

Acheron® Screen Channel Loudspeakers  
(Acheron 100, Acheron 80, and Acheron LF)



***Keep these important operating instructions.  
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Acheron Operating Instructions, PN 05.188.005.01 B2

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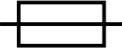
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## IMPORTANT SAFETY INSTRUCTIONS

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

### SYMBOLS USED

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

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

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

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

 **CAUTION:** Disconnect the mains plug before disconnecting the power cord from the 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, Neutraleiter, Schutzleiter) anschließen. Die Steckdose muss vorschriftsgemäß mit einer Sicherung oder einem Leitungsschutzschalter abgesichert sein. Das Anschließen des Produkts an eine anders ausgeführte Stromversorgung kann gegen Vorschriften verstossen und zu Stromunfällen führen.
- Das Produkt nicht an einem Ort aufstellen, an dem es direkter Wassereinwirkung oder übermäßig hoher Luftfeuchtigkeit ausgesetzt werden könnte, solange es sich nicht um ein Produkt handelt, dass mit der Meyer Sound Weather Protection Option ausgestattet ist.
- Vermeiden Sie das Eindringen von Wasser oder Fremdkörpern in das Innere des Produkts. Stellen Sie keine Objekte, die Flüssigkeit enthalten, auf oder neben dem Produkt ab.
- Um ein Überhitzen des Produkts zu verhindern, halten Sie das Gerät von direkter Sonneneinstrahlung fern und stellen Sie es nicht in der Nähe von wärmeabstrahlenden Geräten (z.B. Heizgerät oder Herd) auf.

- Bei Ausstattung mit einem externen Sicherungshalter ist die austauschbare Sicherung das einzige Gerät, das vom Benutzer gewartet werden kann. Verwenden Sie beim Austausch der Sicherung nur den gleichen Typ und Wert.
- Dieses Gerät enthält möglicherweise gefährliche Spannungen. Versuchen Sie nicht, das Gerät zu zerlegen. Der einzige vom Benutzer zu wartende Teil ist die Sicherung. Alle anderen Reparaturen dürfen nur von im Werk geschultem Servicepersonal ausgeführt werden.

## Français

- Pour éviter tout risque d'électrocution, débranchez l'enceinte de la prise secteur avant de mettre en place le câble audio. Ne rebranchez le cordon secteur qu'après avoir procédé à toutes les connexions de signal audio
- Brancher l'appareil sur une prise secteur à trois fils et deux pôles avec mise à la terre. La prise doit être reliée à un fusible ou à un disjoncteur. Le branchement à tout autre type de prise présente un risque de choc électrique et peut enfreindre les codes locaux de l'électricité.
- N'installez pas l'enceinte dans des endroits humides ou en présence d'eau sans utiliser d'équipements de protection adéquats fournis par Meyer Sound.
- Ne laissez pas d'eau ou d'objet étranger, quel qu'il soit, pénétrer à l'intérieur de l'enceinte. Ne posez pas d'objet contenant du liquide sur ou à proximité de l'enceinte.
- Pour réduire les risques de surchauffe, évitez d'exposer directement l'enceinte aux rayons du soleil. Ne l'installez pas à proximité de sources de chaleur, radiateur ou four par exemple.
- S'il est équipé d'un porte-fusible externe, le fusible remplaçable est le seul élément qui peut être réparé par l'utilisateur. Lors du remplacement du fusible, n'utilisez que le même type et la même valeur.
- Cet appareil contient des tensions potentiellement dangereuses. N'essayez pas de démonter l'appareil. Le fusible est la seule pièce réparable par l'utilisateur. Toutes les autres réparations doivent être effectuées uniquement par du personnel de maintenance formé en usine.

## Español

- Para reducir el riesgo de descarga eléctrica, desconecte el aparato de la red eléctrica antes de instalar el cable de audio. Vuelva a conectar el cable de alimentación sólo después de realizar todas las conexiones de señal.
- Conecte el aparato a una toma de corriente de tres hilos y dos polos con conexión a tierra. El receptáculo debe estar conectado a un fusible o disyuntor. La conexión a cualquier otro tipo de receptáculo representa un riesgo de descarga eléctrica y puede violar los códigos eléctricos locales.

- No instale el aparato en lugares húmedos o mojados sin usar el equipo de protección contra intemperie de Meyer Sound.
- No permita que penetre agua u otros objetos extraños en el interior del aparato. No coloque objetos que contengan líquido sobre o cerca de la unidad.
- Para reducir el riesgo de sobrecalentamiento del aparato, evite exponerlo a la luz solar directa. No instale la unidad cerca de aparatos que emitan calor, como un calefactor o una estufa
- Si está equipado con un portafusibles externo, el fusible reemplazable es el único elemento que puede ser reparado por el usuario. Cuando reemplace el fusible, use solamente el mismo tipo y valor.
- Este aparato contiene voltajes potencialmente peligrosos. No intente desmontar la unidad. La única pieza que el usuario puede reparar es el fusible. Todas las demás reparaciones deben ser realizadas únicamente por personal de servicio capacitado de fábrica.



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## CHAPTER 1: INTRODUCTION

### HOW TO USE THIS MANUAL

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

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



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



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



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

Information and specifications are subject to change. Updates and supplementary information are available at [meyersound.com](http://meyersound.com).

Meyer Sound Technical Support is available at:

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

### ACHERON SCREEN CHANNEL LOUDSPEAKER

At the heart of Meyer Sound's line of cinema products is the Acheron high-performance screen channel loudspeaker. Optimized for installation behind perforated screens, the two-way loudspeaker combines the advantages of self-powered technology and innovative horn design to deliver exceptional, precise coverage for the left, right, and center sound channels for cinema.



*Acheron 100 Screen Channel Loudspeaker*

The Acheron loudspeaker is available in two full-range models: the Acheron 100, with a 100-degree horizontal by 50-degree vertical horn, which is ideal for wide theatres; and the Acheron 80, with an 80-degree horizontal by 50-degree vertical horn, which is suitable for narrow theatres and re-recording, production, and post-production facilities.

The Acheron horn (patent pending) was specifically designed for cinema use and features a very soft roll-off outside the extremely well behaved coverage angle. The horn is fixed within the enclosure to ensure an accurate acoustic crossover, phase response, and an incredibly consistent vertical pattern between the low and high frequencies. The Acheron's 580 Hz crossover point places most of the dialog in the horn, which is ideal for cinema applications.

Boasting a frequency response of 38 Hz to 17 kHz at  $\pm 4$  dB, as well as a generous peak output of 139 dB at 1 meter with very low distortion, the Acheron stands up to the most demanding of digital soundtracks, maintaining a wide dynamic range and full fidelity. Designed and manufactured at Meyer Sound's headquarters in Berkeley, California, the Acheron's drivers include one 15-inch low-frequency neodymium magnet cone driver and one high-frequency 4-inch diaphragm compression driver. The drivers yield uncompromising quality and full bandwidth, making the Acheron suitable for small and medium theatres, re-recording stages, and production and post-production facilities. When pairing an Acheron with an Acheron LF, the system offers enough headroom for large theatres.



*Acheron 80 Screen Channel Loudspeaker*

The Acheron's sophisticated onboard amplification produces consistent and predictable results in any system design. The proprietary Meyer Sound power amplifier is a two-channel, class AB/H amplifier with complementary MOSFET output stages that yields a total output of 1685 W (3370 W peak). Built-in signal processing includes an electronic crossover and correction filters — to achieve a flat phase and frequency response — along with driver protection circuitry. The self-powered design not only ensures consistent results but also simplifies installation in both new and existing rooms.

The optional RMS™ remote monitoring system allows comprehensive monitoring of system parameters on a Windows®-based computer.

Strategically placed 3/8-inch threaded points on the side corners of the Acheron cabinet allow the unit to be secured to floors with uptilt or downtilt using the optional mounting brackets. The Acheron can also be mounted on top of the Acheron LF loudspeaker, with uptilt or downtilt, using the

optional stacking brackets. Both brackets are available for purchase from Meyer Sound.



*Acheron 100 with Optional Floor Mount Brackets, Front View*



*Acheron 100 with Optional Floor Mount Brackets, Rear View*

### **Acheron LF Loudspeaker**

The Acheron LF loudspeaker can be paired with the Acheron 80 or Acheron 100 screen channel loudspeaker to deliver the low-frequency headroom required by larger theatres. The self-powered Acheron LF with dual 15-inch drivers boosts the headroom on the LCR channels by converting each Acheron loudspeaker to a system with three low-frequency drivers in an aligned column.



*Acheron LF Screen Channel Loudspeaker*

The unique multi-way, gradated design offers smooth coverage and maximum low-frequency impact with all drivers active at the lowest frequencies and each rolling off, one at a time, via the integral active crossover. This technique eliminates interference between drivers that would otherwise occur at shorter wavelengths, enabling the system to maintain ideal polar, phase, and frequency responses throughout the low and low-mid operating ranges. As a result, the system can deliver the necessary power to completely fill a large theatre with rich, clean sound, thereby ensuring that the full intensity and nuance so carefully crafted into today's movie soundtracks reach every listener without compromise.

The Acheron LF was designed exclusively for use with Acheron loudspeakers. The Acheron LF's 37 Hz to 370 Hz operating frequency range and 136 dB maximum peak SPL (at 1 meter) were carefully chosen to compliment the Acheron. The Acheron LF also features the same high-power 15-inch cone driver used in the low frequency section of the Acheron. Engineered to deliver optimum performance, the high-excursion, back-vented drivers include 4-inch voice coils and are housed in a tuned, vented enclosure that shares the same rectangular footprint as the Acheron.

The Acheron LF is powered by an onboard two-channel class AB/H amplifier with complementary MOSFET output stages. Total output power is 2250 W (4500 W peak) and provides the system with enough headroom to easily accommodate the extreme demands of digital soundtracks.

The optional RMS remote monitoring system allows comprehensive monitoring of system parameters on a Windows-based computer.



*Acheron LF with Acheron 80*

Strategically placed 3/8-inch threaded points on the side corners of the Acheron LF cabinet allow the unit to be secured to floors with the optional mounting brackets. An Acheron can be mounted on top of the Acheron LF with uptilt or downtilt using the optional stacking brackets.



