

## HMS Cinema Surround Loudspeaker (IntelligentDC)

HMS-5, HMS-10, HMS-12, and HMS-15



***Keep these important operating instructions.  
Check [www.meyersound.com](http://www.meyersound.com) for updates.***

---

© 2016

Meyer Sound. All rights reserved.

HMS Operating Instructions, PN 05.198.005.01 A

The contents of this manual are furnished for informational purposes only, are subject to change without notice, and should not be construed as a commitment by Meyer Sound Laboratories Inc. Meyer Sound assumes no responsibility or liability for any errors or inaccuracies that may appear in this manual. Except as permitted by applicable copyright law, no part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, recording or otherwise, without prior written permission from Meyer Sound.

Compass RMS, RMS, and all alpha-numeric designations for Meyer Sound products and accessories are trademarks of Meyer Sound. Acheron, Compass, Meyer Sound, the Meyer Sound wave logo, and Thinking Sound are registered trademarks of Meyer Sound Laboratories Inc. (Reg. U.S. Pat. & Tm. Off.). All third-party trademarks mentioned herein are the property of their respective trademark holders.

---

# CONTENTS

<b>Chapter 1: Introduction</b>	<b>5</b>
How to Use This Manual	5
HMS Cinema Surround Loudspeaker	5
MPS-488HP IntelligentDC High-Power Eight-Channel power Supply	8
<b>Chapter 2: HMS Loudspeakers</b>	<b>9</b>
Single-Channel Input Connector (HMS-5, HMS-10, and HMS-12)	9
Dual-Channel Input Connectors (HMS-15)	9
Current Draw and Cable Requirements for HMS Loudspeakers	10
Belden 1502 Cable (or Equivalent)	10
Long Cable Runs with Separate Cable for DC Power and Audio	11
On/Status LED	11
Pad Switch (HMS-10 Only)	12
<b>Chapter 3: Powering HMS Loudspeakers</b>	<b>13</b>
Powering HMS Loudspeakers	13
Configuring the MPS-488HP in Compass RMS	14
<b>Chapter 4: HMS Mounting Options</b>	<b>17</b>
Important Safety Considerations!	17
HMS Mounting Options	17
<b>Chapter 5: Removing HMS Grille Frames</b>	<b>21</b>
Removing HMS-12 and HMS-15 Grille Frames	21
<b>Appendix A: HMS Accessories</b>	<b>23</b>
<b>Appendix B: Assembling Loudspeaker Cables</b>	<b>25</b>
<b>Appendix C: HMS Specifications</b>	<b>27</b>



## CHAPTER 1: INTRODUCTION

### HOW TO USE THIS MANUAL

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

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



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



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



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

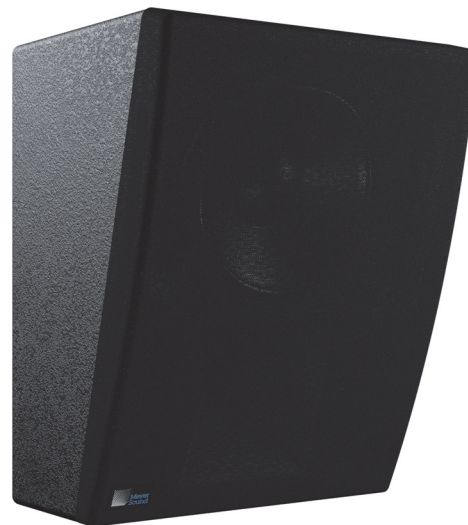
Information and specifications are subject to change. Updates and supplementary information are available at [www.meyersound.com](http://www.meyersound.com).

Meyer Sound Technical Support is available at:

- **Tel:** +1 510 486.1166
- **Tel:** +1 510 486.0657 (after hours support)
- **Web:** [www.meyersound.com/support](http://www.meyersound.com/support)
- **Email:** [techsupport@meyersound.com](mailto:techsupport@meyersound.com)

### HMS CINEMA SURROUND LOUDSPEAKER

The HMS cinema surround loudspeaker is optimized for use in cinemas, high-end private theatres, screening rooms, and other surround applications. Designed to complement Meyer Sound's Acheron™ screen channel loudspeakers, the self-powered HMS maintains a wide dynamic range, exceptional fidelity, and precise clarity during the most demanding of digital soundtracks. Boasting a wide frequency range and a generous linear peak SPL with very low distortion, the HMS delivers the full intensity and nuance of cinema surround channels to every listener without compromise.



*HMS-10 Cinema Surround Loudspeaker (With Grille)*

The HMS cinema surround loudspeaker is available in five models: HMS-5, HMS-10, HMS-12, HMS-15, and HMS-15AC, ranging in size, weight, driver size, and power to accommodate a wide range of venues and applications. The proprietary long-excursion cone drivers and diaphragm compression drivers are driven by an onboard amplifier that includes an active crossover, driver protection circuitry, and correction filters for flat phase and frequency response. A constant-directivity horn provides uniform, full-range, consistent coverage.

The HMS-5, HMS-10, HMS-12, and HMS-15 are equipped with IntelligentDC technology and receive DC power and balanced audio from composite Phoenix™ 5-pin connectors. Powering the loudspeakers from an external DC source eliminates the need for AC conduits while preserving the advantages of self-powered systems. IntelligentDC loudspeakers require an MPS-488HP external power supply. The single-space 19-inch rack unit distributes DC power and balanced audio to up to eight HMS-5, HMS-10, or HMS-12 loudspeakers.

ers, or up to four HMS-15 loudspeakers. Composite multi-conductor cables, such as Belden® 1502 or equivalent, can deliver both DC power and balanced audio to loudspeakers at cable lengths up to 150 feet with just 1 dB of loss in peak SPL using 18 AWG wire. Longer cable runs are possible with heavier gauges. The MPS-488HP is optionally available with an RMS™ remote monitoring system module for monitoring voltage and current draw for its attached loudspeakers from a Mac® or Windows®-based computer.


The HMS-15AC is an AC-powered version of the HMS-15. Its Intelligent AC™ power supply provides automatic voltage selection, EMI filtering, soft current turn-on, and surge suppression. The HMS-15AC is optionally available with its own onboard RMS remote monitoring system module for comprehensive monitoring of loudspeaker parameters from a Mac or Windows-based computer.


The versatile HMS can be suspended or mounted on walls or ceilings at fixed or adjustable angles with optional half-yoke, U-bracket, or wall-mount brackets, allowing it to be deployed per the requirements of any surround application or immersive cinema format.

