 A, is included with each loudspeaker. If you replace the included AC power cable, make sure to use a cable with the appropriate power plug (on the other end) for the area in which you will operate the unit. LEOPARD requires 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 (see Table 1 on page 10).

AC Loop Output (Gray)

The gray AC Loop Output connector allows multiple LEOPARDS to be looped and powered from a single power source. The 3-conductor powerCON 20 is rated at 20 A and uses a locking connector that prevents accidental disconnections. For applications that require multiple LEOPARDS, 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 AC 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 LEOPARD loudspeaker.

Table 1: Maximum LEOPARDS that Can Be Looped with AC Power

Circuit Breaker/ Connector Rating	115 V AC	230 V AC	100 V AC
15 A / 16 A	4 looped (5 total)	9 looped (10 total)	3 looped (4 total)
20 A	5 looped (6 total)	12 looped (13 total)	4 looped (5 total)

**NOTE:** Current draw for LEOPARD is dynamic and fluctuates as operating levels change. The indicated number of loudspeakers that can be looped assumes that operating levels are normal and not such that loudspeakers are constantly limiting.

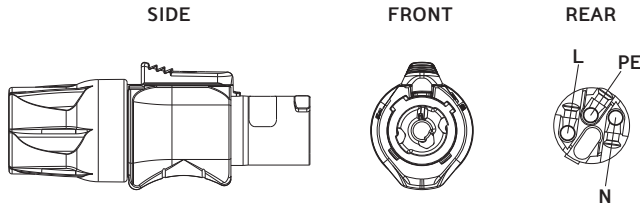
LEOPARD ships with a gray powerCON 20 cable mount connector, rated at 20 A, for assembling AC looping cables. Assembled AC looping cables are also available from Meyer Sound.

**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 (see Table 1).

## WIRING AC POWER CABLES

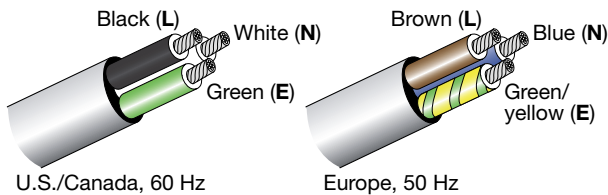
LEOPARD ships with a gray powerCON 20 cable mount connector, rated at 20 A, for assembling AC looping cables. The pins on the powerCON 20 cable mount connector are labeled as follows:

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



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 9). When wiring AC power cables for single-line systems, use one of the following wiring schemes:



### 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 on both ends of the cable. LEOPARD 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

LEOPARD operates 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 LEOPARD should always operate within the required operating range, at least a few volts from the upper and lower ranges. This 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.

## LEOPARD CURRENT REQUIREMENTS

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

- **Idle Current** — The maximum rms current during idle periods.
- **Maximum Long-Term Continuous Current** — The maximum rms current during a period of at least 10 seconds. The maximum long-term continuous current is used to calculate temperature increases for cables, to ensure that cable sizes and gauges conform to electrical code standards. The current rating is also used as a rating for slow-reacting thermal breakers, 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 LEOPARD loudspeakers.
- **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.

You can use the following table as a guide for selecting cable gauges and circuit breaker ratings for the system's operating voltage.

**LEOPARD Current Draw**

Current Draw	115 V AC	230 V AC	100 V AC
Idle	0.46 A rms	0.35 A rms	0.49 A rms
Maximum Long-Term Continuous	3.0 A rms	1.5 A rms	3.4 A rms
Burst	4.4 A rms	2.3 A rms	5.5 A rms
Maximum Instantaneous Peak	12.6 A rms	6.3 A rms	14.5 A rms

The minimum electrical service amperage required by a 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 voltage always remains within the loudspeaker's operating range.

## POWERING ON LEOPARD

When AC power is applied to LEOPARD, its Intelligent AC™ power supply automatically selects the correct operating voltage, allowing it to be used internationally without manually setting voltage switches. It also provides soft-start power up, eliminating high inrush currents; suppresses high-voltage transients up to several kilovolts; filters common mode and differential mode radio frequencies (EMI); and sustains operation temporarily during low-voltage periods.

When powering on LEOPARD, the following startup events take place over several seconds.

1. Audio output is muted.
2. Voltage is detected and the power supply mode is automatically adjusted as necessary.
3. The power supply ramps up.
4. On the user panel, the Active/Status LED flashes multiple colors successively.
5. The Active/Status LED turns solid green, indicating the loudspeaker is ready to output audio.



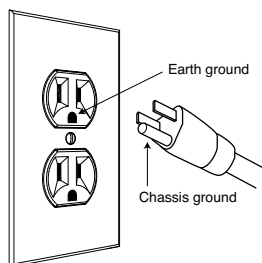
**CAUTION:** If the Active/Status LED does not turn solid green, or LEOPARD does not output audio after 10 seconds, remove AC power immediately and verify that the voltage is within the required

range. If the problem persists, contact Meyer Sound Technical Support.

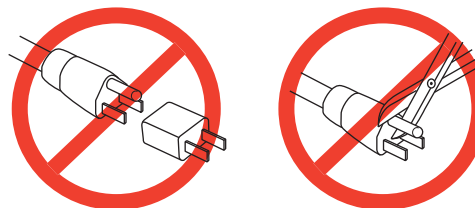
## ELECTRICAL SAFETY GUIDELINES

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

- The powerCON 20 connector should not be engaged or disengaged when under load or live.
- LEOPARD requires a grounded outlet. Always use a grounded outlet and plug.



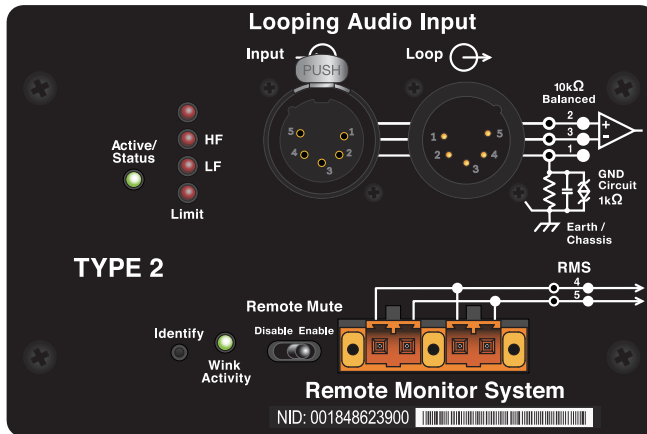
- Do not use a ground-lifting adapter or cut the AC cable ground pin.



- Do not exceed the current capability of the 20 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 LEOPARD loudspeakers to avoid hazards from electrical shock.

## CHAPTER 3: AMPLIFICATION AND AUDIO

LEOPARD's drivers are powered by a proprietary 3-channel, open-loop, class D amplifier. The audio signal is processed with an electronic crossover, correction filters for phase and frequency responses, and driver protection circuitry. Each channel has peak and rms limiters that prevent driver over-excursion and regulate voice coil temperatures.

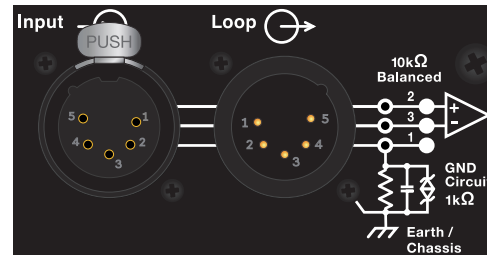


LEOPARD User Panel

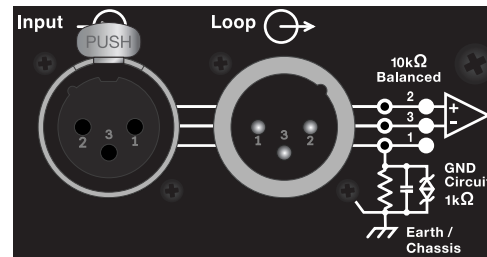
The LEOPARD user panel includes Input and Loop output connectors for audio, Limit and Active LEDs, and RMS connectors and controls (see Chapter 5, “RMS Remote Monitoring System”).

### AUDIO CONNECTORS

LEOPARD is available with XLR 3-pin or 5-pin connectors for audio Input and audio Loop output. XLR 5-pin connectors accommodate both balanced audio and RMS signals.



XLR 5-Pin Audio Connectors, Input and Loop Output



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 kΩ. The connector uses the following wiring:

- **Pin 1** — 1 kΩ 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, and AC power.

### 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 13). For applications that require multiple LEOPARDS, 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 10 LEOPARDS 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 LEOPARDS with other Meyer Sound self-powered loudspeakers.



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



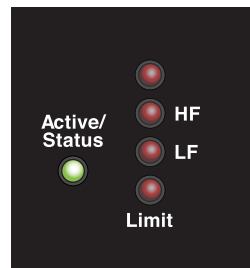
**TIP:** Audio outputs from Meyer Sound's Galileo 616 and Galileo Callisto 616 are rated at 50 ohms, which means that their outputs can singly drive up to 20 Meyer Sound (10 kOhm) loudspeakers without distortion.



**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.

### TRUPOWER LIMITING

LEOPARD employs Meyer Sound's advanced TruPower® limiting. Conventional limiters assume a constant loudspeaker impedance and set the limiting threshold by measuring voltage alone. This method is inaccurate because loudspeaker impedances change as frequency content in the source material changes, and as thermal values for the loudspeaker's voice coil and magnet vary. Consequently, conventional limiters often begin limiting prematurely, which reduces system headroom and dynamic range.



LEOPARD Limit LEDs

In contrast, TruPower limiting anticipates varying loudspeaker impedances by measuring both current and voltage to compute the actual power dissipation in the voice coil. This 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.



## HF and LF Limit LEDs

The low- and high-frequency drivers for LEOPARD are powered by separate amplifier channels, each with their own limiter. Limiting activity is indicated with two Limit LEDs on the user panel. The HF Limit LED indicates limiting for the high-frequency channel and the LF Limit LED indicates limiting for the low-frequency channel.

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 thresholds, limiting ceases.