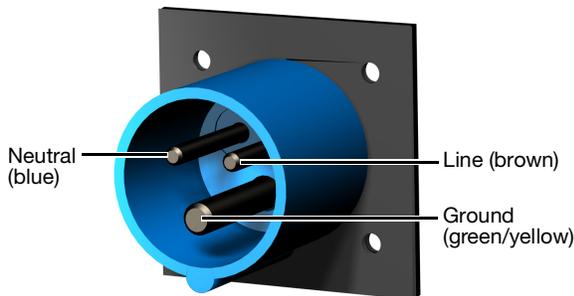
## CHAPTER 2: POWER REQUIREMENTS

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

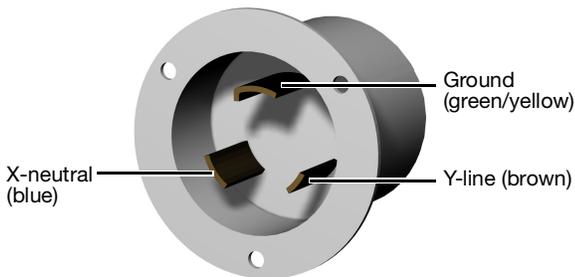
### AC CONNECTOR

The Acheron AC connector supplies AC power to the unit and is located on its rear user panel. The Acheron can be equipped with one of the following AC connectors:

- IEC 309 male inlet connector.



- NEMA L6-20 (twistlock) male inlet

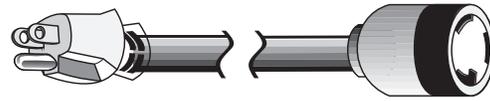


The Acheron requires a grounded outlet. To operate safely and effectively, it is extremely important that the entire system be properly grounded.

If you replace the included AC power cable, make sure to use a cable that is wired correctly and equipped with the with the appropriate power plug (on the other end) for the area in which you will operate the unit.

### AC Power Cable with Edison Adapter

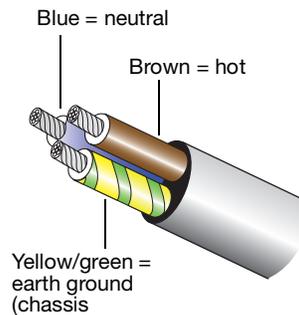
The Acheron can be powered from a standard three-prong Edison outlet with an L6-20 to Edison adapter (available for purchase from Meyer Sound; PN 27.033.024.03).



L6-20 to Edison AC Power Cable Adapter

### AC Connector Wiring

When wiring international or special-purpose AC power cables and connectors, use the following wiring scheme:



AC Cable Wiring Scheme

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

**CAUTION:** When creating AC power cables and distribution systems, it is important to preserve AC line polarity and connect the earth ground on both ends of the cable. The Acheron 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.

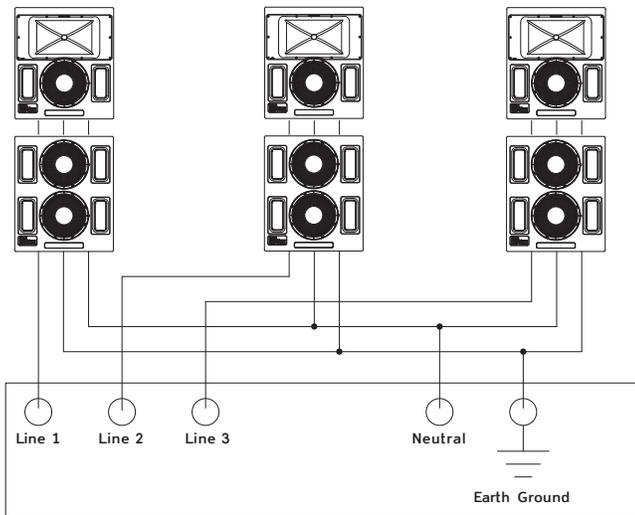
### AC POWER DISTRIBUTION

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

**NOTE:** Improper grounding 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.

The figure below illustrates a basic three-phase AC distribution system with the loudspeaker load distributed across the three phases. All loudspeakers are connected to common neutral and earth-ground lines.



AC Power Distribution System

## ACHERON VOLTAGE REQUIREMENTS

The Acheron operates safely and continuously when the AC voltage stays within 85–134 V AC and 165–264 V AC at 50 or 60 Hz. The loudspeaker allows any combination of voltage to GND (neutral-line-ground or line-line-ground).

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

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

**CAUTION:** The power source for the Acheron should always operate within the required voltage 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.

**TIP:** Since the Acheron does not require a dedicated neutral line, and it can tolerate elevated voltages from the ground line, it can be connected to line-line terminals in 120 V, 3-phase Wye systems. This results in 208 V AC between lines (nominal) and therefore draws less current than when using 120 V AC (line-neutral). Make sure that the voltage remains within the Acheron’s recommended operating windows (85–134 V AC and 165–264 V AC). 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).

## ACHERON CURRENT REQUIREMENTS

The current draw for the Acheron 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.

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

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

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

You can use Table 1 and Table 2 as guidelines for selecting cable gauge and circuit breaker ratings for the system's operating voltage.

**Table 1: Acheron 100 and Acheron 80 Current Draw**

Current Draw	115 V AC	230 V AC	100 V AC
Idle Current	0.71 A rms	0.38 A rms	0.79 A rms
Maximum Long-Term Continuous Current	5.8 A rms	2.8 A rms	6.3 A rms
Burst Current	6.4 A rms	3.2 A rms	7.2 A rms
Maximum Instantaneous Peak Current	26 A peak	14 A peak	28 A peak
Inrush Current	7 A peak	7 A peak	10 A peak

**Table 2: Acheron LF Current Draw**

Current Draw	115 V AC	230 V AC	100 V AC
Idle Current	0.64 A rms	0.32 A rms	0.85 A rms
Maximum Long-Term Continuous Current	8.8 A rms	4.4 A rms	10.0 A rms
Burst Current	19 A rms	9.5 A rms	22 A rms
Maximum Instantaneous Peak Current	39 A peak	20 A peak	45 A peak
Inrush Current	7 A peak	7 A peak	10 A peak

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

 **NOTE:** For best performance, the AC cable voltage drop should not exceed 10 V, or 10 percent at 115 V and 5 percent at 230 V. Make sure that even with AC voltage drops that the AC voltage always remains within the operating windows.

## POWERING UP THE ACHERON

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

When powering up the Acheron, 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 primary ultra low-noise fan turns on.
4. The power supply ramps up.
5. The green Active LED on the user panel lights up, indicating the loudspeaker is ready to output audio.

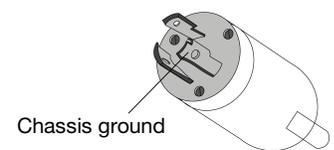
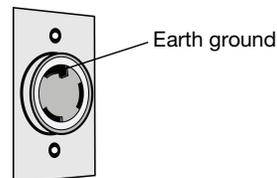
 **CAUTION:** If the Active LED does not light up, or the Acheron does not output audio after ten seconds, remove AC power immediately and verify that the voltage is within the required range. If the problem persists, contact Meyer Sound Technical Support.

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

## ELECTRICAL SAFETY GUIDELINES

Pay close attention to these important electrical and safety guidelines.

- The Acheron requires a grounded outlet. Always use a grounded outlet and plug.



- Make sure the AC power cable for the loudspeaker has the appropriate power plug (on the other end) for the area in which you will operate the loudspeaker.
- Do not operate the unit if the power cable is frayed or broken.
- Keep all liquids away from the Acheron to avoid hazards from electrical shock.

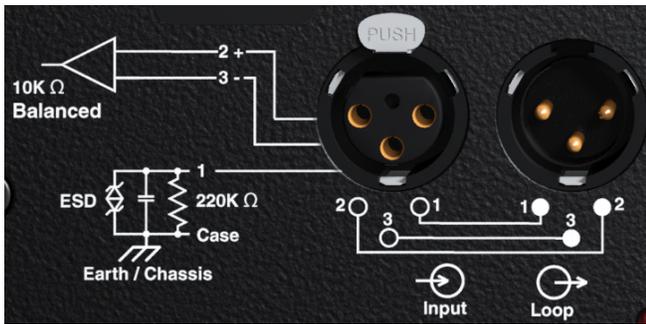
## CHAPTER 3: AMPLIFICATION AND AUDIO

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

The Acheron rear panel has an audio Input and Loop output connector, Limit LEDs, and an optional RMS module for connecting to the RMS remote monitoring system (see Chapter 6, “The RMS Remote Monitoring System”).

### AUDIO CONNECTORS

The Acheron and Acheron LF include female XLR Input and male XLR Loop output connectors.



*Acheron Audio Connectors, Input and Loop Output*

### Input Connector

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

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

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

input connector pin to the case may cause a ground loop, resulting in hum.

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

### Loop Output Connector

The male XLR Loop output connector allows Acheron and Acheron LF loudspeakers to be looped from a single audio source. For applications that require multiple Acherons and Acheron LFs, connect the Loop output of the first unit to the Input of the second, and so forth.

**NOTE:** The order in which loudspeakers are connected when looping audio signals is unimportant. The Loop connector is wired in parallel to the Input connector and transmits the unbuffered source signal even when the Acheron is powered off.

To avoid distortion when looping multiple Acherons, 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 peak SPL over the entire operating bandwidth of the loudspeakers. Most professional audio equipment can transmit these source levels.

To calculate the load impedance for the looped loudspeakers, divide 10 kΩ (the input impedance for a single Acheron) by the number of looped loudspeakers. For example, the load impedance for 10 Acheron loudspeakers is 1000 ohms (10 kΩ / 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 Acheron loudspeakers with other self-powered Meyer Sound loudspeakers and subwoofers.

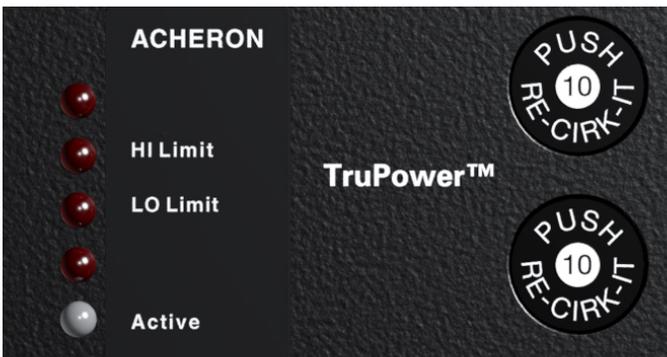
**NOTE:** Most source devices are capable of driving loads no smaller than 10 times their output impedance.

