

Ultra Reflex LF-15 Compact Cinema Loudspeaker



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Ultra Reflex LF-15 Operating Instructions, PN 05.311.005.01 A2

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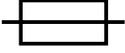
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IMPORTANT SAFETY INSTRUCTIONS

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

SYMBOLS USED

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

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



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



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



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



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

English

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

Deutsch

- Zur Minimierung der Gefahr eines elektrischen Schlages trennen Sie das Produkt vor dem Anschluss von Audio- und/oder Steuerleitungen vom Stromnetz. Das Netzkabel darf erst nach Herstellung aller Signalverbindungen wieder eingesteckt werden.

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

Français

- Pour éviter tout risque d'électrocution, débranchez l'enceinte de la prise secteur avant de mettre en place le câble audio. Ne rebranchez le cordon secteur qu'après avoir procédé à toutes les connexions de signal audio
- Brancher l'appareil sur une prise secteur à trois fils et deux pôles avec mise à la terre. La prise doit être reliée à un fusible ou à un disjoncteur. Le branchement à tout autre type de prise présente un risque de choc électrique et peut enfreindre les codes locaux de l'électricité.
- N'installez pas l'enceinte dans des endroits humides ou en présence d'eau sans utiliser d'équipements de protection adéquats fournis par Meyer Sound.
- Ne laissez pas d'eau ou d'objet étranger, quel qu'il soit, pénétrer à l'intérieur de l'enceinte. Ne posez pas d'objet contenant du liquide sur ou à proximité de l'enceinte.
- Pour réduire les risques de surchauffe, évitez d'exposer directement l'enceinte aux rayons du soleil. Ne l'installez pas à proximité de sources de chaleur, radiateur ou four par exemple.

- S'il est équipé d'un porte-fusible externe, le fusible remplaçable est le seul élément qui peut être réparé par l'utilisateur. Lors du remplacement du fusible, n'utilisez que le même type et la même valeur.
- Cet appareil contient des tensions potentiellement dangereuses. N'essayez pas de démonter l'appareil. Le fusible est la seule pièce réparable par l'utilisateur. Toutes les autres réparations doivent être effectuées uniquement par du personnel de maintenance formé en usine.

Español

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

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INTRODUCTION

HOW TO USE THIS MANUAL

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

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



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



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



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

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THE ULTRA REFLEX LF-15 LOUDSPEAKER

The Ultra Reflex LF-15 loudspeaker was specifically designed to complement the ULTRA-X22 Compact Narrow Coverage Loudspeaker in screen channel solutions for direct view displays.

In addition, due its performance and versatility, the Ultra Reflex LF-15 is equally suited to complement other Meyer Sound loudspeakers, such as HMS-5, HMS-10, HMS-12, and HMS-15 in immersive surround applications.

The Ultra Reflex LF-15 includes a single 15-inch, low distortion, long excursion cone driver. The bass reflex cabinet employs optimized port design for high efficiency and low port distortion. Its slanted connector panel facilitates flush-mounting the cabinet against wall surfaces, reducing required installation depth to 19 inches including connectors.



Ultra Reflex LF-15 Slanted Connector Panel

INTEGRATED AMPLIFIER AND PROCESSING

A self-powered loudspeaker, the Ultra Reflex LF-15 cabinet houses an open-loop class D amplifier. The audio signal is processed with electronic crossover, correction filters for flat frequency and phase responses, and by driver protection circuitry. The built-in crossover accepts full-range signals which enables daisy-chain signal distribution and eliminates the need for external crossovers in smaller systems. The amplifier/processing package incorporates Meyer Sound's Intelligent AC™ which auto-selects the correct operating voltage, suppresses high voltage transients, filters EMI and provides soft-start power-up.

The Ultra Reflex LF-15 cabinet comes standard with audio XLR and powerCON 20 input and looping output connectors.

The Ultra Reflex LF-15 loudspeaker's on-board amplifier is convection cooled.