Meyer Sound's industry-leading self-powered technology not only delivers unparalleled and consistent audio fidelity but also simplifies installation, whether designing new rooms from scratch or adding surround channels to existing installations. The HMS cabinet features a black textured finish and an acoustically transparent, detachable, black cloth grille that blend smartly with any theatre decor.

These operating instructions document the following HMS loudspeakers:

- HMS-5 compact cinema surround loudspeaker
- HMS-10 cinema surround loudspeaker
- HMS-12 high-power cinema loudspeaker
- HMS-15 high-power cinema loudspeaker

 **NOTE:** For the sake of brevity, when referring to these loudspeakers collectively, this document will refer to them as HMS loudspeakers.

 **NOTE:** The AC-powered HMS-15AC is not documented in these operating instructions. For information on it, refer to the *HMS-15AC Operating Instructions* (PN 05.242.005.01).

## HMS-5 Compact Cinema Surround Loudspeaker

The HMS-5 compact cinema loudspeaker includes two 5-inch low-frequency, long-excursion cone drivers, and one 2-inch diaphragm high-frequency compression driver on a symmetrical, constant-directivity 80-degree horn. The loudspeaker is powered by a 3-channel amplifier with an active crossover. The cabinet is constructed of multi-ply hardwood and includes 3.94 inches x 3.94 inches (100 mm x 100 mm) rear attachment points for optional mounting hardware.



*HMS-5 Compact Cinema Surround Loudspeaker (Without Grille)*

## HMS-10 Cinema Surround Loudspeaker

The HMS-10 cinema loudspeaker includes one 10-inch low-frequency, long-excursion cone driver, and one 2-inch diaphragm high-frequency compression driver on a symmetrical, constant-directivity 80-degree horn. The loudspeaker is powered by a 2-channel amplifier with an active crossover. The cabinet is constructed of multi-ply hardwood and includes 3.94 inches x 3.94 inches (100 mm x 100 mm) rear attachment points for optional mounting hardware.



*HMS-10 Cinema Surround Loudspeaker (Without Grille)*

### **HMS-12 High-Power Cinema Surround Loudspeaker**

The HMS-12 high-power cinema loudspeaker includes one 12-inch low-frequency, long-excursion cone driver, and one 3-inch diaphragm high-frequency compression driver on a symmetrical, constant-directivity 100-degree horn. The loudspeaker is powered by a 2-channel amplifier with an active crossover. The cabinet is constructed of multi-ply hardwood and includes 3.94 inches x 3.94 inches (100 mm x 100 mm) rear attachment points for optional mounting hardware.



*HMS-12 High-Power Cinema Surround Loudspeaker (Without Grille)*

### **HMS-15 High-Power Cinema Surround Loudspeaker**

The HMS-15 high-power cinema loudspeaker includes one 15-inch low-frequency, long-excursion cone driver, and one 3-inch diaphragm high-frequency compression driver on a symmetrical, constant-directivity 80-degree horizontal by 50-degree vertical horn. The loudspeaker is powered by a 2-channel amplifier with an active crossover. The cabinet is constructed of multi-ply hardwood and includes 5.00 inches x 2.75 inches (127 mm x 70 mm) rear attachment points and side attachment points with 3/8"-16 threads for optional mounting hardware.



*HMS-15 High-Power Cinema Surround Loudspeaker (Without Grille)*

## MPS-488HP INTELLIGENTDC HIGH-POWER EIGHT-CHANNEL POWER SUPPLY

HMS loudspeakers require an external MPS-488HP IntelligentDC power supply. The single-space 19-inch rack unit distributes DC power and balanced audio to up to eight HMS-5, HMS-10, or HMS-12 loudspeakers, or up to four HMS-15 loudspeakers. Composite multiconductor cables, such as Belden 1502 or equivalent, can deliver both DC power and balanced audio to loudspeakers at cable lengths up to 150 feet with just 1 dB of loss in peak SPL using 18 AWG wire. Longer cable runs are possible with heavier gauges. Meyer Sound's RMS remote monitoring system is optionally available for the MPS-488HP.



*MPS-488HP IntelligentDC Power Supply*



**CAUTION:** Disconnect the mains plug or power off the MPS-488HP before disconnecting its power cord.



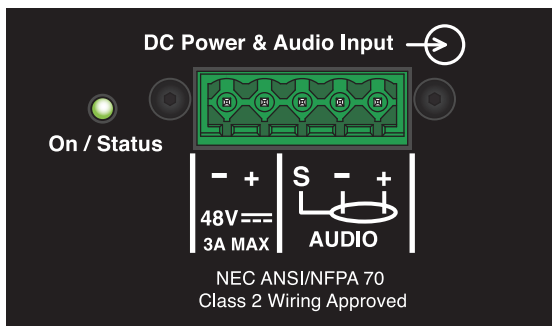
**TIP:** For complete information on using the MPS-488HP IntelligentDC power supply, refer to the *MPS-488HP Operating Instructions* (PN 05.205.005.01).



## CHAPTER 2: HMS LOUDSPEAKERS

### SINGLE-CHANNEL INPUT CONNECTOR (HMS-5, HMS-10, AND HMS-12)

The HMS-5, HMS-10, and HMS-12 loudspeakers receive DC power and balanced audio from a single Phoenix 5-pin male Input connector. The connector includes two pins for DC power (positive and negative) and three pins for balanced audio (positive, negative, and shield). The pins are clearly labeled on the HMS user panel. To function properly, the HMS-5, HMS-10, and HMS-12 require an MPS-488HP IntelligentDC power supply (one channel output per loudspeaker). The MPS-488HP can power up to eight single-channel HMS loudspeakers.



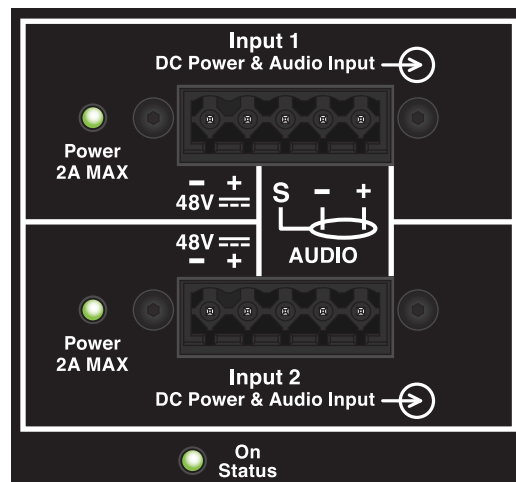
Single-Channel Input Connector (HMS-5, HMS-10, and HMS-12)

Single-channel HMS loudspeakers ship with one Phoenix 5-pin female cable mount connector for assembling loudspeaker cables. A single composite cable (such as Belden 1502 or equivalent) can be used to route DC power and balanced audio to the HMS loudspeaker. For more information, see “Belden 1502 Cable (or Equivalent)” on page 10 and Appendix B, “Assembling Loudspeaker Cables.”