**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.

## LIMITING

Acheron loudspeakers employ 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.



Acheron 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. 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.

**NOTE:** Since TruPower limiting only reduces signal levels to keep voice coil temperatures under a safe margin, signal peaks remain unaffected.

## Limiting LEDs

Behavior for the Acheron Limit LEDs is described below:

- The low- and high-frequency drivers for the Acheron 80 and Acheron 100 are powered by separate amplifier channels, each with their own limiter. Limiting activity is indicated with a High Limit LED for the high-frequency channel, and a Low Limit LED for the low-frequency channel.
- The two low-frequency drivers for the Acheron LF are powered by separate amplifier channels that are routed to a single limiter. When a safe power level is exceeded in either channel, limiting is engaged for both channels and the Low Limit LED lights.

When engaged, the limiters not only protect the drivers but also prevent signal peaks from causing excessive distortion in the amplifier channels, thereby preserving headroom and maintaining smooth frequency responses at high levels. When levels returns to normal, below the limiter thresholds, limiting ceases.

The Acheron performs within its acoustical specifications at normal temperatures when the Limit LEDs are unlit, or if the LEDs are lit for two seconds or less and then turn off for at least one second. If the LEDs remain lit for longer than three seconds, the loudspeaker enters hard limiting where:

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

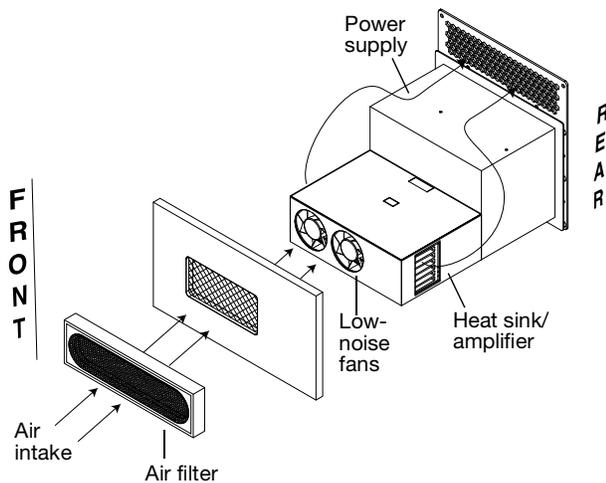
**CAUTION:** The Limit LEDs indicate when a safe, optimum level is exceeded. If the Acheron 80s or Acheron 100s in a system begin to limit before reaching the required SPL, consider adding Acheron LFs to the system (see Chapter 4, “Integrating Acheron LF Loudspeakers”).

**NOTE:** Acheron loudspeakers use optical limiters that add no noise and have no effect on the signal when the limiters are not engaged and the Limit LEDs are not lit.

## AMPLIFIER COOLING SYSTEM

The Acheron uses a forced-air cooling system with two fans (one variable-speed, ultra low-noise primary fan and one reserve fan) to prevent the amplifier module from overheating. The fans draw air in through ducts on the front of the

cabinet, over the heat sink, and out the rear of the cabinet. Because dust does not accumulate in the amplifier circuitry, its life span is increased significantly.



*Airflow for the Acheron*

When the Acheron heat sink temperature is below 42° C, the variable-speed primary fan runs continuously at its slowest speed with an inaudible operating noise. The primary fan increases speed when the heat sink temperature reaches 42° C; the primary reaches full speed at 62° C and is barely audible near the cabinet, even without an audio signal. If the the heat sink temperature reaches 74° C, the reserve fan turns on. The reserve fan turns on if:

- The primary fan has failed (check status immediately)
- High source levels are encountered for extended periods
- Dust has accumulated along the cooling path

The reserve fan turns off when the heat sink temperature lowers to 68° C.

**NOTE:** In the unlikely event that the reserve fan does not keep the Acheron heat sink temperature below 85° C, the unit automatically shuts down until AC power is removed and reapplied. If the Acheron shuts down again after cooling and re-applying AC power, contact Meyer Sound for repair information.

## Dust and the Amplifier Module

Operating the Acheron in dusty environments, or for prolonged, intensive periods, may cause dust to accumulate along its airflow path, thereby preventing normal cooling. Under these circumstances, it may be necessary to periodically remove the air intake foam and use compressed air to clear the dust from the foam and air ducts.

In addition, if the amplifier gets unusually hot, you should remove the amplifier module and use compressed air to clear any dust from its heat sink.

**CAUTION:** Make sure to unplug the AC power from the Acheron before cleaning its amplifier.

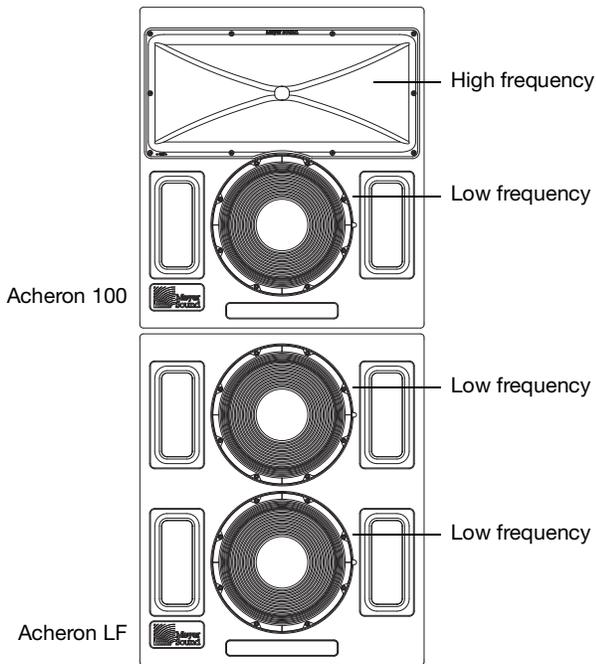
**CAUTION:** To keep the Acheron from getting too hot, allow for proper ventilation, 3–4 inches, behind the loudspeaker.



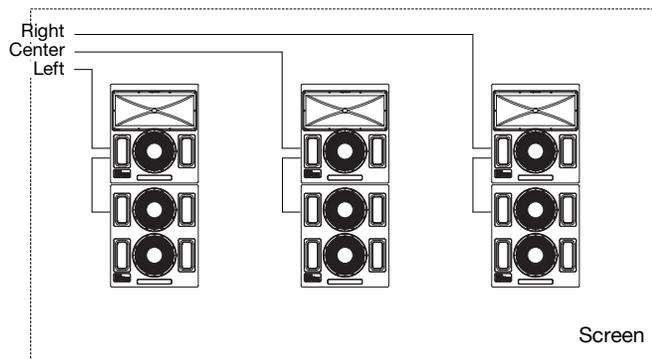
## CHAPTER 4: INTEGRATING ACHERON LF LOUDSPEAKERS

### INTEGRATING ACHERON LF LOUDSPEAKERS

To meet the SPL and low frequency headroom requirements of large rooms, the Acheron 100 or Acheron 80 can be daisy-chained with the Acheron LF loudspeaker, creating a system with three low frequency drivers and one high frequency driver. Adding an Acheron LF yields approximately a 10 dB boost in the low frequency range, depending on loading conditions and room acoustics.



Acheron 100 with Acheron LF



Acheron LCR System with Acheron LFs

The Acheron LF has been carefully designed so its frequency and phase responses complement the Acheron. The Acheron LF has the same low end frequency response

as the Acheron (38 Hz) and rolls off at 320 Hz to avoid any interference in the crossover region of the Acheron.

- At 38 Hz to 150 Hz, the low frequency driver in the Acheron 80 or Acheron 100 and the two low frequency drivers in the Acheron LF are all active. At 150 Hz, the bottom Acheron LF low frequency driver rolls off.
- At 150 Hz to 300 Hz, two low frequency drivers are active: one in the Acheron 80 or Acheron 100 and the top Acheron LF driver. At 300 Hz, the top Acheron LF low frequency driver rolls off.
- At 300 Hz to 580 Hz, only the Acheron 80 or Acheron 100 low frequency driver is active, which enables a smooth crossover to the high frequency driver.

This unique multi-way, graded design offers smooth coverage and maximum low-frequency impact with all drivers active at the lowest frequencies and each rolling off, one at a time, via the internal active crossover. This technique eliminates interference between drivers that would otherwise occur at shorter wavelengths, enabling the system to maintain ideal polar, phase, and frequency responses throughout the low and low-mid operating ranges. As a result, the system can deliver the necessary power to completely fill a large theatre.

### Achieving a Flat Frequency Response with an Acheron / Acheron LF Stack

When the Acheron and Acheron LF are daisy-chained (using the Loop output connector on the user panel) an approximate boost of 10 dB at 110 Hz results, depending on the loading conditions and room acoustics. To achieve a flat frequency response in this configuration, a single parametric filter with the following characteristics can be applied to the signal:

<b>Filter type</b>	Parametric
<b>Frequency</b>	110 Hz
<b>Bandwidth</b>	2 (Q = 0.6667)
<b>Amplitude</b>	-10 dB

**CAUTION:** When daisy-chaining Acherons and Acheron LFs, make sure the audio cables are wired correctly to avoid polarity reversals.

## **USING DIGITAL SIGNAL PROCESSORS AND CROSSOVERS WITH ACHERON SYSTEMS**

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

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

In no case should a filter higher than the 2nd order be used on source signals. The additional phase shift introduced by these filters deteriorates the impulse response, and the higher roll-off does not improve crossover interaction.

If loudspeakers will be driven directly from a digital signal processor, make sure the signal is sufficient to drive the total load impedance of the connected loudspeakers (see “Loop Output Connector” on page 15).

## CHAPTER 5: MOUNTING

Strategically placed 3/8-inch threaded points on the side corners of the Acheron cabinet allow the unit to be secured to floors with uptilt or downtilt using the optional mounting brackets. The Acheron can also be mounted on top of the Acheron LF loudspeaker, also with uptilt or downtilt, using the optional stacking brackets. Both brackets are available for purchase from Meyer Sound.