LEOPARD performs within its acoustical specifications at normal temperatures when the Limit LEDs are unlit, or when the LEDs are lit for 2 seconds or less and then turn off for at least 1 second. If the LEDs remain 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 a LEOPARD loudspeaker system begins to limit before reaching the desired SPL, consider adding more units to the system.

## AMPLIFIER COOLING SYSTEM

LEOPARD employs natural convection in its cooling system. The amplifier's heat sink provides natural convection cooling from the air flowing near its fins. When exposed to high ambient temperatures or when driven continuously at high output levels, a variable-speed fan circulates air internally to ensure that LEOPARD remains operational.



**CAUTION:** To keep LEOPARD from overheating, allow at least 6 inches behind the loudspeaker for proper ventilation.



**CAUTION:** LEOPARD's heat sink can reach temperatures up to 80° C (176° F) during extreme operation. Wait 15 minutes for the unit to cool before touching.

## ACTIVE/STATUS LED

During normal operation, when LEOPARD is powered on, the Active/Status LED is solid green. If the loudspeaker encounters a hardware fault, or the unit begins to overheat, the LED flashes red. In some instances, the loudspeaker will continue to output audio while the LED flashes red, though with a reduction in the limiter thresholds (and gain) to protect the loudspeaker.

If a loudspeaker is overheating (for RMS-equipped loudspeakers, you can verify this in Compass RMS), a reduction in SPL may be necessary. If, after a reduction in SPL and an appropriate cooling period, the Active/Status LED continues to flash red (does not return to solid green), contact Meyer Sound Technical Support.

If the Active/Status LED flashes red and the loudspeaker does not output audio, contact Meyer Sound Technical Support immediately.



**TIP:** When LEOPARD 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."



**CAUTION:** If a LEOPARD loudspeaker system consistently overheats before reaching the desired SPL, consider adding more units to the system.



**NOTE:** During startup, the Active/Status LED flashes multiple colors successively. For more information on the power on sequence, see "Powering on LEOPARD" on page 12.





## 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.

### LEOPARD RIGGING OPTIONS

This chapter provides an overview of QuickFly rigging for LEOPARD. Table 2 summarizes the available rigging options for LEOPARD. For complete information on rigging hardware, including dimensions, weight, configuration, and load ratings, refer to the MG-LEOPARD/900 Assembly Guide (PN 05.243.080.01) available at [www.meyersound.com](http://www.meyersound.com).

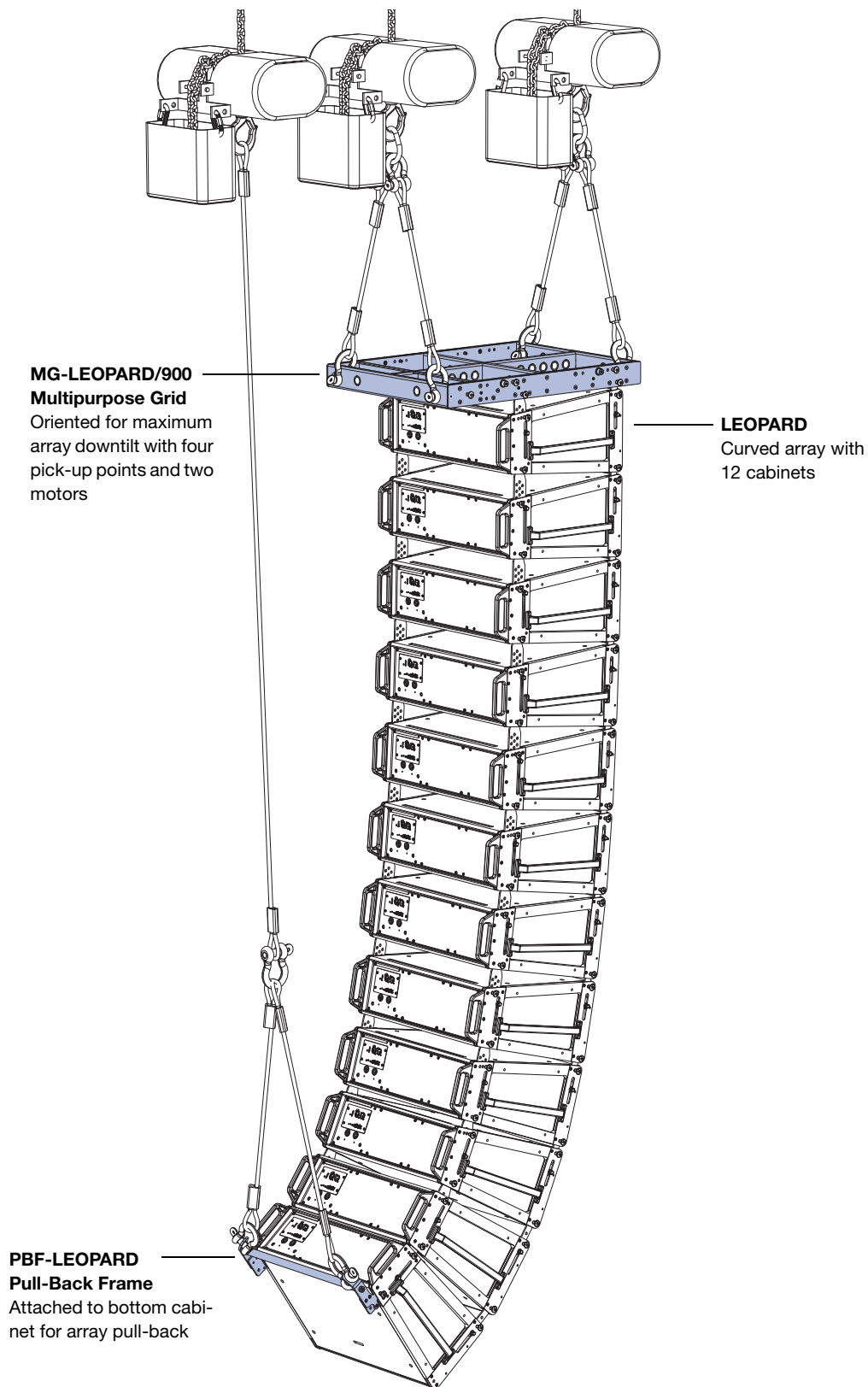
Table 2: LEOPARD Rigging Options

Model	Weight	Features	Required Quick-Release Pins	Required Shackle Size
<b>MG-LEOPARD/900</b> multipurpose grid (PN 40.243.080.01)	60.5 lbs (27.5 kg)	With some restrictions, flies up to 23 LEOPARDS at a 5:1 safety factor, or up to 20 LEOPARDS at a 7:1 safety factor; supports mixed arrays of LEOPARDS and 900-LFCs without transition hardware; accommodates a variety of pickup configurations with four corner and 13 center pickup points; includes attachment points for adapters and brackets for lasers and inclinometers; can also be used for groundstacks	5/16 x 0.875-inch, red button, PN 134.025, qty 10 included	5/8-inch or 3/4-inch
<b>MG-LEOPARD/900</b> grid tilt kit (PN 40.243.163.01)	2 lbs (0.9 kg)	Includes two angle feet that attach to the rear of the MG-LEOPARD/900 grid that add from 3-8 degrees of tilt to groundstacks	5/16 x 0.875-inch, red button, PN 134.025, qty 0 included	—
<b>MVP</b> motor Vee plate (PN 40.215.184.01)	20 lbs (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
<b>PBF-LEOPARD</b> pull-back frame (PN 40.243.185.01)	4.9 lbs (2.2 kg)	Attaches to the bottom cabinet in LEOPARD and 900-LFC arrays and provides pull-back for extreme array downtilts; can also be used to add tilt to LEOPARDS groundstacked on 900-LFCs	5/16 x 0.63-inch, black button, PN 134.024, qty 2 included	1/2-inch
<b>MTF-LYON/LEOPARD</b> transition frame (PN 40.232.140.01)	71 lbs (32.2 kg)	Allows LEOPARDS to be flown below LYON arrays for downfill; includes rear attachment points for pull-back; collapsible for easy transport on top of LEOPARD stacks	5/16 x 0.875-inch, red button, PN 134.025, qty 8 included	1/2-inch or 5/8-inch
<b>MCF-LEOPARD</b> caster frame (PN 40.243.130.01)	37 lbs (16.8 kg)	Safely transports up to four LEOPARDS, making it easy to assemble and disassemble arrays in blocks of four cabinets	5/16 x 0.63-inch, black button, PN 134.024, qty 0 included	—