**CAUTION:** When wiring HMS loudspeaker cables, it is extremely important that each pin be wired correctly. Make sure the 48 V DC from the external power supply is wired directly (and only) to the 48 V DC pins on the loudspeaker connector, and that the polarity is observed (negative to negative, positive to positive) to avoid damage to the loudspeaker. In addition, make sure that audio pins are wired correctly; polarity reversals for audio signals affect system performance.

### DUAL-CHANNEL INPUT CONNECTORS (HMS-15)

The HMS-15 loudspeaker receives DC power and balanced audio from two Phoenix 5-pin male Input connectors. Each connector includes two pins for DC power (positive and negative) and three pins for balanced audio (positive, negative, and shield). The pins are clearly labeled on the HMS-15 user panel. To function properly, the HMS-15 requires an MPS-488HP IntelligentDC power supply (two channel outputs per loudspeaker). The MPS-488HP can power up to four HMS-15 loudspeakers.



Dual-Channel Input Connectors (HMS-15)

The HMS-15 must be connected to a channel output pair (1–2, 3–4, 5–6, or 7–8) of the MPS-488HP using two separate composite cables. When successfully connected and receiving the required voltage, both Input LEDs for the HMS-15 turn solid green. Identical audio signals can be sent to the two inputs with no additional gain and no adverse effect. Sending different audio signals to the two inputs is not recommended and could cause one signal to be heard in the background.

**NOTE:** If the HMS-15 does not sense power from both inputs (both Input LEDs lit) then it will not output audio.

HMS-15 loudspeakers ship with two Phoenix 5-pin female cable mount connectors for assembling loudspeaker cables. Separate composite cables (such as Belden 1502 or equivalent) must be used to route DC power and balanced audio to the two inputs for the HMS-15 loudspeaker. For more information, see “Belden 1502 Cable (or Equivalent)” on page 10 and Appendix B, “Assembling Loudspeaker Cables.”

**CAUTION:** When wiring HMS loudspeaker cables, it is extremely important that each pin be wired correctly. Make sure the 48 V DC from the external power supply is wired directly (and only) to the 48 V DC pins on the loudspeaker connector, and that the polarity is observed (negative to negative, positive to positive) to avoid damage to the loudspeaker. In addition, make sure that audio pins are wired correctly; polarity reversals for audio signals affect system performance.

### CURRENT DRAW AND CABLE REQUIREMENTS FOR HMS LOUDSPEAKERS

DC current draw for HMS loudspeakers is dynamic and fluctuates as operating levels change. Cabling between HMS loudspeakers and their external power supply adds resistance and hence causes a voltage drop at the loudspeakers. Because lower DC voltages compromise amplifier performance (peak SPL), and in some cases frequency response, cable resistance should be kept to a minimum.

### Cable Lengths and Cable Gauges

Cable lengths up to 150 feet between HMS loudspeakers and their external power supply are supported with only 1 dB of peak SPL loss using 18 AWG wire. Longer cable lengths are possible with heavier wire gauges (see Table 1 and Table 2).

**Table 1: HMS Loudspeaker Cable Lengths (AWG)**

Cable Gauge	Resistance (Ohms/ft)	Approximate Max. Length
12 AWG	0.0016	600 ft
14 AWG	0.00253	375 ft
16 AWG	0.00402	237 ft
18 AWG	0.00636	150 ft
20 AWG	0.01008	87 ft

**Table 2: HMS Loudspeaker Cable Lengths (European)**

Cable Gauge	Resistance (Ohms/m)	Approximate Max. Length
2.50 mm <sup>2</sup>	0.0052	157 m
1.50 mm <sup>2</sup>	0.01076	87 m
1.00 mm <sup>2</sup>	0.02087	45 m
0.75 mm <sup>2</sup>	0.03307	27 m

**NOTE:** The total cable resistance between HMS loudspeakers and their external power supply should not exceed 2 ohms.

**NOTE:** For long cable runs, you can use a large cable gauge for DC power and a separate balanced audio cable for audio. For more information, see “Long Cable Runs with Separate Cable for DC Power and Audio” on page 11.

### Calculating the Maximum Cable Length

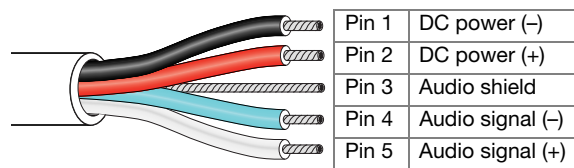
The maximum cable length for an HMS loudspeaker can be calculated with the following formula:

$$\text{maximum length} = 2 \text{ ohms} / (2 * \text{cable resistance})$$

For example, the maximum length of an 18 AWG cable with a resistance of 0.00636 is 157.2 feet (2 / (2 \* 0.00636)).

### BELDEN 1502 CABLE (OR EQUIVALENT)

The most convenient method of wiring HMS loudspeaker cables is with a multiconductor cable such as Belden 1502, which has dedicated conductors for DC power and balanced audio in a single jacket. When wiring loudspeaker cables with Belden 1502 (or equivalent), use the conventions in Table 3. The red and black wires are 18 AWG, thicker than the other three wires, and should be used for DC power (cable lengths up to 150 feet are possible with just 1 dB of peak SPL loss). The blue, white, and shield drain wires should be used for audio.




*Belden 1502 Composite Cable*


**Table 3: HMS Loudspeaker Cables with Belden 1502**

Wire	Signal	Gauge
Black	DC power (-)	18 AWG
Red	DC power (+)	18 AWG
Shield drain	Audio shield	24 AWG
Blue	Audio signal (-)	22 AWG
White	Audio signal (+)	22 AWG

**CAUTION:** When wiring HMS loudspeaker cables, it is extremely important that each pin be wired correctly. Make sure the 48 V DC from the external power supply is wired directly (and only) to the 48 V DC pins on the loudspeaker connector, and

that the polarity is observed (negative to negative, positive to positive) to avoid damage to the loudspeaker. In addition, make sure that audio pins are wired correctly; polarity reversals for audio signals affect system performance.

 **NOTE:** For more information on cable assembly, refer to Appendix B, “Assembling Loudspeaker Cables.”

 **NOTE:** For a complete list of available cables and cable accessories from Meyer Sound, refer to Appendix A, “HMS Accessories.”