NOTE: Complete acoustical, electrical and physical specifications are covered in Appendix A on page 15.



Ultra Reflex LF-15 with MUB-Amie-Sub (ceiling mount)

INTEGRATED RIGGING POINTS

Meyer Sound builds the Ultra Reflex LF-15 cabinet from premium birch plywood coated with a durable, slightly textured finish and includes a stamped-steel grille to protect the drivers. A grille frame with black cloth that mounts on top of the steel grille is optionally available.

The Ultra Reflex LF-15 comes standard with two 3/8-inch-16 mounting points on each side for use with the optional MUB-Amie-Sub U-bracket to mount the loudspeaker from ceilings.



Ultra Reflex LF-15 with Optional Black Cloth Grille Frame

POWER REQUIREMENTS

The Ultra Reflex LF-15 loudspeaker combines advanced loudspeaker technology with equally advanced power capabilities. Understanding power distribution, voltage and current requirements, and electrical safety guidelines is critical for the safe operation of the device.

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 Ultra Reflex LF-15 loudspeaker remains within its 90–264 V AC operating range. In addition, the ground line must always be used for safety reasons and the line-to-ground voltage should never exceed 250 V AC (typically 120 V AC from line to ground).

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

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

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

Line-Neutral-Earth/Ground

Figure 1 illustrates a basic 120 V AC, 3-phase Wye distribution system with the loudspeaker load distributed across all three phases, with each loudspeaker connected to a single line and common neutral and earth/ground lines. This system delivers 120 V AC to each loudspeaker.

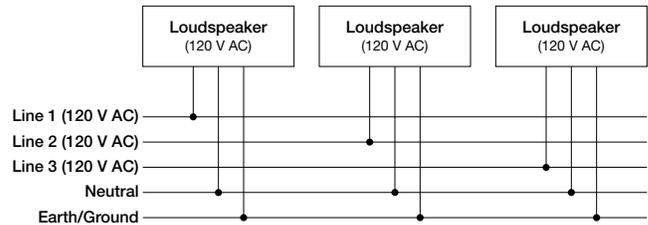


Figure 1: 120 V AC, 3-Phase Wye System (Single Line to Loudspeakers)

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

Line-Line-Earth/Ground

Figure 2 illustrates a 120 V AC, 3-phase Wye distribution system with each loudspeaker connected to two lines and a common earth/ground line. This configuration is possible because Ultra Reflex LF-15 tolerates elevated voltages from the ground line and does not require a neutral line. This system delivers 208 V AC to each loudspeaker.

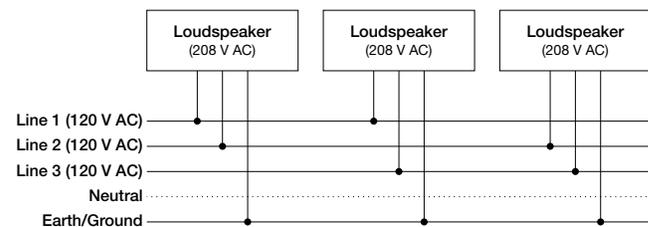


Figure 2: 120 V AC, 3-Phase Wye System (Two Lines to Loudspeakers)

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

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

Line-Neutral-Earth/Ground

Figure 3 illustrates a basic 230 V AC, 3-phase Wye distribution system with the loudspeaker load distributed across all three phases, with each loudspeaker connected to a single line and common neutral and earth/ground lines. This system delivers 230 V AC to each loudspeaker.

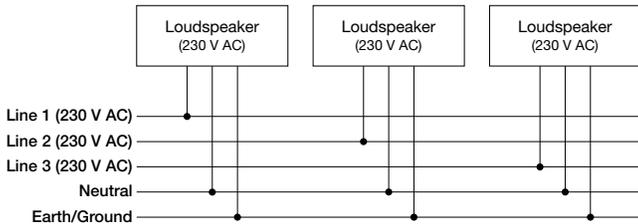


Figure 3: 230 V AC, 3-Phase Wye System (Single Line to Loudspeakers)

CAUTION: For 230 V AC, 3-phase Wye systems, never connect two lines to the AC input of Ultra Reflex LF-15, as the resulting voltage would exceed the upper voltage limit (275 V AC) and will damage the loudspeaker.