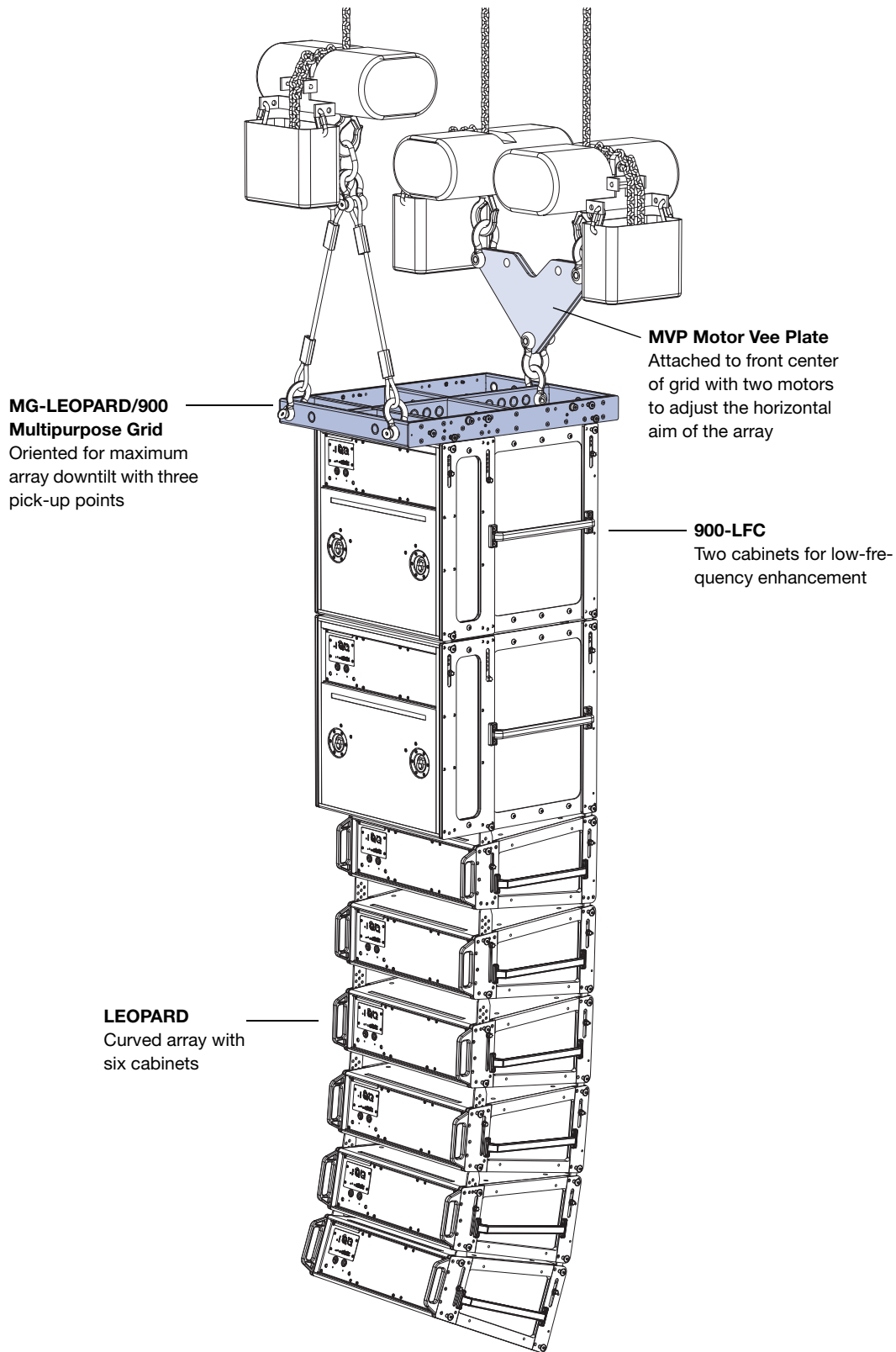
**NOTE:** The MCF-LEOPARD caster frame does not include quick-release pins because it is secured with the quick-release pins included with the loudspeaker. The MG-LEOPARD/900 grid tilt kit does not include quick-release pins because the angle feet are secured with the quick-release pins included with the grid.

## Rigging Example, LEOPARD Array with Pull-Back



MG-LEOPARD/900 Grid with 12 LEOPARDs and PBF-LEOPARD Pull-Back Frame

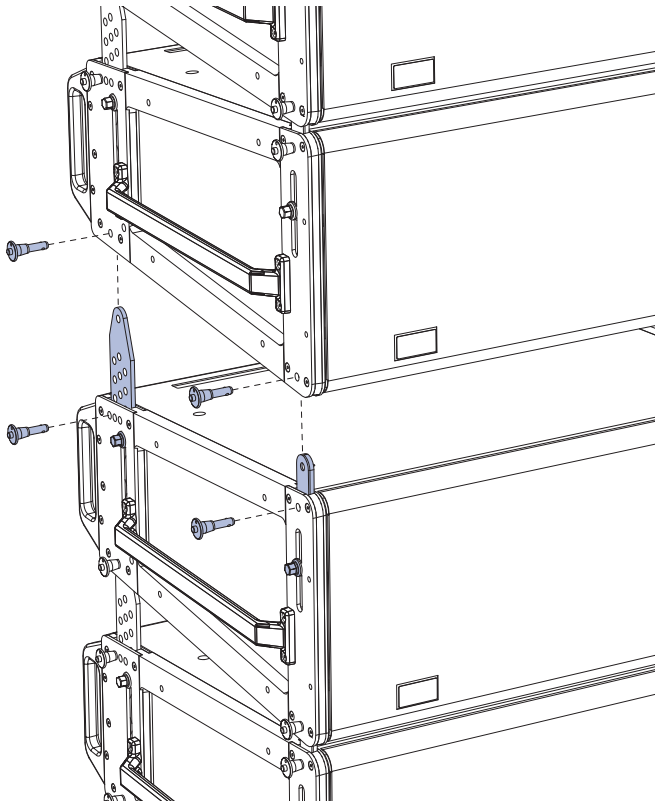
## Rigging Example, Mixed Array with 900-LFCs and LEOPARDS



MG-LEOPARD/900 Grid with Two 900-LFCs, Six LEOPARDS, and MVP Motor Vee Plate

## LEOPARD GUIDEALINKS

LEOPARD is equipped with four captive GuideALinks that link to adjacent units in flown and groundstacked arrays. LEOPARD can be flown or groundstacked with both LEOPARDs and 900-LFCs. Located at the top corners of the cabinet, GuideALinks extend up and into the link slots of the cabinet above it, or into the link slots of the MG-LEOPARD/900 grid. GuideALinks extend and retract with recessed knobs and are secured with two quick-release pins: one each in the top and bottom cabinets. Each LEOPARD loudspeaker ships with eight 5/16 x 0.063-inch quick-release pins (black button) (PN 134.024).



LEOPARD GuideALinks with Quick-Release Pins, Exploded View



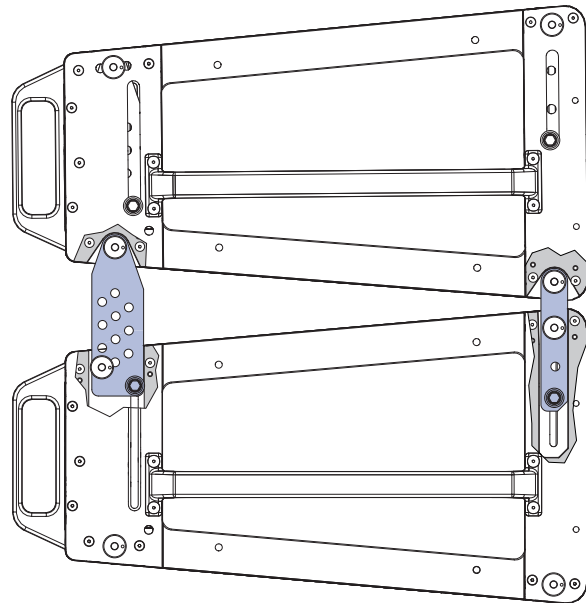
**CAUTION:** GuideALinks must be secured with the included quick-release pins. At no time should the weight of the loudspeaker rest on the GuideALink knobs when the links are fully extended (without the pins inserted). GuideALink knobs are for extending and retracting the links only.

## GuideALink Splay Angles

Front GuideALinks attach at splay angles of 0 or +5 degrees. However, the front GuideALinks should almost always be attached at 0 degrees, to ensure that coverage between linked cabinets is continuous. When attached at 0 degrees, the front GuideALinks act as a pivot point between the linked LEOPARDs, with the splay angle between the units determined by the rear GuideALink positions. When attached at +5 degrees, the front GuideALinks add 5 degrees to the splay angle configured with the rear GuideALinks, making it possible to achieve splay angles of 11 to 15 degrees. To stow the front GuideALinks, move them all the way down to STOW and pin them.



**TIP:** Wide splay angles of 11 to 15 degrees should only be used for downfill coverage, or for steering coverage away from structures like balconies.



LEOPARD GuideALinks (Exposed) Attached at 0.5 Degrees

Rear GuideALinks attach at splay angles of 0.5 to 10 degrees. The labels next to the rear GuideALinks indicate the splay angle between cabinets and provide a guide for which of the three pinning positions to use to secure the links (see Figure 7 on page 21). As the links are moved down, the splay angle increases. To stow the rear GuideALinks, move them all the way down to STOW and pin them to the center pin position.



**NOTE:** The splay angles listed on the GuideALink labels are for relative angles between the center axes of the linked units. For example, setting the GuideALinks to 5 degrees yields a 5-degree down-

tilt of the lower unit to the upper unit. How the loudspeakers relate to the floor, stage, and seating angles in the venue depends on the orientation of the grid, the angles of the loudspeakers in the array above them, and other factors. MAPP prediction software should be used to calculate optimum splay angles for loudspeakers and to predict coverage patterns for arrays.

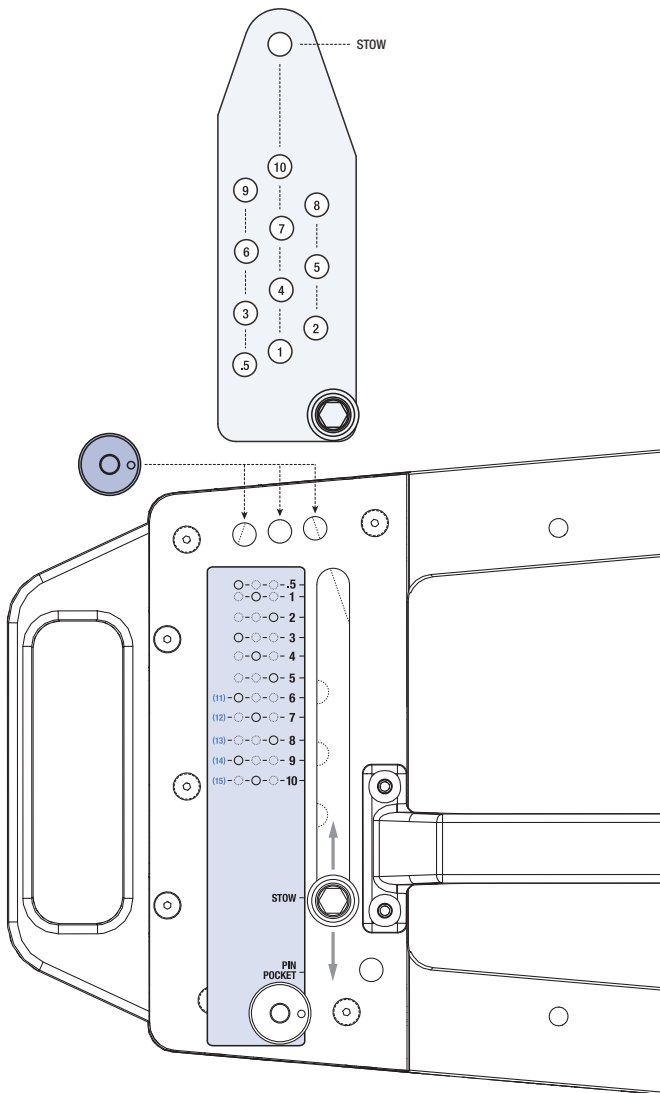


Figure 7: LEOPARD Rear GuideALinks Label, Splay Angles and Pinning Positions



**NOTE:** For more information on GuideALink configurations, refer to the MG-LEOPARD/900 Assembly Guide (PN 05.243.080.01) available at [www.meyersound.com](http://www.meyersound.com).