## LONG CABLE RUNS WITH SEPARATE CABLE FOR DC POWER AND AUDIO

For installations where Belden 1502 is not feasible, or for installations that require cable runs longer than 150 feet, you can use separate cables for DC power and balanced audio: a large-gauge cable for DC and a high-quality, balanced audio cable for audio. The separate cables attach to the Phoenix connector at the loudspeaker as shown in Figure 1. Cable runs longer than 150 feet for DC power require cable gauges larger than 18 AWG; for more information, see “Cable Lengths and Cable Gauges” on page 10.

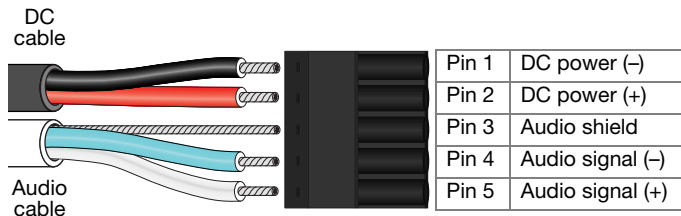



Figure 1: Separate Cables for DC Power and Balanced Audio

## ON/STATUS LED


The HMS user panel includes an On/Status LED that indicates whether the loudspeaker is operating normally (green), limiting or overheating (yellow), or clipping (red).


 **NOTE:** The HMS-15 also includes two Input LEDs that indicate, when solid green, when the inputs are receiving voltage from the MPS-488HP.

## Normal Operation (Green)

When powering on the HMS loudspeaker, the following startup events occur and are indicated by the On/Status LED:

1. The On/Status LED flashes multiple colors during its power-on sequence.
2. The LED turns solid green, indicating the power-on sequence has completed and the loudspeaker is ready to reproduce audio.
3. The LED remains green but is dimmed to eliminate any undesired glow in darkened theatres.

 **CAUTION:** If after the power-on sequence the On/Status LED does not turn solid green (instead flashes multiple colors or stays solid red) and the HMS loudspeaker does not output audio, the loudspeaker has encountered an error and may need to be serviced. Contact Meyer Sound Technical Support.

 **NOTE:** All three LEDs for the HMS-15 (Input 1, Input 2, and On/Status) must turn solid green before it will output audio. If some or all of the HMS-15 LEDs remain unlit, or not green, verify the cabling to the MPS-488HP.


## Limiting (Yellow)

The On/Status LED turns yellow to indicate limiting. When the LED is solid yellow, limiting is engaged for the high-frequency channel. When the LED flashes yellow (on and off), limiting is engaged for the low-frequency channel.

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

The HMS loudspeaker performs within its acoustical specifications at normal temperatures when the On/Status LED is green, or when limiting is not continuous. If limiting activity is continuous, the loudspeaker is nearing the limits of its operating capabilities 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:** Continuous limiting indicates that a safe, optimum level has been exceeded. If the HMS loudspeakers in a cinema installation begin to limit before reaching the desired SPL, consider adding more units to the system.

### Operating Temperature


The On/Status LED also turns solid yellow when the HMS loudspeaker's internal temperature reaches a certain level, indicating the unit is reaching its maximum heat dissipation. When the On/Status LED is yellow, a reduction in SPL is recommended. While the loudspeaker will continue to operate while the LED is yellow, the limiter threshold is lowered (causing the output level to also be reduced) to prevent the loudspeaker from overheating. When the loudspeaker's internal temperature returns to a normal level, the On/Status LED returns to green and the limiter threshold returns to normal.

### Amplifier Cooling

HMS loudspeakers rely solely on natural convection for cooling from air flowing over their heat sinks. The efficient amplifier and heat sink design keeps temperatures low, even when units are operated at high ambient temperatures and driven continuously at high output levels.

### Clipping on Input (Red)

The On/Status turns red when the loudspeaker's input stage clips, causing the amplifier to overload. When the On/Status LED is red, the source level should be reduced to avoid distortion and to avoid overloading the amplifier.


 **CAUTION:** If the On/Status LED turns solid red and the loudspeaker continues to output audio, though at reduced levels, the loudspeaker's voltage may have dropped below 25 V DC. When these conditions are encountered, operation of the loudspeaker should cease and its power supply and cabling should be verified.

### PAD SWITCH (HMS-10 ONLY)

The HMS-10 user panel includes a Pad switch that, when enabled, reduces the loudspeaker's internal gain by 7.5 dB, thereby lowering the loudspeaker's noise floor. This reduces noise generated from audio sources upstream from the loudspeaker and is especially useful for close-proximity listening.





*HMS-10 Pad Switch*

 **NOTE:** When the Pad switch is enabled (set to Pad), to achieve the linear peak SPL for the loudspeaker, the gain for the processor driving the loudspeaker must be increased by 7.5 dB.


## CHAPTER 3: POWERING HMS LOUDSPEAKERS

HMS loudspeakers require an external MPS-488HP IntelligentDC power supply. The single-space 19-inch rack unit distributes DC power and balanced audio to up to eight HMS-5, HMS-10, or HMS-12 loudspeakers, or up to four HMS-15 loudspeakers. Composite multiconductor cables, such as Belden 1502 or equivalent, can deliver both DC power and balanced audio to loudspeakers at cable lengths up to 150 feet with just 1 dB of loss in peak SPL using 18 AWG wire. Longer cable runs are possible with heavier gauges. Meyer Sound's RMS remote monitoring system is optionally available for the MPS-488HP.

 **CAUTION:** Disconnect the mains plug or power off the MPS-488HP before disconnecting its power cord.

 **TIP:** For complete information on using the MPS-488HP IntelligentDC power supply, refer to the *MPS-488HP Operating Instructions* (PN 05.205.005.01).

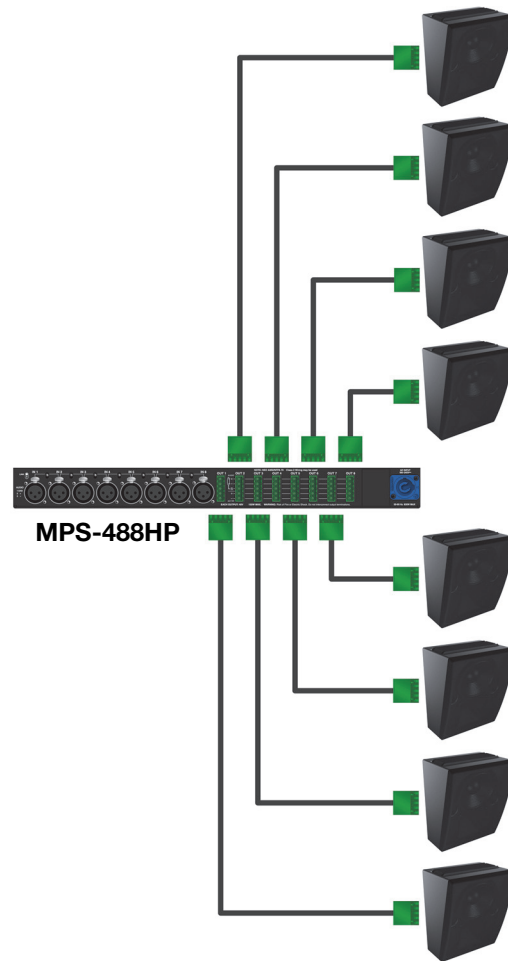
### POWERING HMS LOUDSPEAKERS

 **NOTE:** The MPS-488HP can power up to eight single-channel HMS loudspeakers (HMS-5, HMS-10, and HMS-12), or up to four dual-channel HMS-15 loudspeakers.