AC CONNECTORS

The Ultra Reflex LF-15 user panel includes two powerCON 20 connectors (Figure 4), one for AC Input (blue) and one for AC Loop Output (gray).

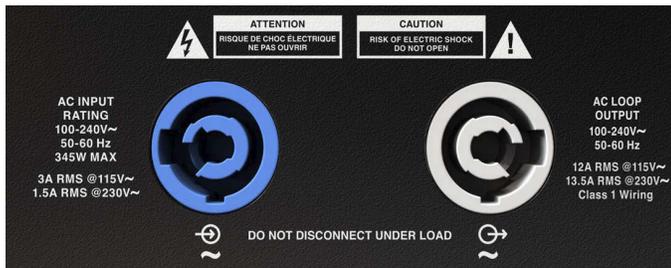


Figure 4: AC Input (Left) and AC Loop Output (Right) Connectors

AC Input (Blue)

The blue AC Input connector supplies power to Ultra Reflex LF-15. 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 the included AC power cable is replaced, make sure to use a cable with the appropriate power plug (on the other end) for the region where the unit will be operated. Ultra Reflex LF-15 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 (Table 1).

AC Loop Output (Gray)

The gray AC Loop Output connector allows multiple Ultra Reflex LF-15s 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 Ultra Reflex LF-15s, connect the AC Loop Output of the first loudspeaker to the AC Input of the second loudspeaker and so forth.

The maximum number of Ultra Reflex LF-15s 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 Ultra Reflex LF-15 loudspeaker (Table 1).

Table 1: Maximum Ultra Reflex LF-15s that Can Be Looped

Circuit Breaker/ Connector Rating	115 V AC	230 V AC	100 V AC
15 A	8 looped (9 total)	18 looped (19 total)	8 looped (9 total)
20 A	11 looped (12 total)	24 looped (25 total)	11 looped (12 total)

NOTE: Current draw for Ultra Reflex LF-15 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.

Ultra Reflex LF-15 ships with a gray powerCON 20 cable mount connector, rated at 20 A, for assembling AC looping cables. Assembled 1-meter AC looping cables are also available from Meyer Sound.

WIRING AC POWER CABLES

Ultra Reflex LF-15 ships with a gray powerCON 20 cable mount connector, rated at 20 A, for assembling AC looping cables (Figure 5). The pins on the powerCON 20 cable mount connector are labeled as follows:

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

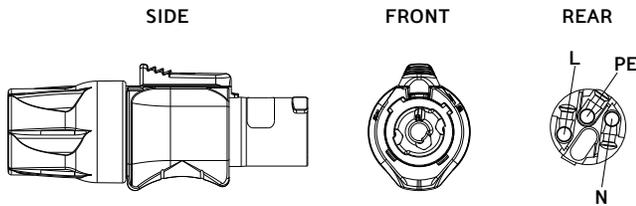


Figure 5: powerCON20 Cable Mount Connector

How AC power cables are wired is determined by the type of AC power distribution system used (see “AC Power Distribution” on page 3). When wiring AC power cables for single-line systems, use one of the wiring schemes shown in Figure 6 and described in Table 2:

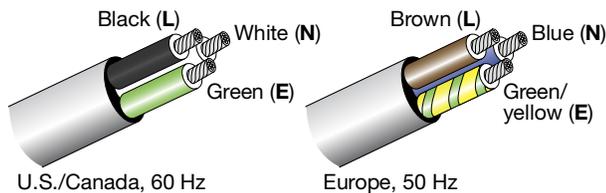


Figure 6: AC Wiring Scheme

Table 2: AC Wiring Scheme

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

CAUTION: When wiring AC power cables and distribution systems, it is important to preserve AC line polarity and connect the earth ground at both ends of the cable. Ultra Reflex LF-15 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

Ultra Reflex LF-15 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 Ultra Reflex LF-15 should always operate within the required operating range, at least a few volts from the upper and lower limits. This approach ensures that AC voltage variations from the service entry—or peak voltage drops due to cable runs—will not cause the loudspeaker’s amplifier to cycle on and off or cause damage to the power supply.