## Splay Angles for Top Flown Cabinets

When flying LEOPARDS below the MG-LEOPARD/900 grid, a splay angle of 0 degrees is recommended for the top cabinet (rear GuideALinks set to 5, front GuideALinks set to 0) to ensure that it aligns with any lasers or inclinometers mounted on the grid. To add tilt to the top cabinet, the grid should instead be tilted (see “MG-LEOPARD/900 Multipurpose Grid” on page 22).

When flying LEOPARDS below the 900-LFC, splay angles of -4.5 to +10 degrees are supported for the top cabinet with the following GuideALink configurations.

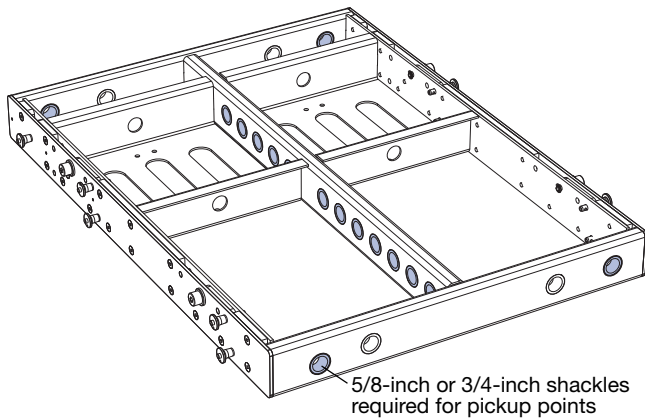
Table 3: LEOPARD (Top Cabinet) GuideALink Configurations

Rear GuideALinks Set To	Front GuideALinks Set To	Resulting Angle of Attachment When Flown Below 900-LFC
.5°	0°	-4.5°
1°	0°	-4°
2°	0°	-3°
3°	0°	-2°
4°	0°	-1°
5°	0°	0°
6°	0°	1°
7°	0°	2°
8°	0°	3°
9°	0°	4°
10°	0°	5°
6°	+5°	6°
7°	+5°	7°
8°	+5°	8°
9°	+5°	9°
10°	+5°	10°

## MG-LEOPARD/900 MULTIPURPOSE GRID

With some restrictions, the optional MG-LEOPARD/900 multipurpose grid flies arrays of up to:

- 23 LEOPARDS at a 5:1 safety factor
- 20 LEOPARDS at a 7:1 safety factor



MG-LEOPARD/900 Grid (Valid Pickup Points Highlighted in Blue)



**TIP:** The MG-LEOPARD/900 grid supports mixed arrays of LEOPARDS and 900-LFCs without transition hardware. The grid can also be used for groundstacks.

The MG-LEOPARD/900 grid accommodates a variety of pickup configurations with its four corner and 13 center pickup points. The grid and its attached array can be tilted with motors attached to the front and rear of the grid, or, if just one motor is available, by attaching to one of the 13 center pickup points, offset from the center of the grid, to achieve the desired tilt. The grid can also be oriented to provide either maximum array downtilt or maximum array uptilt (see “MG-LEOPARD/900 Orientation” on page 22).

The MG-LEOPARD/900 grid includes attachment points to accommodate brackets and adapters for lasers and inclinometers.



**NOTE:** For more information on the MG-LEOPARD/900 grid, including dimensions, weight, load ratings, and pickup configurations, refer to the MG-LEOPARD/900 Assembly Guide (PN 05.243.080.01) available at [www.meyersound.com](http://www.meyersound.com).



**CAUTION:** Always use the 5/16 x 0.875-inch quick-release pins (red button) included with the MG-LEOPARD/900 grid to secure the attached LEOPARD or 900-LFC. Do not use the quick-release pins included with LEOPARD or the 900-LFC in the grid as they are shorter and will not lock in place.



**CAUTION:** Always use properly rated rigging hardware. The MG-LEOPARD/900 grid requires 5/8-inch or 3/4-inch shackles for its pickup points.



**CAUTION:** The two holes immediately to the left and right of the center pickup bar are for aiming lasers or inclinometers. These holes are not rated to support the weight of the array and should not be used as pickup points.



**TIP:** The MG-LEOPARD/900 grid can travel installed on top of LEOPARD stacks on the MCF-LEOPARD caster frame.

## MG-LEOPARD/900 ORIENTATION

The MG-LEOPARD/900 grid can be oriented to locate the array's center of gravity closer to the front or rear of the grid, to achieve maximum downtilt or uptilt for flown arrays.

The grid's orientation also determines whether downtilt or uptilt can be applied to groundstacks with the MG-LEOPARD/900's optional angle feet.

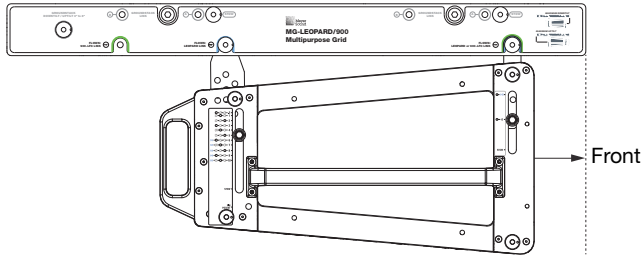


**TIP:** The grid and its attached array can be tilted with motors attached to the front and rear of the grid, or, if just one motor is available, by attaching to one of the 13 center pickup points, offset from the center of the grid, to achieve the desired tilt.



### MG-LEOPARD/900 Oriented for Maximum Array Downtilt (Forward)

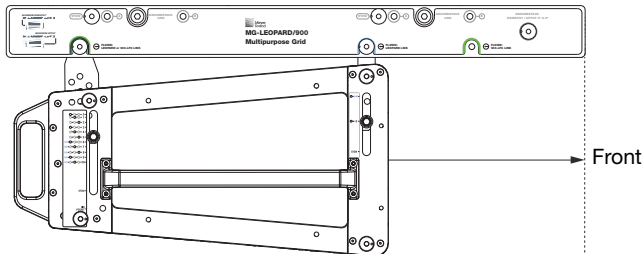
When the MG-LEOPARD/900 grid is oriented with the attached loudspeaker near the front of the grid, the array's center of gravity is located closer to the front of the grid, thereby allowing the rear pickup points to achieve maximum array downtilt.



MG-LEOPARD/900 Grid Oriented for Maximum Array Downtilt

### MG-LEOPARD/900 Oriented for Maximum Array Uptilt (Rearward)

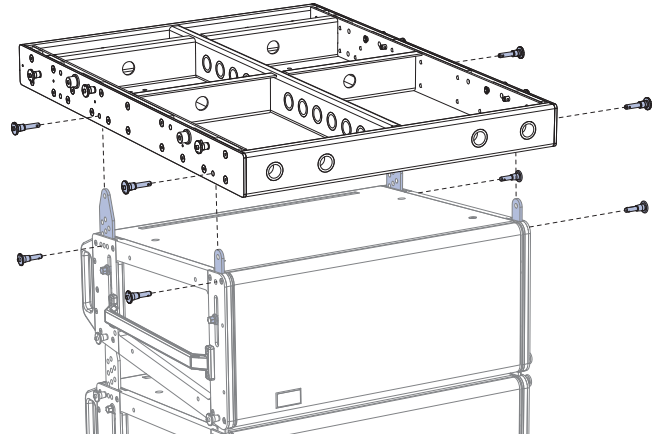
When the MG-LEOPARD/900 grid is oriented with the attached loudspeaker near the rear of the grid, the array's center of gravity is located closer to the rear of the grid, thereby allowing the front pickup points to achieve maximum array uptilt.



MG-LEOPARD/900 Grid Oriented for Maximum Array Uptilt

### ATTACHING FLOWN ARRAYS TO THE MG-LEOPARD/900

The MG-LEOPARD/900 grid has six bottom link slots, three on each side of the grid, that accept GuideALinks from the top LEOPARD or 900-LFC cabinet in the array. The configuration of the GuideALinks for the top cabinet determines the angle of its attachment (see "GuideALink Splay Angles" on page 20). The grid includes 10 5/16 x 0.875-inch quick-release pins (red button) for securing the top cabinet and configuring the grid's links for groundstack attachments.



MG-LEOPARD/900 Grid with LEOPARDs, Exploded View

**CAUTION:** Always use the 5/16 x 0.875-inch quick-release pins (red button) included with the MG-LEOPARD/900 grid to secure the attached LEOPARD or 900-LFC. Do not use the quick-release pins included with LEOPARD or the 900-LFC in the grid as they are shorter and will not lock in place.

**NOTE:** When flying LEOPARD below the MG-LEOPARD/900 grid, a splay angle of 0 degrees is recommended for the top cabinet (rear GuideALinks set to 5, front GuideALinks set to 0) to ensure that the cabinet aligns with any lasers or inclinometers mounted on the grid. To add tilt to the top cabinet, the grid should instead be tilted (see "MG-LEOPARD/900 Multipurpose Grid" on page 22).