To power HMS loudspeakers with the MPS-488HP:

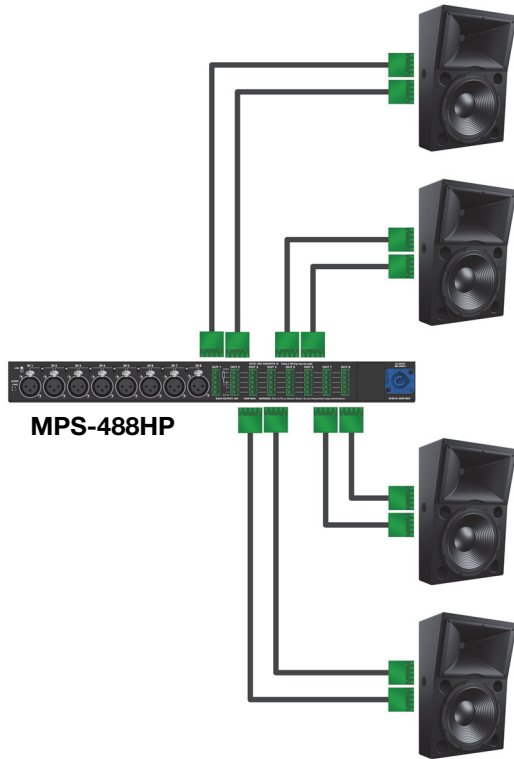
1. Power off the MPS-488HP.
2. Connect audio sources (from a mixer or processor) to the MPS-488HP channel inputs. Use balanced XLR cables.
3. Use the MPS-488HP Link switches to route channel inputs to the desired channel outputs. For information on the MPS-488HP Link switches, refer to the *MPS-488HP Operating Instructions* (PN 05.205.005.01).

4. Connect HMS loudspeakers to the MPS-488HP channel outputs. Use composite cables (such as Belden 1502 or equivalent) wired for both DC power and balanced audio and outfitted with the appropriate connectors.
- To power single-channel HMS loudspeakers (HMS-5, HMS-10, and HMS-12), connect each loudspeaker to a single channel output with a single composite cable. The MPS-488HP can power up to eight single-channel HMS loudspeakers.



MPS-488HP with Eight HMS-10 Loudspeakers

- To power dual-channel HMS-15 loudspeakers, connect each loudspeaker to a channel output pair (1–2, 3–4, 5–6, or 7–8) with two separate composite cables. The MPS-488HP can power up to four dual-channel HMS-15 loudspeakers.



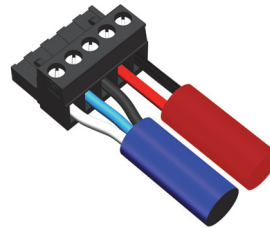
MPS-488HP with Four HMS-15 Loudspeakers

**CAUTION:** When powering HMS-15 loudspeakers, you must use two separate composite cables connected to an MPS-488HP channel output pair (1–2, 3–4, 5–6, or 7–8). Do not use a single cable to deliver power to the HMS-15’s two Input connectors. Never, in any manner, combine the signals from two MPS-488HP channel outputs, either at the power supply (source) or the loudspeaker (destination).

**CAUTION:** Make sure loudspeaker cables are wired correctly. For details on assembling loudspeaker cables, refer to Appendix B, “Assembling Loudspeaker Cables.”

**TIP:** You can use separate cables for HMS loudspeaker connections: a 2-conductor cable for DC power and a 3-conductor cable for balanced audio, both attached to a single Phoenix connector on

each cable end. This allows you to use a larger gauge for the DC cable so you can achieve longer cable runs (see “Long Cable Runs with Separate Cable for DC Power and Audio” on page 11).



5. Power on the MPS-488HP and monitor the LEDs on the front panel to verify connections. For information on the MPS-488HP LEDs, refer to the *MPS-488HP Operating Instructions* (PN 05.205.005.01).
6. Monitor the HMS loudspeaker LEDs to verify they are receiving power.
  - For single-channel HMS loudspeakers (HMS-5, HMS-10, and HMS-12), make sure the On/Status LED turns solid green after powering on the loudspeakers.
  - For dual-channel HMS-15 loudspeakers, make sure the two Input LEDs and On/Status LED turn solid green after powering on the loudspeakers.
7. Enable output from the audio sources (from the mixer or processor) connected to the MPS-488HP.

## CONFIGURING THE MPS-488HP IN COMPASS RMS

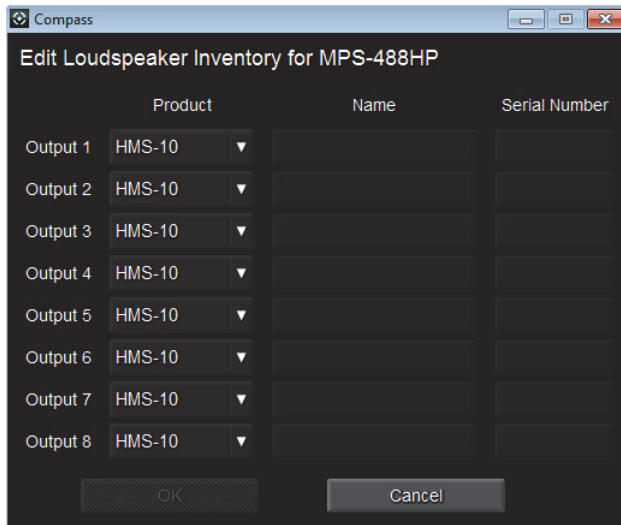
IntelligentDC loudspeakers can connect to RMS networks via the MPS-488HP external supply (when equipped with the factory-installed RMS option). Up to eight single-channel HMS loudspeakers (HMS-5, HMS-10, and HMS-12) or up to four dual-channel HMS-15 loudspeakers can be connected to the MPS-488HP with their voltage and DC current monitored in Compass RMS™.