CURRENT REQUIREMENTS

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 and to ensure that the size and gauge of each cable conforms to electrical code standards. This current rating is also used to select appropriately rated, slow-reacting thermal breakers, which are recommended for loudspeaker power distribution. In addition, the maximum long-term continuous current can be used to calculate the AC looping capability for Ultra Reflex LF-15 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.

Use the information in Table 3 to select the appropriate cable gauge and circuit breaker ratings for the system's operating voltage.

Table 3: Ultra Reflex LF-15 Current Draw

Current Draw	115 V AC	230 V AC	100 V AC
Idle	0.25 A rms	0.23 A rms	0.25 A rms
Maximum Long-Term Continuous	1.4 A rms	0.7 A rms	1.5 A rms
Burst	2.9 A rms	1.5 A rms	3.4 A rms
Maximum Instantaneous Peak	7.4 A peak	3.7 A peak	8.5 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 (10 percent at 115 V and 5 percent at 230 V). This approach 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.

INTELLIGENT AC POWER SUPPLY

Ultra Reflex LF-15's Intelligent AC™ power supply automatically selects the correct operating voltage (allowing the loudspeaker to be used internationally without manually setting voltage switches), eliminates high inrush currents with soft-start power up, suppresses high-voltage transients up to several kilovolts, filters common mode and differential mode radio frequencies (EMI), and sustains operation temporarily during low-voltage periods.

Powering on Ultra Reflex LF-15

When powering on Ultra Reflex LF-15, the following startup events take place over several seconds.

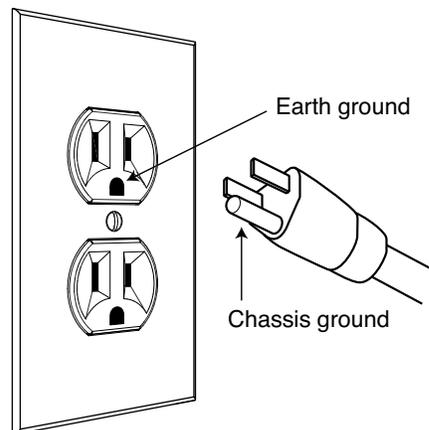
1. Audio output is muted.
2. Voltage is detected and the power supply mode is automatically adjusted as necessary.
3. The power supply ramps up.
4. On the user panel, the Active/Status LED flashes multiple colors successively.
5. The Active/Status LED turns solid green, indicating the loudspeaker is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

 **CAUTION:** If the Active/Status LED does not turn solid green, or the Ultra Reflex LF-15 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.

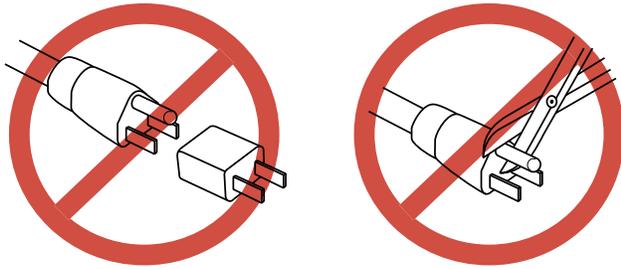
ELECTRICAL SAFETY GUIDELINES

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 energized. Either de-energize or disconnect the other end of the cable.
- Ultra Reflex LF-15 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 Ultra Reflex LF-15 loudspeakers to avoid hazards from electrical shock.