## MG-LEOPARD/900 PICKUP CONFIGURATIONS

The MG-LEOPARD/900 grid accommodates a variety of pickup configurations with its four corner and 13 center pickup points. The grid and its attached array can be tilted with motors attached to the front and rear of the grid, or, if just one motor is available, by attaching to one of the 13 center pickup points, offset from the center of the grid, to achieve the desired tilt. Figure 8 shows a configuration with two center pickup points. For other configurations with one, three, and four pickup points, refer to the MG-LEOPARD/900 Assembly Guide (PN 05.243.080.01) available at [www.meyer-sound.com](http://www.meyer-sound.com).

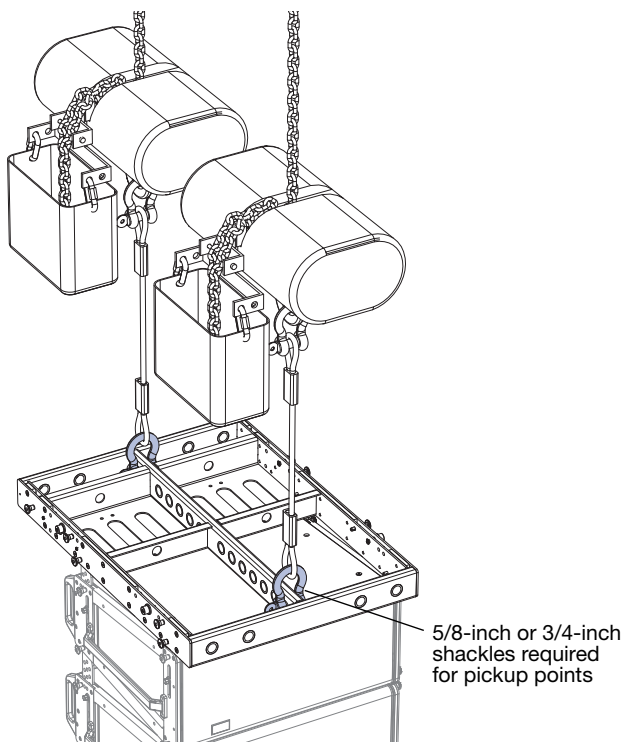
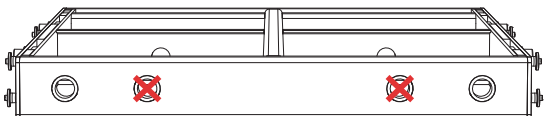


Figure 8: MG-LEOPARD/900 Grid with Two Pickup Points

**CAUTION:** Always use properly rated rigging hardware. The MG-LEOPARD/900 grid requires 5/8-inch or 3/4-inch shackles for its pickup points.

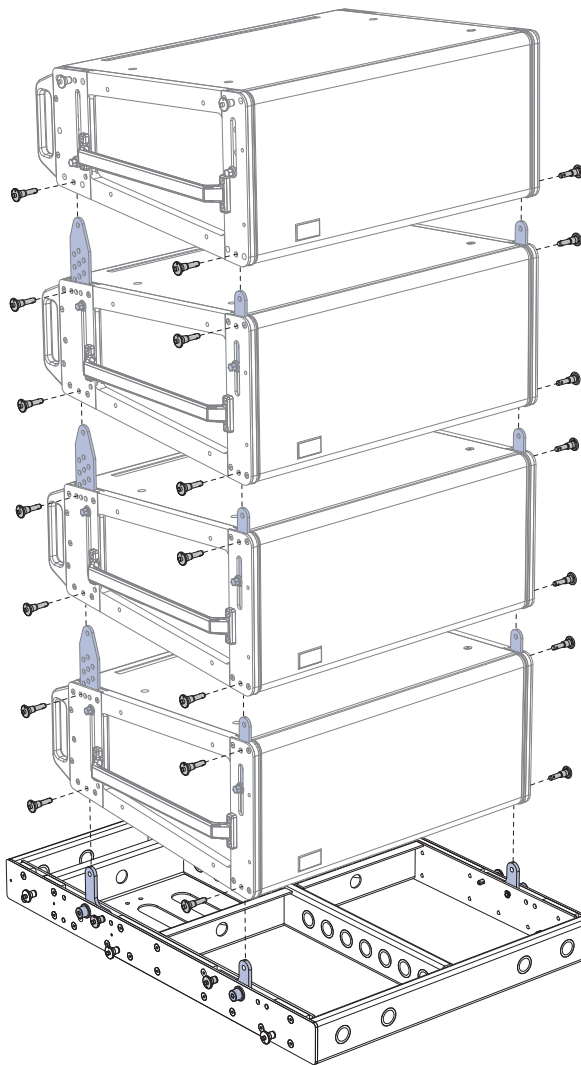
**CAUTION:** The two holes immediately to the left and right of the center pickup bar are for aiming lasers or inclinometers. These holes are not rated to support the weight of the array and should not be used as pickup points.



**CAUTION:** When using bridles between pickup points on the MG-LEOPARD/900, the angle of the bridle at the apex should not be greater than 90 degrees to avoid damaging the grid.

## GROUNDSTACKING WITH THE MG-LEOPARD/900

The MG-LEOPARD/900 multipurpose grid can groundstack up to seven LEOPARDS or up to three 900-LFCs. To groundstack 900-LFCs with the grid, the 900-LFCs must be equipped with the MRK-900 rigging kit.



MG-LEOPARD/900 with Groundstacked LEOPARDS, Exploded View

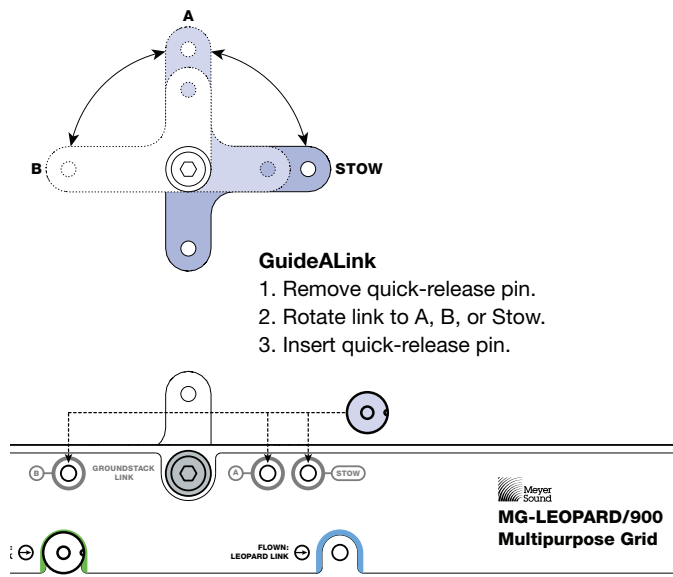
The MG-LEOPARD/900 also supports mixed groundstacks comprised of both LEOPARDS and 900-LFCs (see Table 4).

**Table 4: MG-LEOPARD/900, Maximum Groundstacked Cabinets**

Groundstack	900-LFCs	LEOPARDS
LEOPARDS Only	—	7
Mixed Groundstacks	1	5
	2	4
900-LFCs Only	3	—

When groundstacking with the MG-LEOPARD/900, the grid should be oriented so the center of gravity for the groundstack is near the center of the grid (see “MG-LEOPARD/900 Orientation” on page 22). The grid’s orientation also determines whether downtilt or uptilt can be applied to the groundstack with the optional angle feet.

Four captive GuideALinks are included with the MG-LEOPARD/900, two per side, that attach to the bottom loudspeaker in the groundstack. The links are secured to the loudspeaker with the quick-release pins included with the loudspeaker.



*MG-LEOPARD/900 GuideALink*

The configuration of the grid’s GuideALinks, which can be set to A, B or STOW, determines the angle of attachment for the bottom loudspeaker in the stack. Table 5 lists the available angles of attachment for both LEOPARD and the 900-LFC.

**Table 5: MG-LEOPARD/900 GuideALink Configurations**

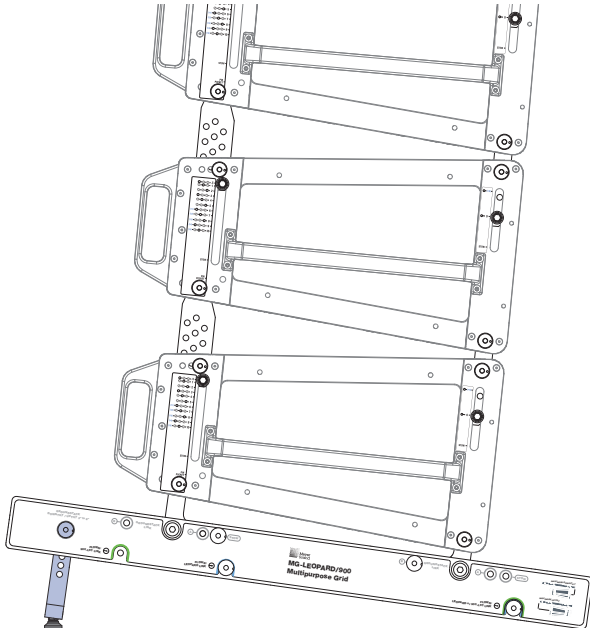
Rear GuideALinks Set To	Front GuideALinks Set To	Resulting Angle of Attachment	
		LEOPARD	900-LFC
A	A	+5°	0°
A	B	+2°	–3°
B	A	+8°	+3°
B	B	+5°	0°

**CAUTION:** Groundstacks with extreme splay angles that locate the stack’s center of gravity outside the grid (for example, seven LEOPARDS, each with 15-degree splay angles) are not supported. To verify the safety and stability of LEOPARD groundstacks, use MAPP prediction software.


**CAUTION:** To further secure large groundstacks, attach tie-downs or weights to the grid along with a safety system directly to the groundstack.

## Adding Groundstack Tilt with the Angle Feet

Tilt can be added to groundstacks with the optional MG-LEOPARD/900 grid tilt kit (PN 40.243.163.01). The kit includes two angle feet that attach to the rear of the MG-LEOPARD/900 grid and add from 3 to 8 degrees of tilt to the entire groundstack. Loudspeaker splay angles within the groundstack are relative to the tilt added with the angle feet. When the grid is oriented for maximum downtilt, downtilt is added to the groundstack. When the grid is oriented for maximum uptilt, uptilt is added to the groundstack.