**NOTE:** In order for the MPS-488HP to report the correct voltage and current draw for the HMS-15 to RMS, the HMS-15 must be connected to an odd-even output pair (1–2, 3–4, 5–6, or 7–8) using two separate composite cables.

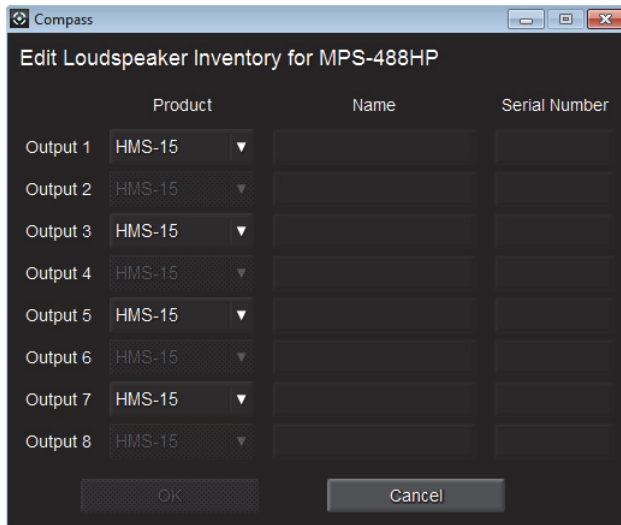
To configure the MPS-488HP in Compass RMS:

1. Make sure the MPS-488HP power supply is powered on and connected to the RMS network.
2. In Compass, click the RMServer > Network tab.

3. In the Device list, right-click the MPS-488HP powering the HMS loudspeakers and choose Edit Loudspeaker Inventory.
4. In the Edit Loudspeaker Inventory dialog box, click in the Product column and select the HMS loudspeaker model connected to each MPS-488HP channel output.
  - Single-channel HMS loudspeakers (HMS-5, HMS-10, and HMS-12) occupy a single channel output.

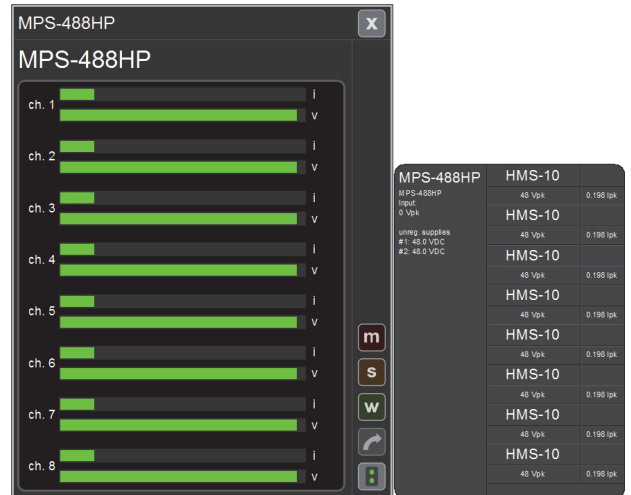


- Dual-channel HMS-15 loudspeakers automatically occupy two channel outputs.



5. Enter a name and serial number for each HMS loudspeaker.

6. Click OK to save and upload the MPS-488HP loudspeaker inventory. Once the MPS-488HP device is added to an RMS page, the page displays the voltage and current draw for the connected HMS loudspeakers.







## CHAPTER 4: HMS MOUNTING OPTIONS

### IMPORTANT SAFETY CONSIDERATIONS!

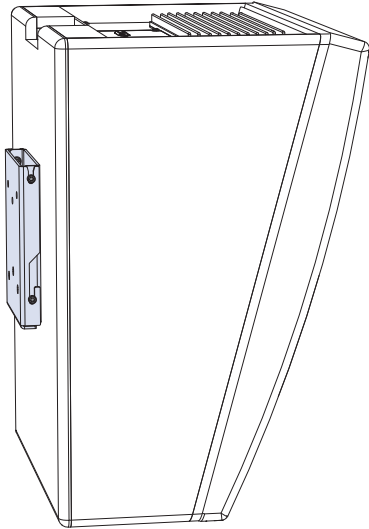
When mounting Meyer Sound loudspeakers, the following precautions should always be observed:

- 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 or mounting 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 are tightened securely. Meyer Sound recommends using Loctite on bolt threads and safety cables.
- Inspect mounting and rigging hardware regularly. Immediately replace any worn or damaged components.

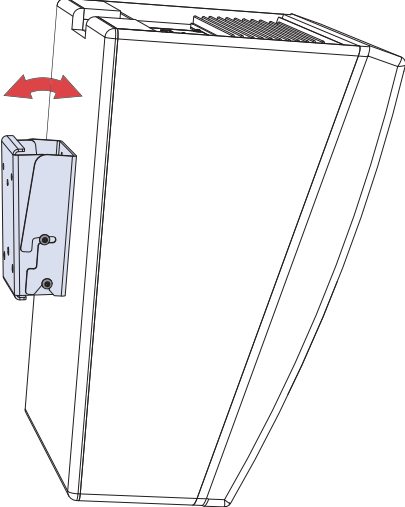
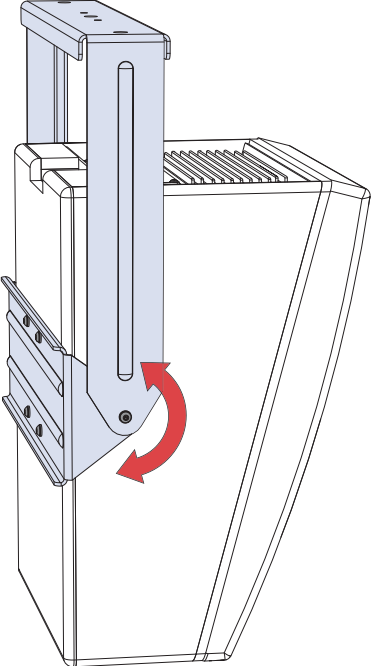
### HMS MOUNTING OPTIONS

Table 4 list the mounting options available for HMS loudspeakers. All mounting options are rated for mounting a single HMS loudspeaker with a 7:1 safety factor. For more information, refer to the installation instructions included with the mounting hardware.