AMPLIFICATION AND AUDIO CONNECTORS

The Ultra Reflex LF-15 drivers are powered by a proprietary open-loop, class D amplifier. The audio signal is processed with electronic crossover, and correction filters for flat phase and frequency responses, and by driver protection circuitry. The amplifier has peak and rms limiters that prevent driver over-excursion and regulate voice coil temperatures.

The standard Ultra Reflex LF-15 user panel (Figure 7) includes 3-pin XLR-F Input and 3-pin XLR-M Loop output connectors for audio, and Limit and Active LEDs.

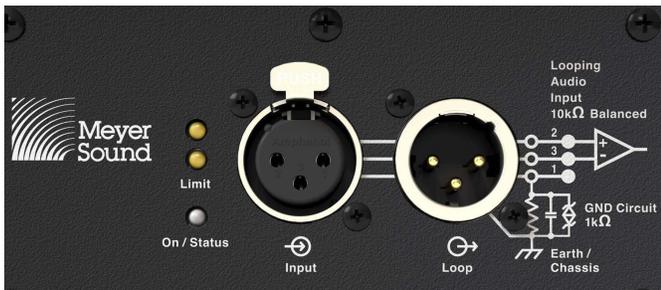


Figure 7: Ultra Reflex LF-15 Standard User Panel

Audio Input (XLR 3-Pin Female)

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

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

Pins 2 and 3 carry the input as a differential signal. Pin 1 is connected to earth through a 1 k Ω , 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 the loudspeaker produces unwanted noise or hiss, 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 source audio, AC power, and electrical ground.

Audio Loop Output (XLR 3-Pin Male)

The XLR 3-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 Female)” on this page). For applications that require multiple Ultra Reflex LF-15, 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 Ω) to yield the maximum SPL over the operating bandwidth of the loudspeakers.

To calculate the load impedance for the looped loudspeakers, divide 10 k Ω (the input impedance for a single loudspeaker) by the number of looped loudspeakers. For example, the load impedance for 10 Ultra Reflex LF-15 is 1000 Ω (10 k Ω / 10). To drive this number of looped loudspeakers, the source device should have an output impedance of 100 Ω or less. This same rule applies when looping Ultra Reflex LF-15 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 loudspeaker GALAXY Network Platform have an output impedance of 50 ohms. Each output can drive up to 20 Meyer Sound (10 k Ω) 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

The Ultra Reflex LF-15 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 loudspeaker’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 LEDs

The low-frequency driver for Ultra Reflex LF-15 is powered by the amplifier which includes a limiter. Limiting activity is indicated by one of the two Limit LEDs on the user panel. The other Limit LED is disabled for this loudspeaker.



Figure 8: Ultra Reflex LF-15 Limit LEDs

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

Ultra Reflex LF-15 performs within its acoustical specifications at normal temperatures when the 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 LED indicates when a safe, optimum level is exceeded. If an Ultra Reflex LF-15 loudspeaker system begins to limit before reaching the desired SPL, consider adding more units to the system.

AMPLIFIER COOLING SYSTEM

CAUTION: The Ultra Reflex LF-15 loudspeaker is convection cooled. The amplifier’s heat sink provides natural convection cooling from the air flowing near its fins.

CAUTION: The Ultra Reflex LF-15 heat sink can reach temperatures up to 80° C (176° F) during extreme operation. Wait 15 minutes for the unit to cool before touching.

ON/STATUS LED

During normal operation, when Ultra Reflex LF-15 is powered on, the On/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 threshold and acoustic output to protect the loudspeaker.

If a loudspeaker is overheating, a reduction in SPL may be necessary. If after a reduction in SPL and an appropriate cooling period the On/Status LED continues to flash red (does not return to solid green), contact Meyer Sound Technical Support.

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

CAUTION: If an Ultra Reflex LF-15 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 about the power on sequence, see “Intelligent AC Power Supply” on page 6.