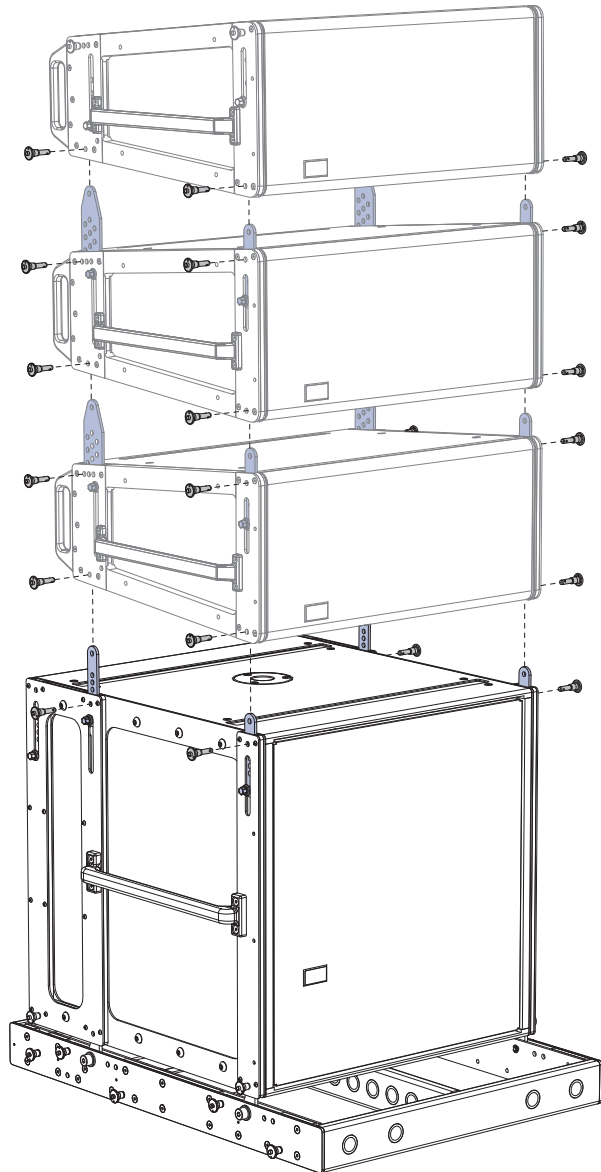


*MG-LEOPARD/900 with Optional Angle Feet, 8 Degrees of Downtilt*

 When using the angle feet for downtilt with the 900-LFC attached to the grid, the angle setting for 3 degrees is not available. In addition, the setting for 4 degrees is only possible when the grid's GuideALinks are configured with the rear link set to A and the front link set to B. The angle setting for 5 degrees is only possible when the grid's GuideALinks are configured with the rear link set to A and the front link set to A (or B).

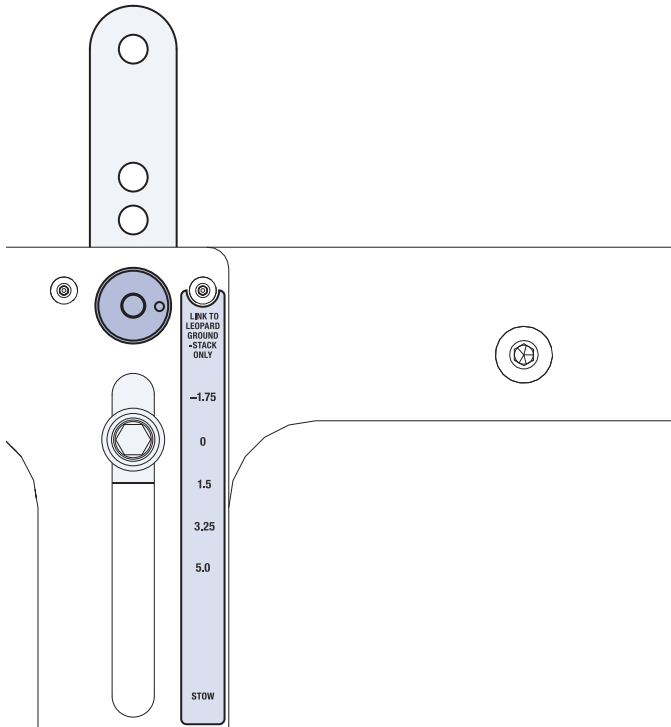
## GROUNDSTACKING LEOPARDS ON THE 900-LFC

Up to five LEOPARDS can be groundstacked on top of a single 900-LFC (when equipped with the MRK-900 rigging kit). Up to four LEOPARDS can be groundstacked on top of two 900-LFCs. The angle of attachment for the bottom LEOPARD is determined by the configuration of the 900-LFC's GuideALinks. When the 900-LFC's front GuideALinks are set to 0 degrees, the available angles for the bottom LEOPARD are 5.00, 3.25, 1.50, 0, and -1.75 degrees.



*LEOPARDS Groundstacked on 900-LFC, Exploded View*

The labels next to the 900-LFC's rear/middle GuideALinks indicate the splay angle for the attached LEOPARD (when the 900-LFC's front GuideALinks are set to 0 degrees). As the links are moved down, the splay angle increases. To stow the rear/middle GuideALinks, move them all the way down to STOW and pin them.



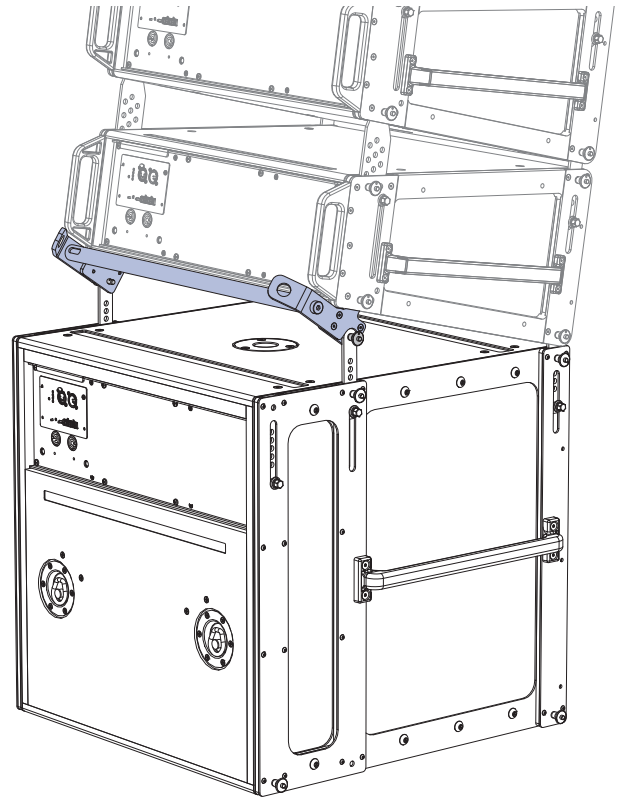
900-LFC Rear/Middle GuideALinks Label

**CAUTION:** Groundstacks with extreme splay angles that locate the stack's center of gravity outside the grid (for example, seven LEOPARDS, each with 15-degree splay angles) are not supported. To verify the safety and stability of LEOPARD groundstacks, use MAPP prediction software.

**CAUTION:** To further secure large groundstacks, attach tie-downs or weights to the grid along with a safety system directly to the groundstack.

## Adding Groundstack Tilt with the PBF-LEOPARD

The PBF-LEOPARD pull-back frame can be used to add 7.75 degrees of downtilt to LEOPARDS groundstacked on the 900-LFC. To achieve the downtilt, the PBF-LEOPARD is placed between the bottom LEOPARD and the 900-LFC's rear/middle GuideALinks. The downtilt from the PBF-LEOPARD is added to the tilt achieved with the 900-LFC's rear/middle GuideALinks (see Table 6).



LEOPARDS Groundstacked on 900-LFC with PBF-LEOPARD (Downtilt)

Any loudspeaker splay angles within the LEOPARD groundstack are relative to the angle of attachment of the bottom LEOPARD cabinet.

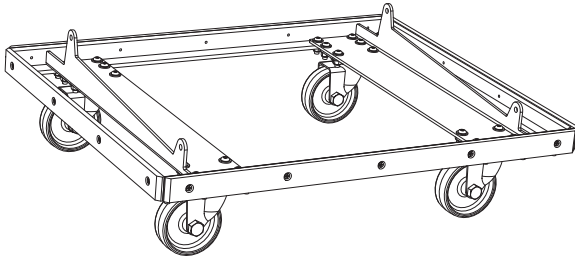
Table 6: LEOPARD/900-LFC Groundstack Downtilt Amount

900-LFC		LEOPARD Angle	
Rear/Middle GuideALink Set To	Front GuideALink Set To	Without PBF-LEOPARD	With PBF-LEOPARD
-1.75	0	-1.75	-9.50°
0	0	0	-7.75°
1.50	0	1.50	-6.25°
3.25	0	3.25	-4.50°
5.00	0	5.00	-2.75°



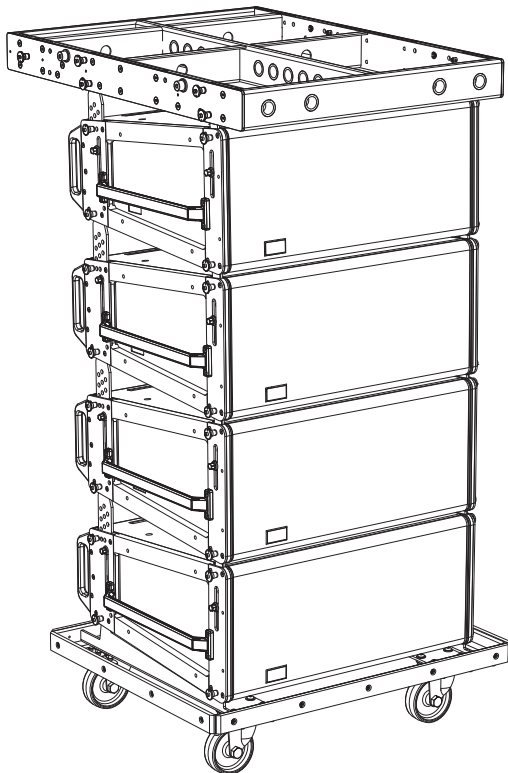
## MCF-LEOPARD CASTER FRAME

The MCF-LEOPARD caster frame safely transports up to four LEOPARDs, making it easy to assemble and disassemble arrays in blocks of four cabinets. The caster frame's sturdy construction allows it to be conveniently moved with forklifts.