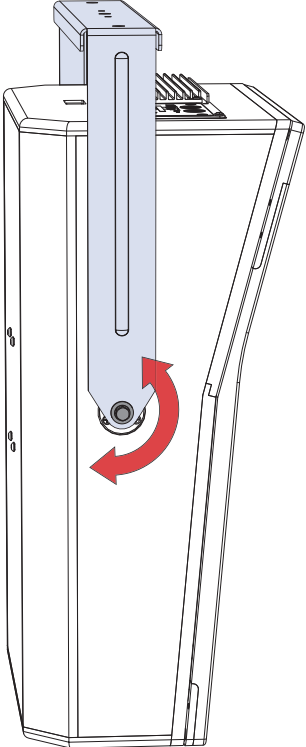
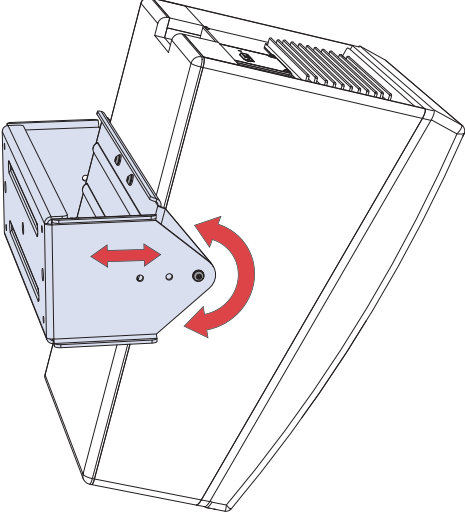
**Table 4: HMS Mounting Options**

Model (Part Number)	Features	Maximum Uptilt/Downtilt	Weight	Rated for Overhead Mounting
<b>FMB-HMS Fixed Mount Bracket</b> (PN 40.198.040.01) 	Mounts HMS loudspeakers (all models) on walls at a fixed 0-degree angle. The fixed bracket mounts cabinets 0.87 inches from the wall.	<ul style="list-style-type: none"> <li>■ HMS-5: 0°</li> <li>■ HMS-10: 0°</li> <li>■ HMS-12: 0°</li> <li>■ HMS-15: 0°</li> <li>■ HMS-15AC: 0°</li> </ul>	3.1 lbs (1.4 kg)	No

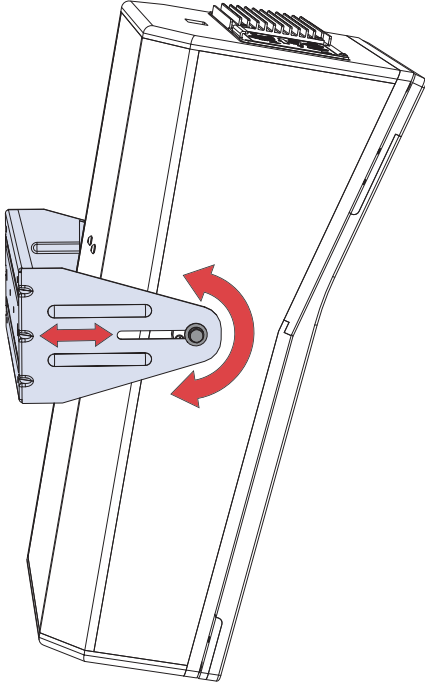
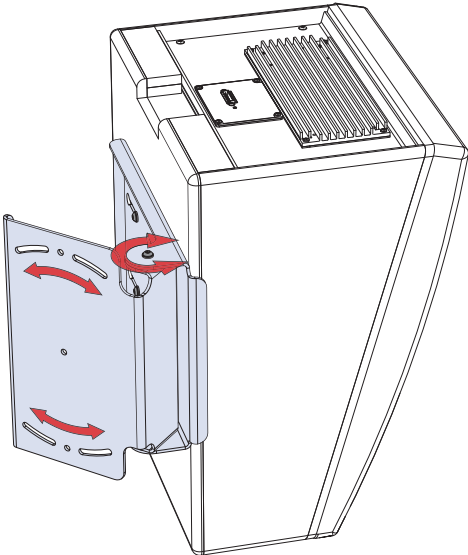
**Table 4: HMS Mounting Options**

Model (Part Number)	Features	Maximum Uptilt/Downtilt	Weight	Rated for Overhead Mounting
<p><b>AMB-HMS Adjustable Mount Bracket</b> (PN 40.198.041.01)</p> 	<p>Mounts HMS loudspeakers (all models) on walls with uptilt or downtilt. The available tilt depends on the HMS loudspeaker model mounted. When installed with no tilt, the bracket mounts cabinets 2.24 inches from the wall.</p>	<ul style="list-style-type: none"> <li>■ HMS-5: +5°/-16°</li> <li>■ HMS-10: +5°/-16°</li> <li>■ HMS-12: +5°/-12°</li> <li>■ HMS-15: +5°/-10°</li> <li>■ HMS-15AC: +5°/-10°</li> </ul> <p><b>Note:</b> Wider downtilt may be possible depending on the building's structural components and mounting surface.</p>	<p>4.2 lbs (1.9 kg)</p>	<p>No</p>
<p><b>HY-HMS Half Yoke</b> (PN 40.227.031.01)</p> 	<p>Suspends HMS-5, HMS-10, and HMS-12 loudspeakers with a full range of tilt (360°). The yoke can attach directly to ceilings or can accept "C" or "G" hanging clamps with standard 1/2-inch or 12 mm bolts.</p>	<ul style="list-style-type: none"> <li>■ HMS-5: 360°</li> <li>■ HMS-10: 360°</li> <li>■ HMS-12: 360°</li> </ul>	<p>12.4 lbs (5.6 kg)</p>	<p>Yes</p>

**Table 4: HMS Mounting Options**

Model (Part Number)	Features	Maximum Uptilt/Downtilt	Weight	Rated for Overhead Mounting
<p><b>HY-HMS-15 Half Yoke</b> (PN 40.242.035.01)</p> 	<p>Suspends HMS-15 and HMS-15AC loudspeakers with a full range of tilt (360°). The yoke can attach directly to ceilings or can accept “C” or “G” hanging clamps with standard 1/2-inch or 12 mm bolts.</p>	<ul style="list-style-type: none"> <li>■ HMS-15: 360°</li> <li>■ HMS-15AC: 360°</li> </ul>	<p>7.6 lbs (3.4 kg)</p>	<p>Yes</p>
<p><b>MUB-HMS U-Bracket</b> (PN 40.227.032.01)</p> 	<p>Mounts HMS-5, HMS-10, and HMS-12 loudspeakers on walls and ceilings with uptilt or downtilt. The U-bracket includes three loudspeaker attachment points for placing the loudspeaker closer or further from the mounting surface. The available tilt is determined by which HMS loudspeaker model is mounted and which attachment points are used.</p>	<ul style="list-style-type: none"> <li>■ HMS-5: +60°/-43°</li> <li>■ HMS-10: +32°/-25°</li> <li>■ HMS-12: +23°/-20°</li> </ul> <p><b>Note:</b> Wider uptilt and downtilt may be possible depending on the building’s structural components and mounting surface.</p>	<p>13.5 lbs (6.1 kg)</p>	<p>Yes</p>