RIGGING

The Ultra Reflex LF-15 comes standard with 3/8-inch - 16 mounting points on both sides. The Ultra Reflex LF-15 may be mounted on the ceiling with the optional MUB-Amie-Sub U-Bracket.

In addition, an optional black cloth grille frame is available for applications where such an appearance is desired. Details about these optional rigging kits are provided in Table 4.

Important Safety Considerations!

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

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

Ultra Reflex LF-15 RIGGING ACCESSORIES

Table 4: Ultra Reflex LF-15 Accessory Options

Model	Features
MUB-Amie-Sub U-Bracket (PN 40.251.050.01)	The MUB-Amie-Sub U-Bracket enables the mounting of a single Ultra Reflex LF-15 loudspeaker to the ceiling. The kit includes two 3/8-inch - 16 screws and two washers for attaching the MUB-Amie-Sub to the loudspeaker.
Black Cloth Grille Frame (PN 40.251.006.01)	This optional black cloth grille frame magnetically mounts on top of the steel grille for applications where this appearance is more desirable.

THE MUB-AMIE-SUB U-BRACKET

The optional MUB-Amie-Sub U-Bracket (Figure 9) (40.251.050.01) enables the mounting of a single Ultra Reflex LF-15 loudspeaker to the ceiling. The MUB-Amie-Sub has 3/8-inch - 16 mounting points on both sides of the cabinet. The kit includes two 3/8-inch screws/washers for attaching the MUB-Amie-Sub to the loudspeaker.

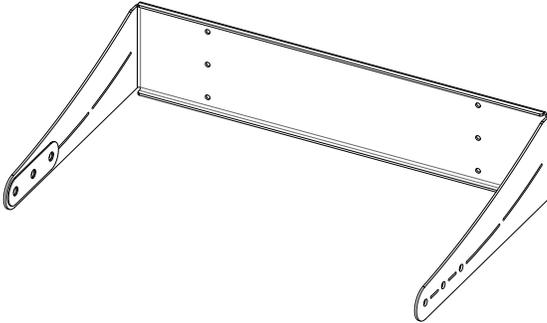


Figure 9: MUB-Amie-Sub U-Bracket

BLACK CLOTH GRILLE FRAME

The optional grille frame with black cloth mounts on top of the steel grille. It attaches with magnets, three on top and three on bottom.