*MCF-LEOPARD Caster Frame*

The caster frame includes four fixed, 0-degree links that attach to the cabinet at the bottom of the stack and are secured with the 5/16 x 0.63-inch (black button) quick-release pins included with LEOPARD.



*MCF-LEOPARD Caster Frame, (4) LEOPARDs, and MG-LEOPARD/900 Grid*

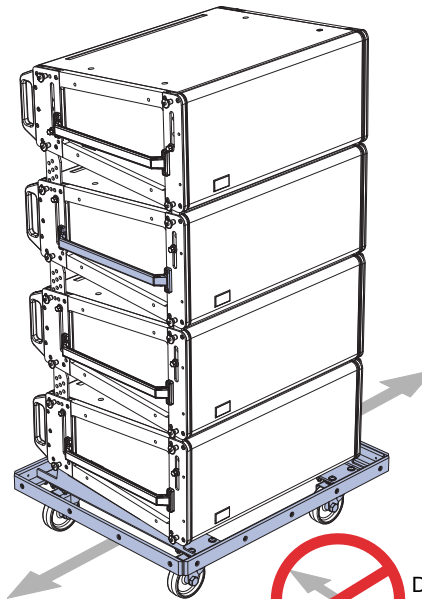
**TIP:** Durable nylon pullover covers, sized for stacks of 3 or 4 units, are available to protect LEOPARD cabinets during transport. Special wrap-around covers are also available to accommodate stacks with grids on top.

**TIP:** The MG-LEOPARD/900 grid can travel installed on top of LEOPARD stacks on the MCF-LEOPARD caster frame.

**NOTE:** For more information on the MCF-LEOPARD caster frame, including dimensions, weight, and truck packing examples, refer to the MG-LEOPARD/900 Assembly Guide (PN 05.243.080.01) available at [www.meyersound.com](http://www.meyersound.com).

## SAFETY GUIDELINES FOR THE MCF-LEOPARD CASTER FRAME

- Do not stack more than four cabinets on the MCF-LEOPARD caster frame.
- Do not move stacks in the front-to-back direction of the loudspeakers (the long side); always move stacks side-ways to avoid tipping.




Always move stacks side-to-side to avoid tipping


Do not move stacks front-to-back

- To avoid tipping, transport stacks with loudspeakers linked and locked at 0.5-degree splay angles.
- When lifting a stack with a forklift, always keep the forks wide and close to the caster frame's wheels. Failing to do so may bend the caster frame or cause the stack to tip.
- The caster frame must be removed before flying the array.

## CHAPTER 5: RMS REMOTE MONITORING SYSTEM

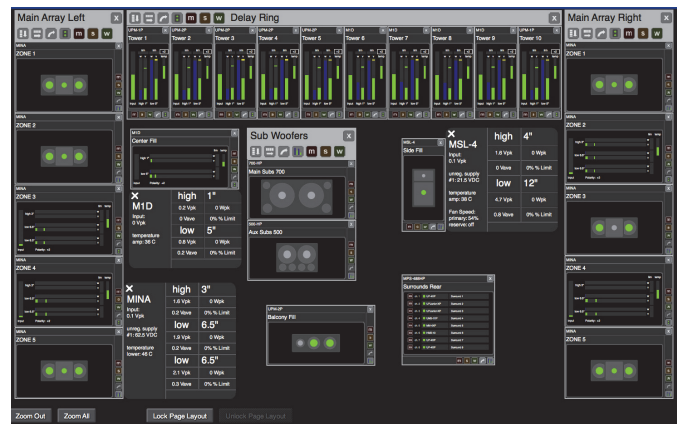
LEOPARD includes an RMS remote monitoring system module, allowing the loudspeaker to be connected to an RMS network. RMS reports, in real time, the status and power usage of multiple Meyer Sound loudspeakers from a Mac or Windows-based computer. The RMS host computer communicates with Meyer Sound loudspeakers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

 **NOTE:** For the latest RMS system requirements, visit the Meyer Sound website (<http://www.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 commissioning procedure. Once loudspeakers are identified on the RMS network, they appear in the Compass RMS software as icons and data views that can be customized to suit your needs.



Compass RMS Window

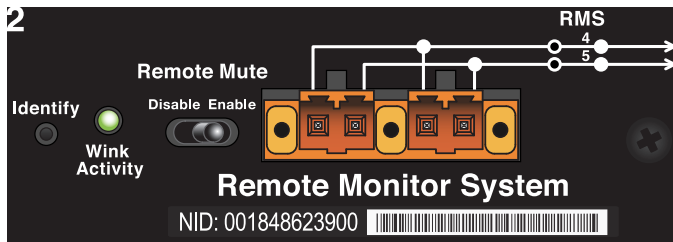
Loudspeaker data is updated 2–5 times per second. Individual loudspeakers can be physically identified with the Wink option in RMS, which lights the Wink LED on the RMS module for that particular loudspeaker. Conversely, a loudspeaker can be identified in the Compass RMS software by pressing the Identify button on the loudspeaker's RMS module.

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



## RMS MODULE

The LEOPARD RMS user panel includes an Identify button, Remote Mute switch, Wink/Activity LED, and two Network connectors.



LEOPARD RMS Module



**NOTE:** The buttons and 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 commissioned (Wink/Activity LED not lit), press the Identify button to identify the loudspeaker on the RMS network and commission it.
- To decommission the loudspeaker, press and hold the Identify button during startup (see “Resetting the RMS Module” on page 31).
- To *wink* a commissioned loudspeaker, press the Identify button. The Wink LED on the loudspeaker icon in the Compass RMS software 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 Wink function is useful for identifying the physical loudspeaker corresponding to a loudspeaker icon in the Compass RMS software.



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

### Wink/Activity LED (Green)

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

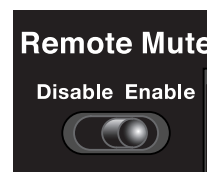
- During startup, the LED blinks green 10 times.
- If the loudspeaker has not yet been commissioned, the LED is not lit after startup.
- If the loudspeaker has been successfully commissioned, the LED flashes green continuously and flashes more rapidly with increased data activity.
- When the loudspeaker is winked, either by clicking the Wink button in the Compass RMS software or by pressing the Identify button on the RMS user panel, the LED is solid green. The LED remains solid green until the loudspeakers is unwinked.



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

### Remote Mute Switch

The recessed Remote Mute switch on the LEOPARD RMS module determines whether the Compass RMS software can control muting and soloing of the loudspeaker. LEOPARD ships from the factory with the switch enabled.



Remote Mute Switch

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



**NOTE:** The Compass RMS software also allows you to disable Mute and Solo functions to eliminate 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 RMS blocks allow cables 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 RMSServer but can also be entered manually, if necessary, when configuring RMS systems in the Compass RMS software without loudspeakers present. The NID label is located on the RMS user panel near the orange Network connectors.

## **RESETTING THE RMS MODULE**

You can use the Identify button to reset the LEOPARD RMS module when powering up the loudspeaker. This will cause the module to be decommissioned from the 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 up the loudspeaker.
4. After the Wink/Status LED blinks on and off, release the Identify button. The RMS module is reset and the loudspeaker is decommissioned.

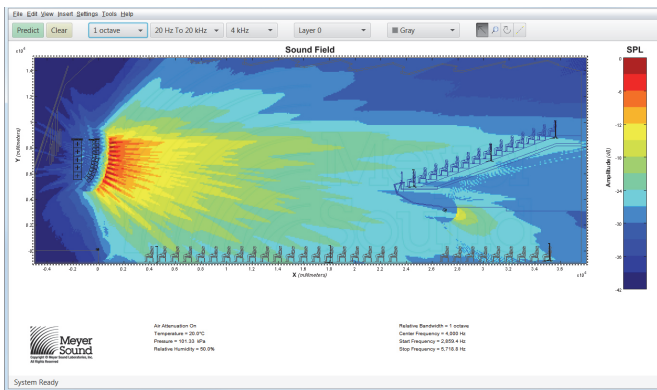


## CHAPTER 6: SYSTEM DESIGN AND INTEGRATION TOOLS

This chapter introduces MAPP, Meyer Sound's patented system design tool, and SIM 3, a comprehensive system for measurement and analysis.

### MAPP SYSTEM DESIGN TOOL

MAPP 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.



MAPP System Design Tool

Whether planning for fixed installations or for tours with multiple venues, you can 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](http://www.meyersound.com).

### MAPP Capabilities

With MAPP, you can:

- Simulate different loudspeaker configurations to refine system design and determine the best coverage for intended audience areas
- Monitor 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 as measured at each microphone position
- Determine delay settings for fill loudspeakers using the Inverse Fast Fourier Transform feature
- Preview the results of Galileo or Galileo Callisto processing to determine optimum settings for the best system response
- Automatically calculate load information for arrays to determine 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 3 MEASUREMENT SYSTEM

The SIM 3 audio analyzer is a high-resolution audio measurement system comprised of software, hardware, microphones, and accessory cables. SIM 3 is optimized for measuring audio frequencies with resolutions down to 1/48th of an octave, allowing you to apply precise corrections to balance system response using frequency and phase domain information.