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

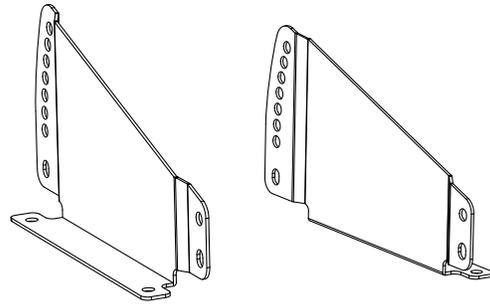
### Acheron and Acheron LF Side Screws

The Acheron and Acheron LF ship with four 3/8-16 x 1.5-inch screws installed on each loudspeaker side (eight total). These screws and threaded points are used to secure the floor mount and stacking brackets to the loudspeakers.

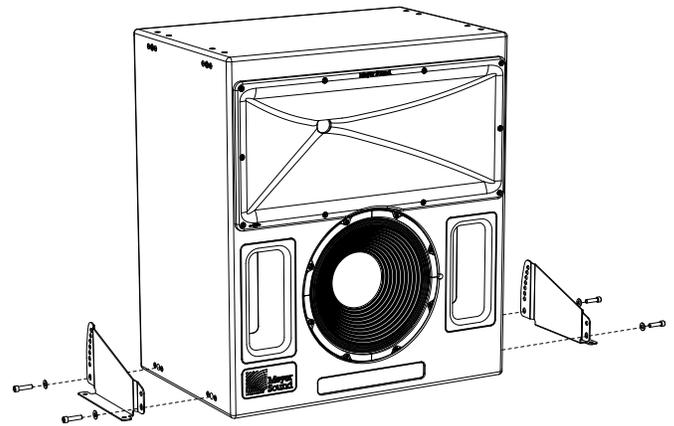
 **CAUTION:** If the Acheron side screws are removed to install the brackets, make sure to always reinstall the screws, and tighten them securely. If the side screws are not present when using the loudspeakers, air leakage will result, which will adversely affect frequency response.

### ACHERON FLOOR MOUNT BRACKETS

The Acheron floor mount brackets secure Acheron loudspeakers to floors with downtilt and uptilt angles of 0–18 degrees (in 3-degree increments). The floor mount brackets should also be used with Acheron LF loudspeakers when stacking an Acheron on top of the Acheron LF.



*Acheron Floor Mount Brackets*



*Acheron with Floor Mount Brackets*

### Acheron Floor Mount Bracket Kit Contents

The Acheron floor mount kit (PN 40.188.026.01) includes the following parts.

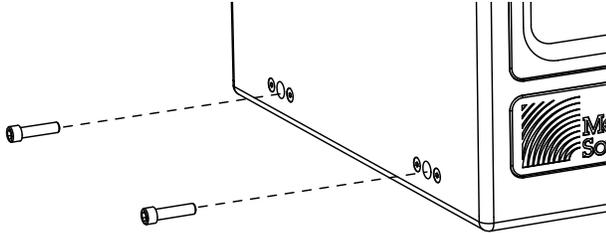
Part	Part number	Quantity
Acheron floor mount bracket (left)	64.188.042.01	1
Acheron floor mount bracket (right)	64.188.043.01	1
Flat washers	113.509	4

 **NOTE:** The 3/8-16 x 1.5-inch screws required for securing the floor mount brackets to the Acheron are shipped with the loudspeaker installed in the two bottom screw holes on each side (four total).

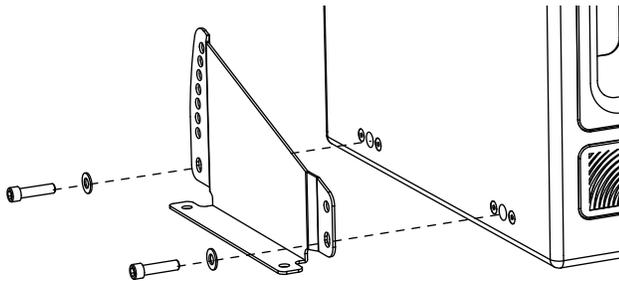
## Floor Mounting Acherons and Acheron LFs

To floor mount an Acheron or Acheron LF:

1. Remove the two 3/8-16 x 1.5-inch screws at the bottom of each loudspeaker side (four total).



2. Secure the left bracket to the left side of the loudspeaker with two of the removed screws and two of the included flat washers.

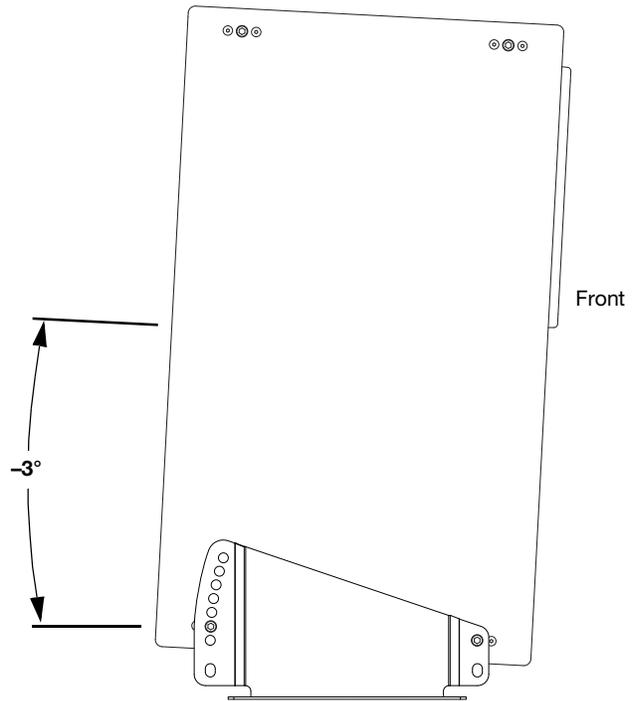


- To mount the loudspeaker at 0 degrees with no downtilt or uptilt, use the bottom bracket holes.
  - To mount the loudspeaker with downtilt, orient the bracket with the large end toward the rear of the loudspeaker. For available downtilt angles, see “Floor Mount Downtilt Angles” on page 23.
  - To mount the loudspeaker with uptilt, orient the bracket with the large end toward the front of the loudspeaker. For available uptilt angles, see “Floor Mount Uptilt Angles” on page 23.
3. Repeat the previous step with the right bracket and the remaining two screws and washers.
  4. Secure the brackets to the floor with fasteners (not included) appropriate for the floor surface.

## Floor Mounting Acherons with Downtilt and Uptilt

The Acheron floor mount brackets can mount loudspeakers with downtilt or uptilt. Available angles are 3-18 degrees in 3-degree increments. The direction in which the brackets are

oriented determines whether the loudspeaker can be mounted with downtilt or uptilt.

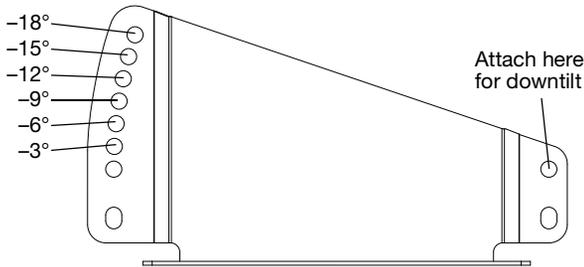


*Acheron Floor Mounted with 3-Degree Downtilt*

**CAUTION:** When using the floor mount brackets with an Acheron LF that will also have an Acheron stacked on top of it, mount the Acheron LF at 0 degrees using the bottom bracket holes.

### Floor Mount Downtilt Angles

When the floor mount brackets are oriented with the bracket's large end toward the rear of the loudspeaker, the Acheron can be mounted with downtilt angles of 3-18 degrees in 3-degree increments.

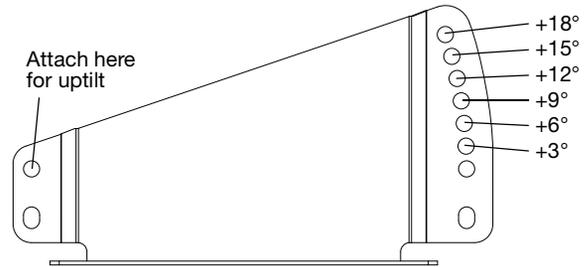


Acheron Floor Mount Bracket Oriented for Downtilt

The small end of the bracket attaches to the loudspeaker using the top hole. The large end of the bracket attaches to the loudspeaker with one of the angled holes.

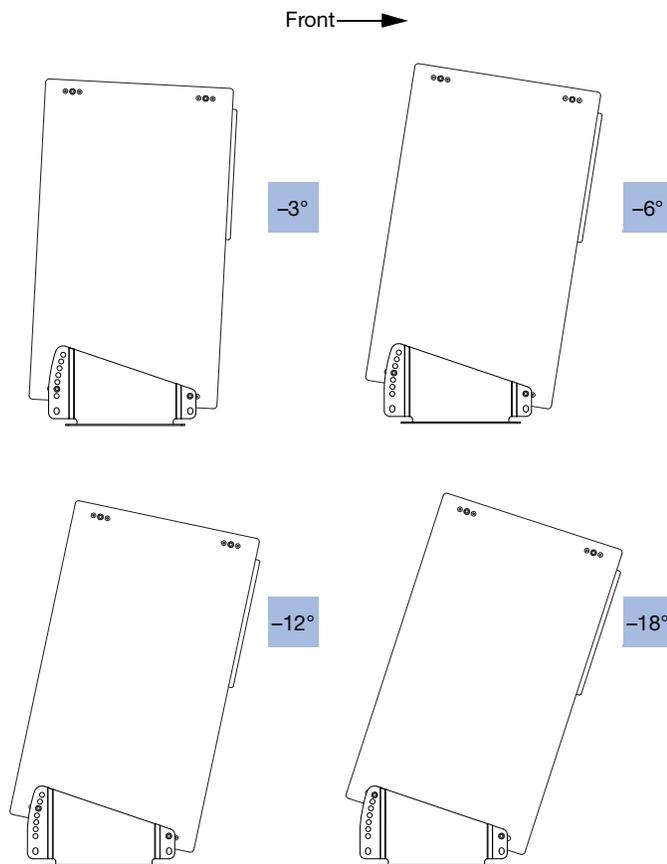
### Floor Mount Uptilt Angles

When the floor mount brackets are oriented with the bracket's large end toward the front of the loudspeaker, the Acheron can be mounted with uptilt angles of 3-18 degrees in 3-degree increments.