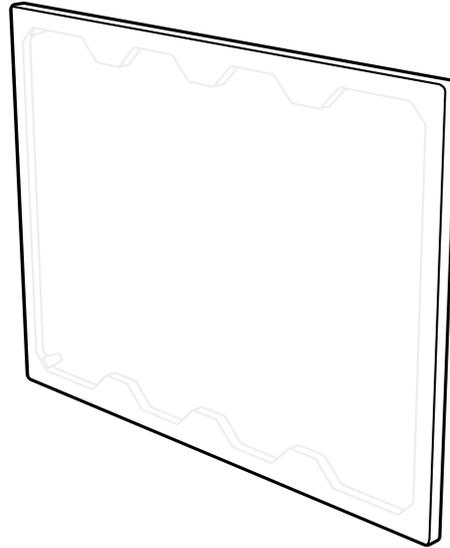


Figure 11: Optional Black Cloth Grille Frame

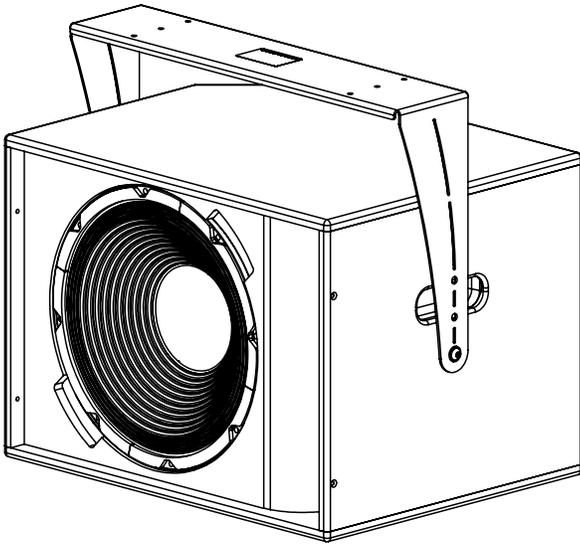


Figure 10: MUB-Amie-Sub Ceiling Mount

ULTRA REFLEX LF-15 SPECIFICATIONS

ACOUSTICAL	
Linear Peak SPL	<p>124.5 dB with crest factor >11.5 dB (M-noise), 124.5 dB (Pink Noise), 126 dB (B-noise)</p> <p>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°C ambient temperature is < 2 dB.</p> <p>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.</p> <p>Pink noise is a full bandwidth test signal with Peak to RMS ratio of 12.5 dB.</p> <p>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.</p>
COVERAGE	
	360° (single unit); varies with number of units and configuration
TRANSDUCERS	
Low Frequency	One 15-inch cone driver; 3 Ω nominal impedance
AUDIO INPUT	
Type	Differential, electronically balanced
Maximum Common Mode Range	±15 V DC, clamped to earth for voltage transient protection
Input Impedance	10 kΩ differential between Signal + and Signal -
Nominal Input Sensitivity	6 dBV (2 V rms) continuous average is typically the onset of limiting for noise and music
Input Level	Audio source must be capable of producing +20 dBV (10 V rms) into 600 Ω to produce maximum peak SPL over the operating bandwidth of the loudspeaker
XLR Wiring	Pin 1: Chassis/earth through 1 kΩ, 1000 pF, 15 V clamp network to provide virtual ground lift at audio frequencies Pin 2: Signal + Pin 3: Signal – (optional polarity reversal switch) Case: Earth ground and chassis
Looping Input Module Connectors	XLR 3-pin female with male loop output
AMPLIFIER	
Type	2-channel, open-loop, class D
Total Output Power	1100 W peak Note: Peak power based on the maximum unclipped peak voltage the amplifier will produce into the nominal load impedance.
THD, IM TIM	<.02%
Cooling	Convection

AC POWER	
Connector	powerCON 20 input with loop output to feed other loudspeakers
Automatic Voltage Selection	90–265 V AC
Safety Agency Rated Operating Voltage	100–240 V AC, 50–60 Hz
Turn On/Turn Off Points	90 V AC turn-on, no turn-off; internal fuse protection above 265 V AC
Current Draw	
Idle Current	0.25 A rms (115 V AC); 0.23 A rms (230 V AC); 0.25 A rms (100 V AC)
Maximum Long-Term Continuous Current	1.4 A rms (115 V AC); 0.7A rms (230 V AC); 1.5 A rms (100 V AC)
Burst Current	2.9 A rms (115 V AC); 1.5 A rms (230 V AC); 3.4 A rms (100 V AC) Note: AC power cabling must be of sufficient gauge so that under burst current rms conditions, cable transmission losses do not cause the loudspeaker’s voltage to drop below the specified operating range.
Maximum Instantaneous Peak Current	7.4 A peak (115 V AC); 3.7 A peak (230 V AC); 8.5 A peak (100 V AC)
Inrush Current	<20 A peak
PHYSICAL	
Dimensions	W: 24.00 in (609 mm) x H: 17.5 in (444 mm) x D: 19 in (482 mm)
Weight	74 lb (33.5 kg)
Enclosure	Premium multi-ply birch with low-gloss, slightly textured black finish
Protective Grille	Powder-coated, hex-stamped steel with optional cloth grille that attaches to the steel grille
Rigging	Side nut-plates with 3/8-inch - 16 threads for the optional MUB-Ultra Reflex LF-15 U-bracket
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)