### Source Independent Measurement Technique

The SIM 3 audio analyzer implements Meyer Sound's source independent measurement technique, a dual-channel method that accommodates statistically unpredictable excitation signals. Any excitation signal within a 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 captured and used as a SIM 3 test signal, so you can:

- View measurement data as amplitude versus time (impulse response) or amplitude and phase versus frequency (frequency response)
- Utilize a single-channel spectrum mode
- View frequency domain data with a logarithmic frequency axis
- Determine and internally compensate for propagation delays using the SIM 3 Delay Finder

## SIM 3 Applications

SIM 3's main applications are testing and aligning loudspeaker systems, which entails:

- Measuring propagation delays between subsystems to determine appropriate polarities and delay times
- 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 3 can also be used in the following applications:

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

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## APPENDIX A: RAIN HOODS

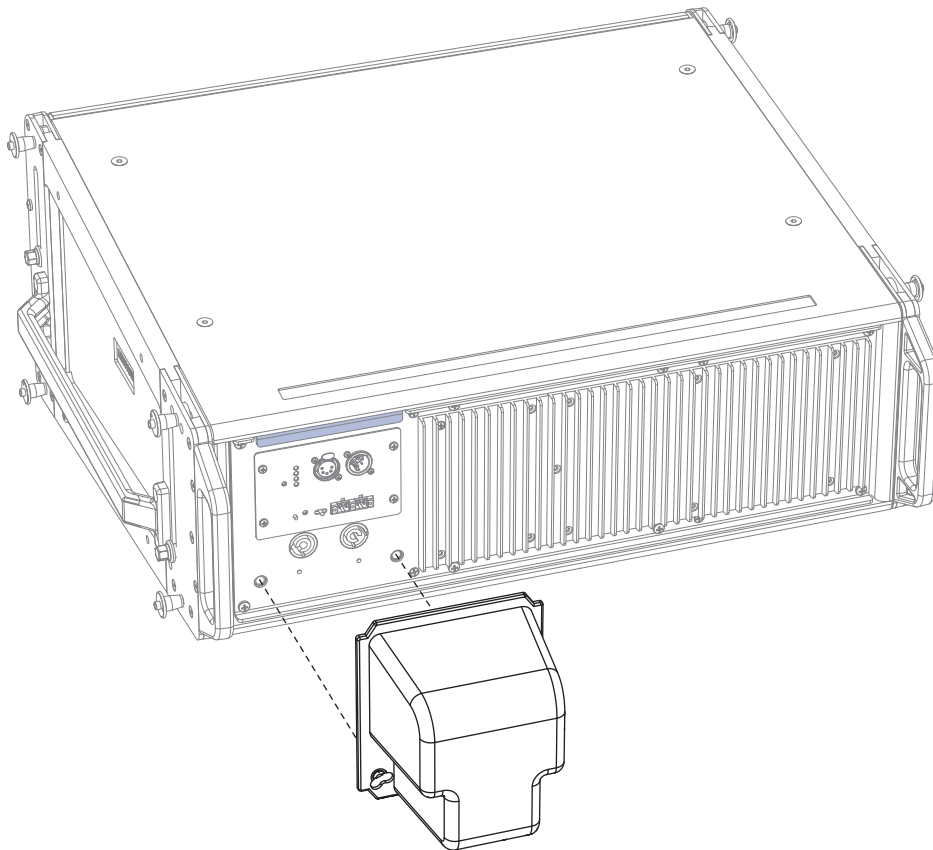
Weather-protected LEOPARDS include a quick-clip removable rain hood for indoor/outdoor touring and sheltered outdoor installations.

### LEOPARD QUICK-CLIP RAIN HOOD

The LEOPARD quick-clip removable rain hood is easily attached and removed with its two winghead studs.

To attach the LEOPARD quick-clip rain hood:

1. Attach any required cables to the LEOPARD loudspeaker.
2. Attach the rain hood to the user panel, slipping it under the rain hood retainer's flange at the top of the user panel and securing it to the center of the panel with its two winghead studs.



*LEOPARD with Quick-Clip Rain Hood*

3. Make sure to tighten the winghead studs one quarter turn so they fully lock.





## APPENDIX B: SPECIFICATIONS



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

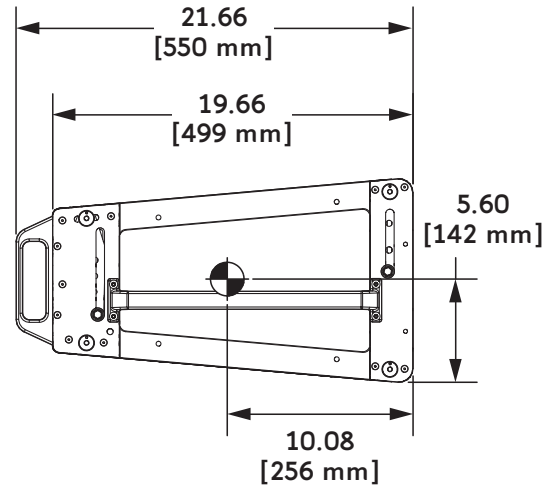
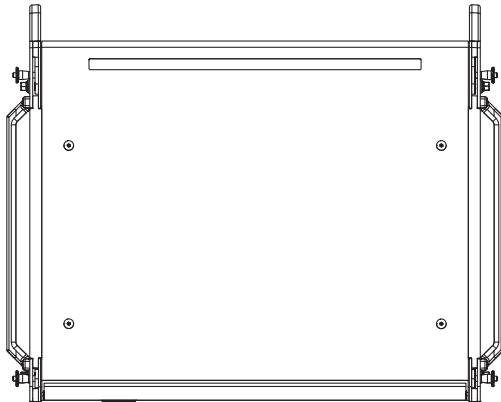
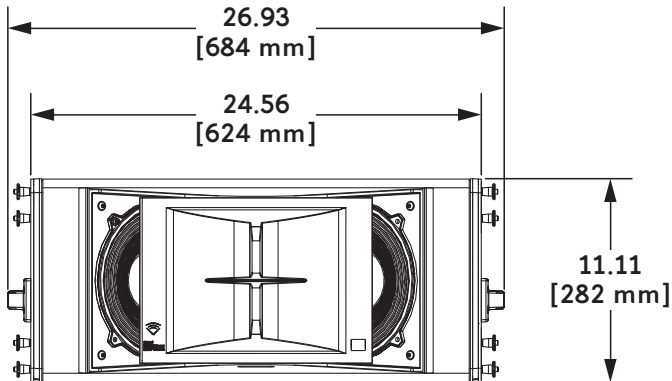
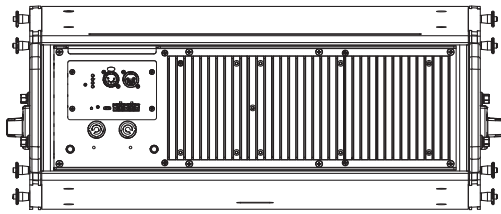
### LEOPARD Specifications

<b>ACOUSTICAL</b>	
Operating Frequency Range	55 Hz – 18 kHz <b>Note:</b> Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
Phase Response	92 Hz – 18 kHz $\pm 30$ degrees
<b>TRANSDUCERS</b>	
Low Frequency	Two 9-inch long-excursion cone drivers
High Frequency	One 3-inch compression driver coupled to a constant-directivity horn through a patented REM <sup>®</sup> manifold
<b>AUDIO INPUT</b>	
Type	Differential, electronically balanced
Maximum Common Mode Range	$\pm 15$ V DC, clamped to earth for voltage transient protection
Connectors	XLR 3-pin or 5-pin female input XLR 3-pin or 5-pin male loop output <b>Note:</b> XLR 5-pin connectors accommodate both balanced audio and RMS signals.
Input Impedance	10 kOhm differential between pins 2 and 3
Wiring	Pin 1: Chassis/earth through 1 kOhm, 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 <b>Note:</b> Pins 4 and 5 (RMS) included only with XLR 5-pin connectors.
DC Blocking	Differential DC blocking up to the maximum common mode voltage
CMRR	>50 dB, typically 80 dB (50 Hz – 500 Hz)
RF Filter	Common mode: 425 kHz; Differential mode: 142 kHz
TIM Filter	<80 kHz, integral to signal processing
Nominal Input Sensitivity	6.0 dBV (2.0 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, 14 V peak) into 600 ohms to produce the maximum peak SPL over the operating bandwidth of the loudspeaker
<b>AMPLIFIER</b>	
Type	3-channel, open-loop, class D
Cooling	Convection
<b>AC POWER</b>	
Connectors	powerCON 20 input with loop output
Safety Rated Voltage Range	100–240 V AC, 50–60 Hz
Turn-on/off Points	Turn-on: 90 V AC; Turn-off: none; internal fuse protection above 265 V AC

**LEOPARD Specifications**

Current Draw			
Idle	0.46 A rms (115 V AC)	0.35 A rms (230 V AC)	0.49 A rms (100 V AC)
Maximum Long-Term Continuous	3.0 A rms (115 V AC)	1.5 A rms (230 V AC)	3.4 A rms (100 V AC)
Burst	4.4 A rms (115 V AC)	2.3 A rms (230 V AC)	5.5 A rms (100 V AC)
Maximum Instantaneous Peak	12.6 A rms (115 V AC)	6.3 A rms (230 V AC)	14.5 A rms (100 V AC)
PHYSICAL			
Dimensions	26.93 inches (684 mm) W	11.11 inches (282 mm) H	21.66 inches (550 mm) D
Weight	75 lbs (34.0 kg)		
Enclosure	Multi-ply hardwood		
Finish	Black textured		
Protective Grille	Hex-stamped steel with acoustical black mesh		
Rigging	Endframes with captive GuideALinks (0.5 to 15.0-degree splay angles), quick-release pins, and detachable side and rear handles		
Load Ratings	MG-LEOPARD/900 multipurpose grid flies 23 LEOPARDS at a 5:1 safety factor, or 20 LEOPARDS at a 7:1 safety factor, with some restrictions		
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)		

## LEOPARD DIMENSIONS



LEOPARD Dimensions



**NOTE:** For dimensions and weight for the MG-LEOPARD top grid and MCF-LEOPARD caster frame, refer to the MG-LEOPARD Assembly Guide (PN 05.243.080.01) available at [www.meyersound.com](http://www.meyersound.com).



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Meyer Sound Laboratories Inc.  
2832 San Pablo Avenue  
Berkeley, CA 94702  
+1 510 486.1166  
[www.meyersound.com](http://www.meyersound.com)

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LEOPARD Operating Instructions  
PN 05.243.005.01 A