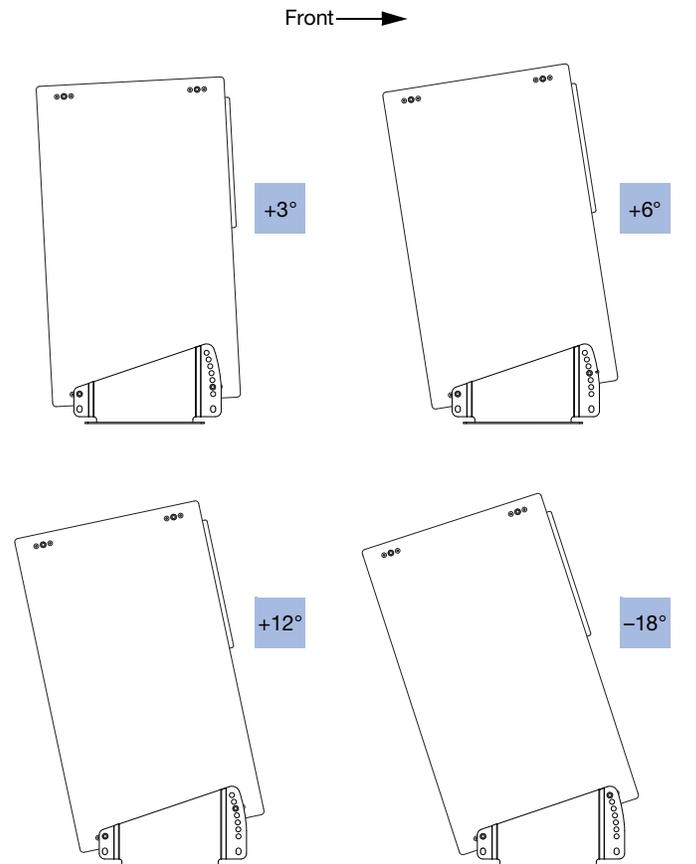


Acheron Floor Mount Bracket Oriented for Uptilt

The small end of the bracket attaches to the loudspeaker using the top hole. The large end of the bracket attaches to the loudspeaker with one of the angled holes.



Acheron Floor Mount Downtilt Angles

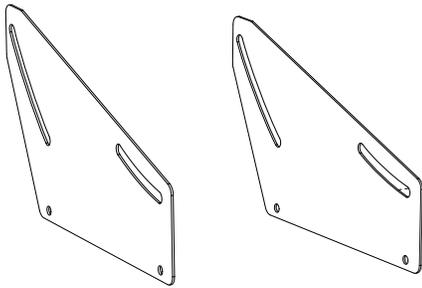


Acheron Floor Mount Uptilt Angles

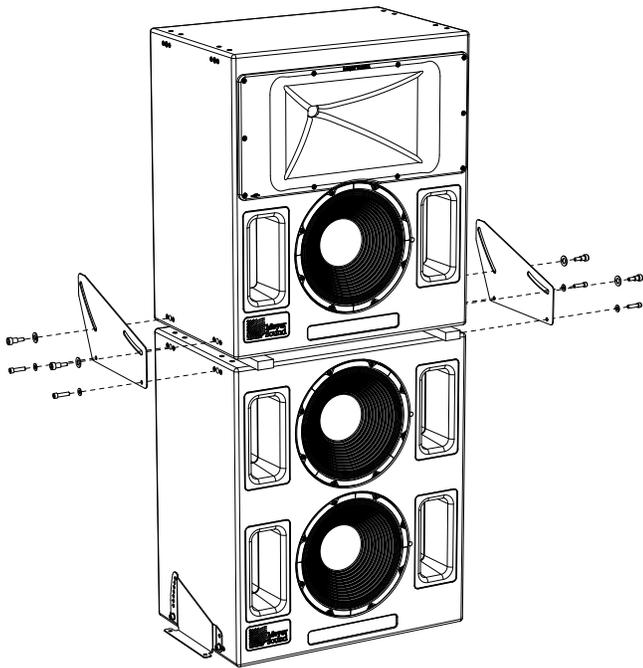
## ACHERON STACKING BRACKET

One Acheron can be stacked on top of the Acheron LF and secured with the Acheron stacking brackets. The stacked Acheron can be mounted with downtilt and uptilt angles of 0–16 degrees.

 **NOTE:** The orientation of the Acheron to the Acheron LF with the stacking bracket was carefully optimized to minimize any acoustical artifacts between the loudspeakers, as well as between the loudspeakers and baffle walls.



Acheron Stacking Brackets



Acheron and Acheron LF with Stacking Brackets

 **CAUTION:** When stacking an Acheron on top of an Acheron LF, the Acheron LF must be secured to the floor with the floor mount brackets. Floor mount the Acheron LF at 0 degrees using the bottom bracket holes.

## Acheron Stacking Bracket Kit Contents

The Acheron stacking bracket kit (PN 40.188.025.01) includes the following parts.

Part	Part number	Quantity
Acheron stacking bracket (left)	45.188.043.01	1
Acheron stacking bracket (right)	45.188.044.01	1
3/8-16 x 1.5" shoulder screws	101.507	4
Large 1/2" flat washers	113.531	4
Small Flat washers	113.509	4

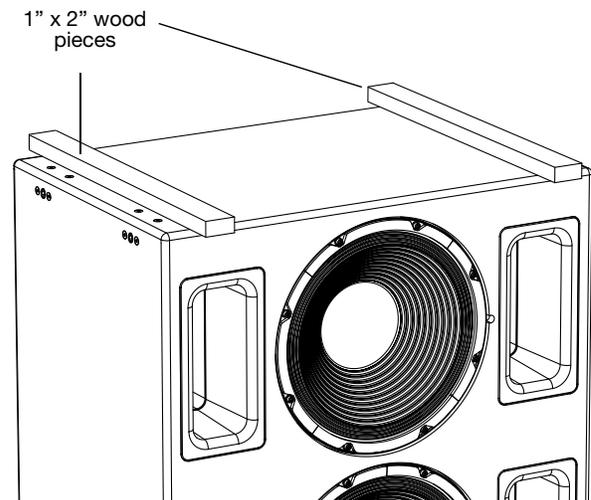
 **NOTE:** The 3/8-16 x 1.5-inch screws required for securing the stacking bracket to the Acheron LF are shipped with the Acheron LF installed in the top two screw holes on each side of the unit (four total).

## Stacking Acherons on Acheron LFs

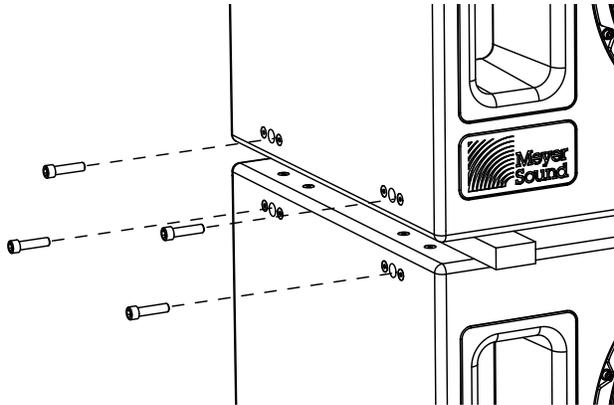
To stack an Acheron on top of an Acheron LF:

1. Secure the Acheron LF to the floor with the floor mount brackets at 0 degrees using the bottom bracket holes. For more information, see “Floor Mounting Acherons and Acheron LFs” on page 22.
2. Stack the Acheron on top of the Acheron LF.

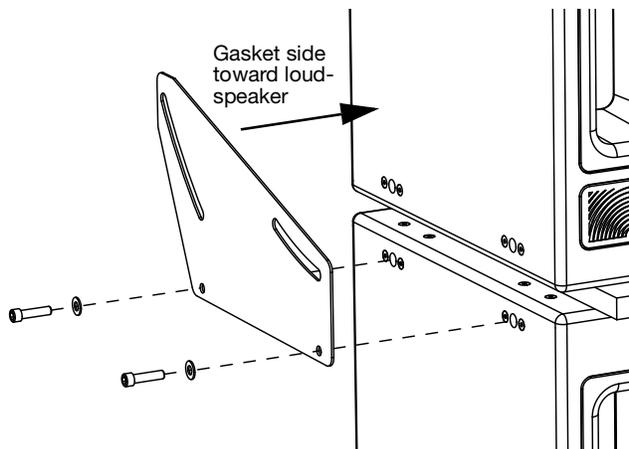
 **TIP:** Optionally place two 1 x 2-inch wood pieces (not included) across the top of the Acheron LF, between it and the Acheron. The resulting extra space between the loudspeakers will make it easier to align the Acheron screw holes with the brackets.



- Remove the two 3/8-16 x 1.5-inch screws at the top of each side of the Acheron LF (four total). These screws will be used to secure the stacking bracket to the Acheron LF.

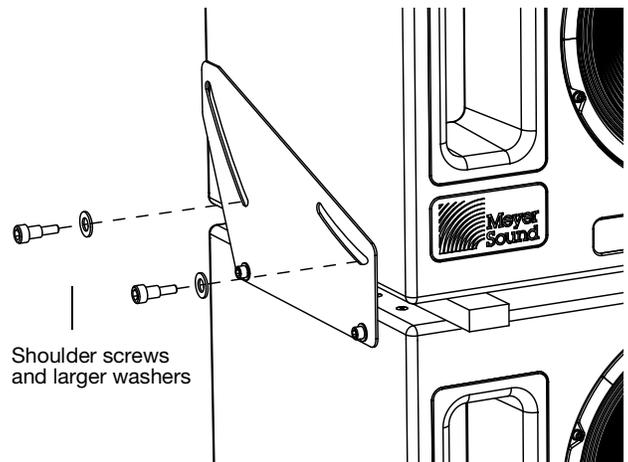


- Remove the two 3/8-16 x 1.5-inch screws at the bottom of each side of the Acheron (four total). These screws will not be needed for installing the stacking bracket.
- Secure the left bracket to the left side of the Acheron LF with two of the removed screws and two of the small flat washers (included in the Acheron stacking bracket kit). Use the bracket's bottom screw holes and install the bracket so its rubber gasket faces the loudspeaker.



- To mount the Acheron with downtilt, orient the bracket with the large end toward the rear of the loudspeakers. For available downtilt angles, see “Stack Mount Downtilt Angles” on page 26.
- To mount the Acheron with uptilt, orient the bracket with the large end toward the front of the loudspeakers. For available uptilt angles, see “Stack Mount Uptilt Angles” on page 26.