Pending UL, CE & RCM



ULTRA REFLEX LF-15 DIMENSIONS

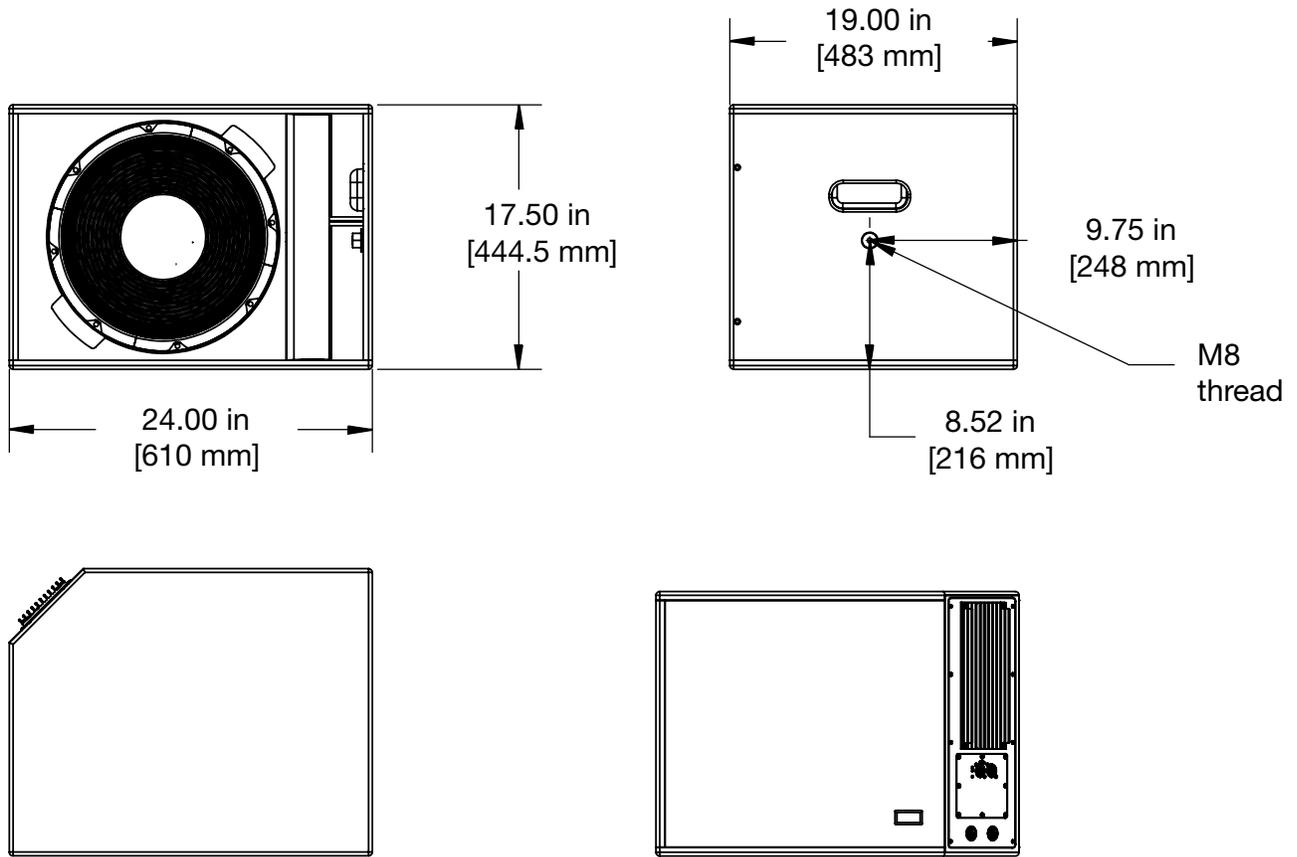


Figure 12: Ultra Reflex LF-15 Loudspeaker Dimensions





THINKING SOUND

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Ultra Reflex LF-15 Operating Instructions PN 05.311.005.01 A2