- Secure the right bracket to the right side of the Acheron LF with the remaining two screws (previously removed) and the remaining two small flat washers. Install the bracket so its rubber gasket faces the loudspeaker.
- Secure the stacking brackets to the Acheron with the four 3/8-16 x 1.5-inch shoulder screws and four large 1/2-inch washers (both included with the Acheron stacking bracket kit). Insert the shoulder screws in the bracket's top slots but don't yet tighten them completely.

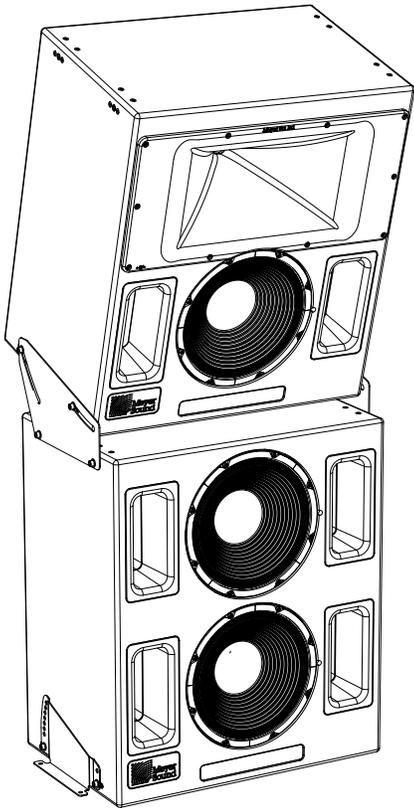


 **TIP:** If necessary, tip the Acheron slightly to align its screw holes with the bracket holes.

- Adjust the angle of the stacked Acheron — anywhere between 0 and 16 degrees — by tilting the unit up or down so the screws slide through bracket slots.
- Tighten all four shoulder screws to secure the stacking bracket to the Acheron.

### Stacking Acherons with Downtilt and Uptilt

The Acheron stacking brackets can mount Acherons with either downtilt or uptilt. Available angles are anywhere from 0–16 degrees. The direction in which the brackets are oriented determines whether the loudspeaker can be mounted with downtilt or uptilt.

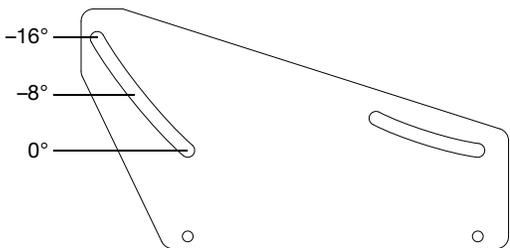


Acheron LF and Stacked Acheron with 16-Degree Downtilt

**CAUTION:** When stacking an Acheron on top of an Acheron LF, the Acheron LF must be secured to the floor with the floor mount brackets. In addition, the Acheron LF should *not* be mounted with downtilt or uptilt.

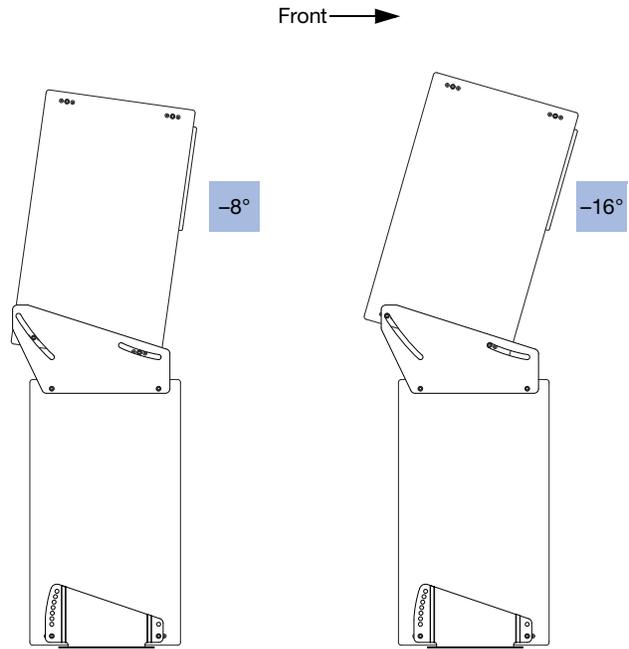
### Stack Mount Downtilt Angles

When the stacking brackets are oriented with the bracket's large end toward the rear of the loudspeakers, the Acheron can be mounted with downtilt angles of up to 16 degrees.



Acheron Floor Mount Bracket Oriented for Downtilt

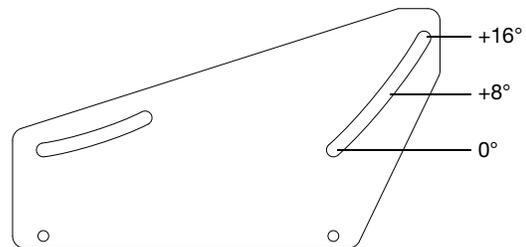
Make sure to install the brackets so the rubber gasket faces the loudspeaker. This ensures that the loudspeaker will not get scratched when adjusting the downtilt angle.



Acheron Floor Mount Downtilt Angles

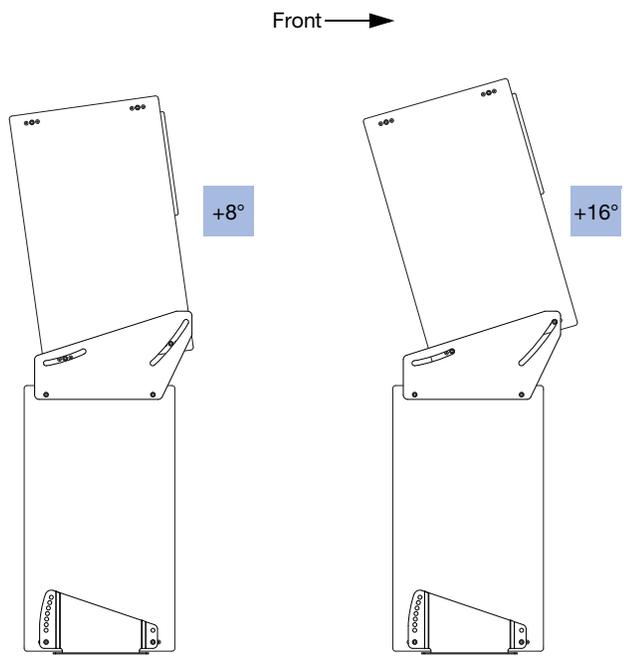
### Stack Mount Uptilt Angles

When the stacking brackets are oriented with the bracket's large end toward the front of the loudspeakers, the Acheron can be mounted with uptilt angles of up to 16 degrees.



Acheron Floor Mount Bracket Oriented for Uptilt

Make sure to install the brackets so the rubber gasket faces the loudspeaker. This ensures that the loudspeaker will not get scratched when adjusting the uptilt angle.



*Acheron Floor Mount Uptilt Angles*



## CHAPTER 6: ACHERON RMS REMOTE MONITORING SYSTEM

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

 **NOTE:** For the latest RMS system requirements, visit [meyersound.com](http://meyersound.com).

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

 **NOTE:** RMS-equipped loudspeakers include a Mute Jumper to enable the loudspeaker’s mute and solo capability. Meyer Sound currently ships RMS-equipped loudspeakers with the Mute Jumper installed. These mute-enabled loudspeakers can be identified by the blue “ME” sticker on the face of the RMS module. Older RMS-equipped loudspeakers can easily be mute-enabled by installing the Mute Jumper. For more information, refer to the RMsServer Hardware Guide (PN 05.222.024.01) available at [meyersound.com/documents](http://meyersound.com/documents).

 **NOTE:** The RMS software allows disabling of the Mute and Solo functions to eliminate any possibility of accidentally muting loudspeakers. Mute and solo capability can also be disabled by removing the Mute Jumper from RMS modules. For more information, refer to the RMsServer Quick Start Guide (PN 05.222.005.01) available at [meyersound.com/documents](http://meyersound.com/documents).

### COMPASS RMS SOFTWARE

Compass RMS™ software provides extensive system status and performance data for each loudspeaker, including amplifier voltage, limiting activity, power output, heat sink temperature, fan and driver status, as well as mute and solo capability. Loudspeakers are added to the RMS network and assigned a node name during a one-time discovery

procedure. Once loudspeakers are identified on the RMS network, they appear in Compass RMS as icons that can be customized to (Figure ).



Compass RMS Window

Individual loudspeakers can be physically identified with the Wink option in RMS, which lights the Wink LED on the RMS module of that particular loudspeaker. Loudspeaker icons can be arranged in Compass RMS and saved as pages to represent how the loudspeakers have been deployed in the system. Multiple pages can be saved and recalled for specific performances and venues.

### RMS MODULE

The Acheron RMS user panel (Figure ) includes three LEDs, two buttons, and two Network connectors..



Acheron RMS Module

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

## Service LED (Red)

The red Service LED provides the following feedback:

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

## Service Button

Pressing the Service button identifies the loudspeaker on the RMS network and notifies the RMS software that the loudspeaker is connected. Simultaneously press the Reset and Service buttons to reset the RMS module and decommission the loudspeaker from the network (see "Resetting the RMS Module" on page 30).

## Wink LED (Green)

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

## Reset Button

Pressing the Reset button causes the RMS module's firmware to reboot; this action will not affect whether the loudspeaker is commissioned (which is stored in flash memory). Simultaneously press the Reset and Service buttons to reset the RMS module and decommission the loudspeaker from the network (see "Resetting the RMS Module").

## Activity LED (Green)

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

## Network Connectors

The two Weidmuller 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 the cables to be securely attached to the RMS module with screws.

## RESETTING THE RMS MODULE

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

To reset the RMS module:

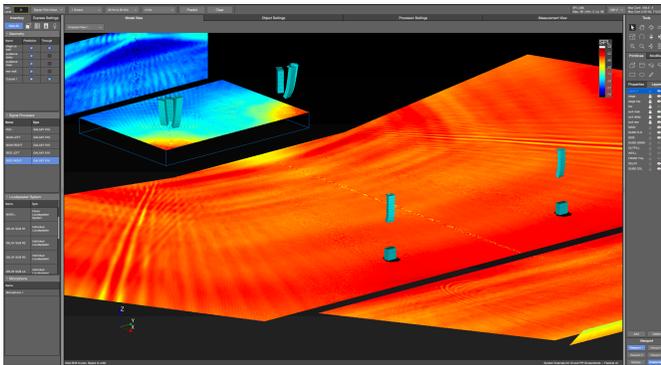
1. Press and hold the Service button for 10 seconds.
2. While continuing to hold down the Service button, press and hold the Reset button for 5 seconds.
3. After releasing the Reset button, continue holding down the Service button for 5 seconds. The RMS module is reset and the loudspeaker is decommissioned.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

## CHAPTER 7: SYSTEM DESIGN AND INTEGRATION TOOLS

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

### MAPP SYSTEM DESIGN TOOL

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



*MAPP System Design Tool*

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

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

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



**TIP:** See [meyersound.com](http://meyersound.com) for support and more information about MAPP.

### MAPP Capabilities

With MAPP, the user can:

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

## **GALILEO GALAXY NETWORK PLATFORM**

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

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

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

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

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

The GALAXY 408, GALAXY 816 and GALAXY 816-AES3 processor versions have the same audio processing capability with different I/O. See [www.meyersound.com](http://www.meyersound.com) to locate their datasheets for more information.

## APPENDIX A: ACHERON 80 AND ACHERON 100 SPECIFICATIONS

### Acheron 80 and Acheron 100 Specifications

ACOUSTICAL	
Operating Frequency Range	37 Hz – 18 kHz <b>Note:</b> Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
Frequency Response	38 Hz – 17 kHz $\pm 4$ dB <b>Note:</b> Measured free field with 1/3 octave frequency resolution at 4 meters.
Phase Response	700 Hz to 17 kHz $\pm 30^\circ$
Linear Peak SPL	Acheron_80: <b>135 dB with crest factor of 18.5 dB (M-noise)</b> , 134 dB (Pink noise), 136 dB (B-noise) Acheron 100: <b>134 dB with crest factor of 18 dB (M-noise)</b> , 133.5 dB (Pink noise), 135 dB (B-noise)  <b>Note: Linear Peak SPL</b> is measured in free-field at 4 m referred to 1 m. Loudspeaker SPL compression measured with M-noise at the onset of limiting, 2-hour duration, and 50-degree C ambient temperature is < 2 dB. <b>M-noise</b> is a full bandwidth (10 Hz–22.5 kHz) test signal developed by Meyer Sound to better measure the loudspeaker’s music performance. It has a constant instantaneous peak level in octave bands, a crest factor that increases with frequency, and a full bandwidth Peak to RMS ratio of 18 dB. <b>Pink noise</b> is a full bandwidth test signal with Peak to RMS ratio of 12.5 dB. <b>B-noise</b> is a Meyer Sound test signal used to ensure measurements reflect system behavior when reproducing the most common input spectrum, and to verify there is still headroom over pink noise.
Dynamic Range	>110 dB
Coverage	Acheron 80: 80° horizontal by 50° vertical Acheron 100: 100° horizontal by 50° vertical
Crossover	580 Hz <b>Note:</b> At this frequency, both transducers produce equal sound pressure levels.
TRANSDUCERS	
Low Frequency	One high-power 15-inch cone driver with neodymium magnet; nominal impedance: 4 $\Omega$
High Frequency	One 4-inch compression driver; nominal impedance: 8 $\Omega$
AUDIO INPUT	
Type	Differential, electronically balanced
Maximum Common Mode Range	$\pm 15$ V DC, clamped to earth for voltage transient protection
Connectors	Female XLR input with male XLR loop output
Input Impedance	10 k $\Omega$ differential between pins 2 and 3
Wiring	Pin 1: Chassis/earth through 220 k $\Omega$ , 1000 pF, 15 V clamp network to provide virtual ground lift at audio frequencies Pin 2: Signal + Pin 3: Signal – Case: Earth ground and chassis
Nominal Input Sensitivity	10 dBV (3.2 V rms) continuous is typically the onset of limiting for noise and music
Input Level	Audio source must be capable of producing +20 dBV (10 V rms) into 600 $\Omega$ to produce the maximum peak SPL over the operating bandwidth of the loudspeaker

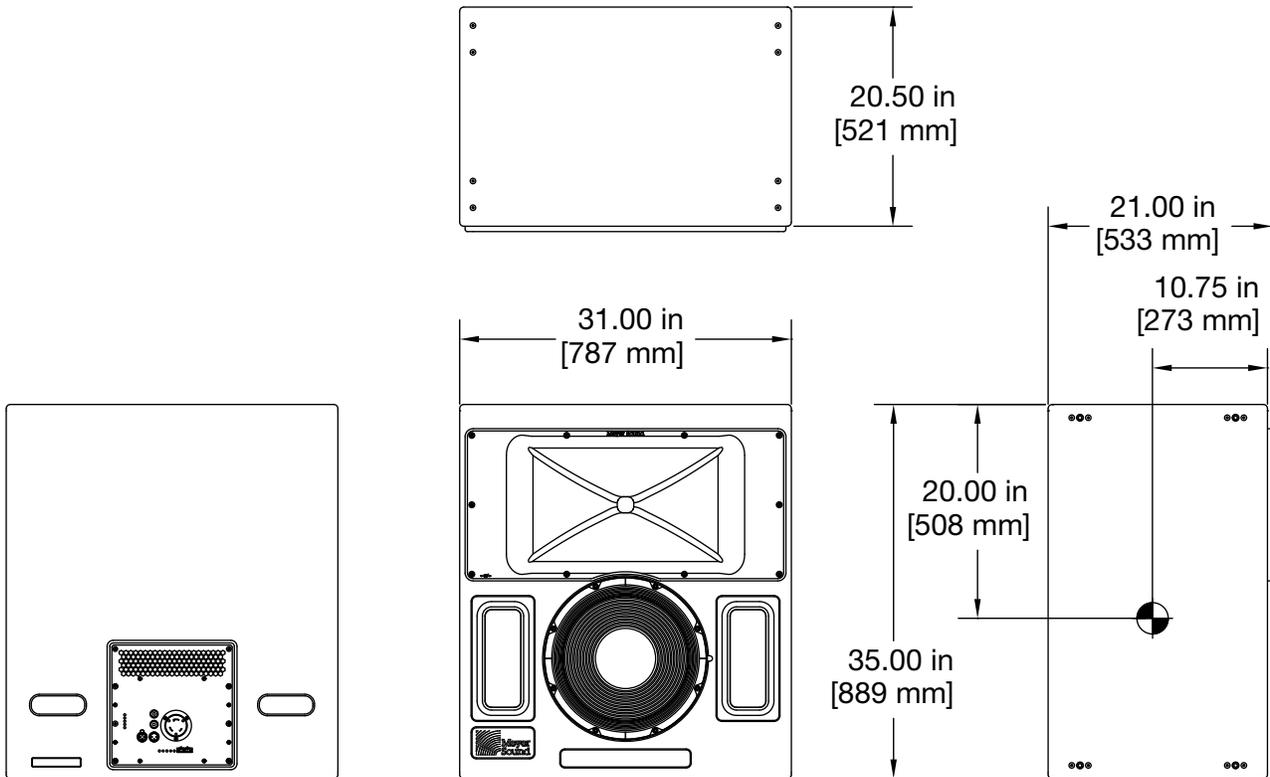
**Acheron 80 and Acheron 100 Specifications**

<b>AMPLIFIER</b>	
Type	Complementary MOSFET output stages (class AB/H)
Total Output Power	3370 W peak <b>Note:</b> Peak power based on the maximum unclipped peak voltage the amplifier will produce into the nominal load impedance.
THD, IM TIM	<.02%
Cooling	Forced air cooling, two internal fans (one ultra low-speed fan, one reserve fan)
<b>AC POWER</b>	
Connectors	250 V NEMA L6-20 (twistlock) inlet or IEC 309 male inlet
Voltage Selection	Automatic, two ranges, each with high-low voltage tap (uninterrupted)
Safety Agency Rated Operating Voltage	95–125 V AC; 208–235 V AC; 50/60 Hz
Turn On/Turn Off Points	85–134 V AC; 165–264 V AC
<b>Current Draw</b>	
Idle Current	0.71 A rms (115 V AC); 0.38 A rms (230 V AC); 0.79 A rms (100 V AC)
Maximum Long-Term Continuous Current	5.8 A rms (115 V AC); 2.8 A rms (230 V AC); 6.3 A rms (100 V AC)
Burst Current	6.4 A rms (115 V AC); 3.2 A rms (230 V AC); 7.2 A rms (100 V AC) <b>Note:</b> AC power cabling must be of sufficient gauge so that under burst current rms conditions, cable transmission losses do not drop below the loudspeaker’s specified operating voltage range.
Maximum Instantaneous Peak Current	26 A peak (115 V AC); 14 A peak (230 V AC); 28 A peak (100 V AC)
Inrush Current	7 A peak (115 V AC); 7 A peak (230 V AC); 10 A peak (100 V AC)
<b>PHYSICAL</b>	
Enclosure	Premium birch plywood
Finish	Low gloss, black textured
Mounting	3/8-inch threaded points on side corners for optional bracket adapters, which allow the Acheron to be mounted to floors with uptilt or downtilt, as well as on top of the Acheron LF (also with uptilt or downtilt)
Dimensions	W: 31.00 in (787 mm) x H: 35.00 in (889 mm) x D: 20.50 in (521 mm)
Weight	Weight 173 lb (78.47 kg)
<b>ENVIRONMENTAL</b>	
Operating Temperature	0° C to +45° C
Non Operating Temperature	–40° C to +75° C
Humidity	to 95% at 35° C
Operating Altitude	to 4600 m (15,000 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)

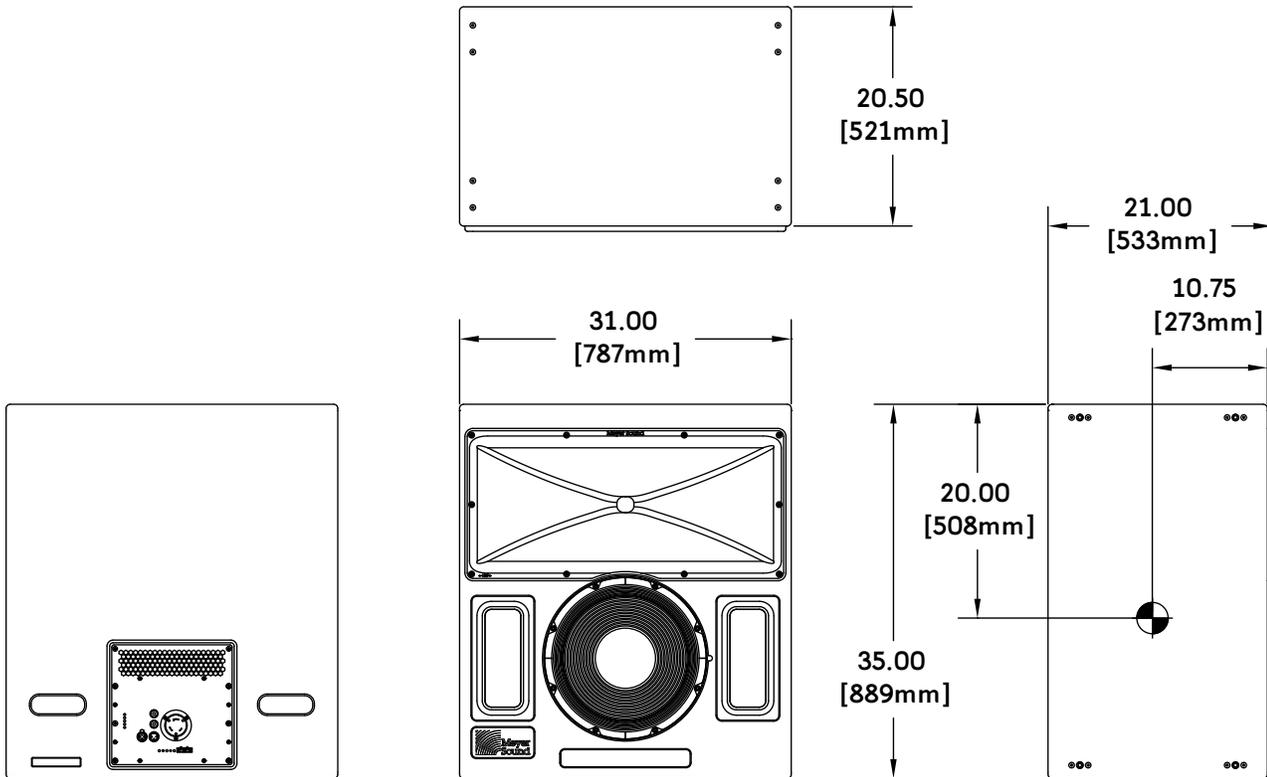
## ACHERON 80 AND ACHERON 100 COMPLIANCE



## ACHERON 80 DIMENSIONS



## ACHERON 100 DIMENSIONS



## APPENDIX B: ACHERON LF SPECIFICATIONS

### Acheron LF Specifications

ACOUSTICAL	
Operating Frequency Range	37 Hz – 370 Hz <b>Note:</b> Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
Frequency Response	38 Hz – 340 Hz $\pm 4$ dB <b>Note:</b> Measured free field with 1/3 octave frequency resolution at 4 meters.
Phase Response	60 Hz to 230 Hz $\pm 30^\circ$
Linear Peak SPL	<b>133 dB (M-noise) with crest factor &gt; 11 dB</b> , 133 dB (Pink noise), 133 dB (B-noise)  <b>Note: Linear Peak SPL</b> is measured in free-field at 4 m referred to 1 m. Loudspeaker SPL compression measured with M-noise at the onset of limiting, 2-hour duration, and 50 °C ambient temperature is < 2 dB. <b>M-noise</b> is a full bandwidth (10 Hz–22.5 kHz) test signal developed by Meyer Sound to better measure the loudspeaker’s music performance. It has a constant instantaneous peak level in octave bands, a crest factor that increases with frequency, and a full bandwidth Peak to RMS ratio of 18 dB. The presence of a greater-than (>) symbol with regard to crest factor indicates it may be higher depending on EQ and boundary loading. <b>Pink noise</b> is a full bandwidth test signal with Peak to RMS ratio of 12.5 dB. <b>B-noise</b> is a Meyer Sound test signal used to ensure measurements reflect system behavior when reproducing the most common input spectrum, and to verify there is still headroom over pink noise.
Dynamic Range	>110 dB
Crossover	200 Hz <b>Note:</b> Below this frequency, both Acheron LF transducers are active. Above this frequency, one transducer rolls off to avoid interactions in the higher frequencies (shorter wavelengths) of the Acheron 80 and Acheron 100.
TRANSDUCERS	
Low Frequency	Two high-power 15-inch cone drivers with neodymium magnets; nominal impedance: 4 $\Omega$
AUDIO INPUT	
Type	Differential, electronically balanced
Maximum Common Mode Range	$\pm 15$ V DC, clamped to earth for voltage transient protection
Connectors	Female XLR input with male XLR loop output
Input Impedance	10 k $\Omega$ differential between pins 2 and 3
Wiring	Pin 1: Chassis/earth through 220 k $\Omega$ , 1000 pF, 15 V clamp network to provide virtual ground lift at audio frequencies Pin 2: Signal + Pin 3: Signal – Case: Earth ground and chassis
Nominal Input Sensitivity	10 dBV (3.2 V rms) continuous is typically the onset of limiting for noise and music
Input Level	Audio source must be capable of producing +20 dBV (10 V rms) into 600 $\Omega$ to produce the maximum peak SPL over the operating bandwidth of the loudspeaker

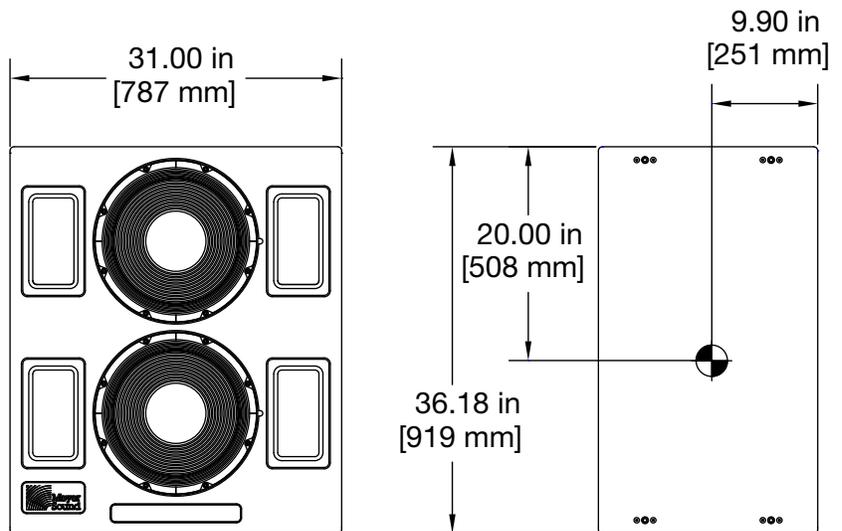
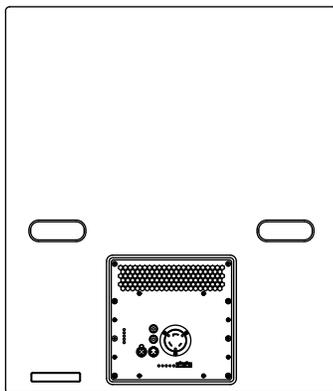
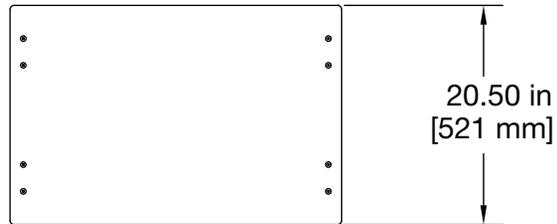
**Acheron LF Specifications**

<b>AMPLIFIER</b>	
Type	Complementary MOSFET output stages (class AB/H)
Total Output Power	4500 W peak <b>Note:</b> Peak power based on the maximum unclipped peak voltage the amplifier will produce into the nominal load impedance.
THD, IM TIM	<.02%
Cooling	Forced air cooling, two internal fans (one ultra low-speed fan, one reserve fan)
<b>AC POWER</b>	
Connectors	250 V NEMA L6-20 (twistlock) inlet or IEC 309 male inlet
Voltage Selection	Automatic, two ranges, each with high-low voltage tap (uninterrupted)
Safety Agency Rated Operating Voltage	95–125 V AC; 208–235 V AC; 50/60 Hz
Turn On/Turn Off Points	85–134 V AC; 165–264 V AC
<b>Current Draw</b>	
Idle Current	0.64 A rms (115 V AC); 0.32 A rms (230 V AC); 0.85 A rms (100 V AC)
Maximum Long-Term Continuous Current	8.8 A rms (115 V AC); 4.4 A rms (230 V AC); 10.0 A rms (100 V AC)
Burst Current	19.0 A rms (115 V AC); 9.5 A rms (230 V AC); 22.0 A rms (100 V AC) <b>Note:</b> AC power cabling must be of sufficient gauge so that under burst current rms conditions, cable transmission losses do not drop below the loudspeaker's specified operating voltage range.
Maximum Instantaneous Peak Current	39 A peak (115 V AC); 20 A peak (230 V AC); 45 A peak (100 V AC)
Inrush Current	7 A peak (115 V AC); 7 A peak (230 V AC); 10 A peak (100 V AC)
<b>PHYSICAL</b>	
Enclosure	Premium birch plywood
Finish	Low gloss, black textured
Mounting	3/8-inch threaded points on side corners for optional bracket adapters, which allow the Acheron LF to be secured to floors; the Acheron 80 and Acheron 100 can be mounted on top of the Acheron LF with uptilt or downtilt
Dimensions	W: 31.00 in (787 mm) x H: 36.18 in (919 mm) x D: 20.50 in (521 mm)
Weight	Weight 185 lb (83.91 kg)
<b>ENVIRONMENTAL</b>	
Operating Temperature	0° C to +45° C
Non Operating Temperature	–40° C to +75° C
Humidity	to 95% at 35° C
Operating Altitude	to 4600 m (15,000 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)

## ACHERON LF COMPLIANCE



## ACHERON LF DIMENSIONS









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Acheron Operating Instructions PN 05.188.005.01 B2