**Table 4: HMS Mounting Options**

Model (Part Number)	Features	Maximum Uptilt/Downtilt	Weight	Rated for Overhead Mounting
<p><b>MUB-HMS-15 U-Bracket</b> (PN 40.242.025.01)</p> 	<p>Mounts HMS-15 and HMS-15AC loudspeakers on walls and ceilings with uptilt or downtilt. The U-bracket includes a loudspeaker attachment slot for placing the loudspeaker closer or further from the mounting surface. The available tilt is determined by how close the loudspeaker is placed to the mounting surface.</p>	<ul style="list-style-type: none"> <li>■ HMS-15: +16°/-13°</li> <li>■ HMS-15AC: +16°/-13°</li> </ul> <p><b>Note:</b> Wider uptilt and downtilt may be possible depending on the building's structural components and mounting surface.</p>	<p>7.6 lbs (3.4 kg)</p>	<p>Yes</p>
<p><b>WH-HMS Wall Hinge Bracket</b> (PN 40.227.030.01)</p> 	<p>Mounts HMS-5, HMS-10, and HMS-12 loudspeakers on walls with the capability of aiming them horizontally up to 90° away from the wall. The bracket is symmetrical, allowing it to be rotated 180° so cabinets can be aimed either toward or away from the screen.</p>	<ul style="list-style-type: none"> <li>■ HMS-5: 0°</li> <li>■ HMS-10: 0°</li> <li>■ HMS-12: 0°</li> </ul> <p><b>Note:</b> Supports horizontally aiming loudspeakers ±90°.</p>	<p>10.4 lbs (4.7 kg)</p>	<p>No</p>

**CAUTION:** When mounting HMS loudspeakers in soffits, allow at least 3 inches above the loudspeaker for the bracket to slide into place. The extra space is also required for ventilation for the loudspeaker's amplifier and heat sink.

**NOTE:** When mounting HMS loudspeakers in soffits, allow sufficient space around the loudspeaker so its coverage pattern is unobstructed by the walls of the soffit.

---

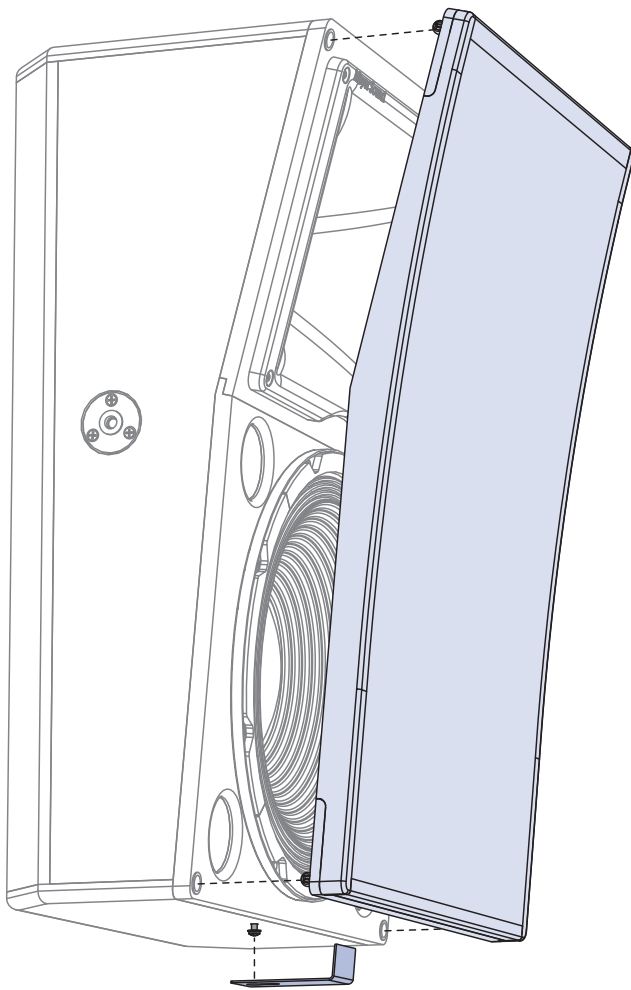
## CHAPTER 5: REMOVING HMS GRILLE FRAMES

If a cinema installation requires it, HMS grille frames can be easily removed. Grille frames for the HMS-5 and HMS-10 are removed by simply unsnapping the corner tree-loks and removing the grille. Grille frames for the HMS-12 and HMS-15 include an L-bracket securing them to the bottom of the cabinet, for safety reasons, that must be removed before the grille can be detached.

### REMOVING HMS-12 AND HMS-15 GRILLE FRAMES

To remove the HMS-12 or HMS-15 grille frame:

1. Use a Phillips-head screwdriver to loosen the pan head screw on the bottom front of the cabinet securing the grille-frame's L-bracket. Slide the L-bracket forward to remove it. Set the L-bracket aside.



2. Re-tighten the pan head screw without the L-bracket installed.
3. Unsnap the corner tree-loks of the grille frame and remove the grille.



**CAUTION:** For installations that require grille frames, do not remove the L-brackets securing HMS-12 and HMS-15 grille frames.



## APPENDIX A: HMS ACCESSORIES

The following HMS accessories are available from Meyer Sound.

### HMS Accessories

Part Number	Accessory	Notes
09.205.001.01	MPS-488HPp external power supply (with US power cord)	Channel outputs equipped with Phoenix 5-pin male connectors
09.205.001.02	MPS-488HPp external power supply (with CE power cord)	
484.065	Phoenix 5-pin female cable mount connector	Connects to MPS-488HPp channel output connectors and HMS Input connectors
524.014	Bulk cable, no connectors (regular)	500-ft spool, black
524.015	Bulk cable, no connectors (plenum)	500-ft spool, white



**NOTE:** Bulk cables use Belden 1502R (regular) or Belden 1502P (plenum) cable. Belden 1502 is a composite cable comprised of two 18 AWG wires for DC power, two 22 AWG wires for balanced audio, and one 24 AWG wire for audio shield. This single cable can deliver both DC power and balanced audio to loudspeakers at cable runs of up to 150 feet with only 1 dB of loss in peak SPL. Longer cable runs are possible with heavier gauges for DC power and separate cables for balanced audio. For more information, see “Current Draw and Cable Requirements for HMS Loudspeakers” on page 10.



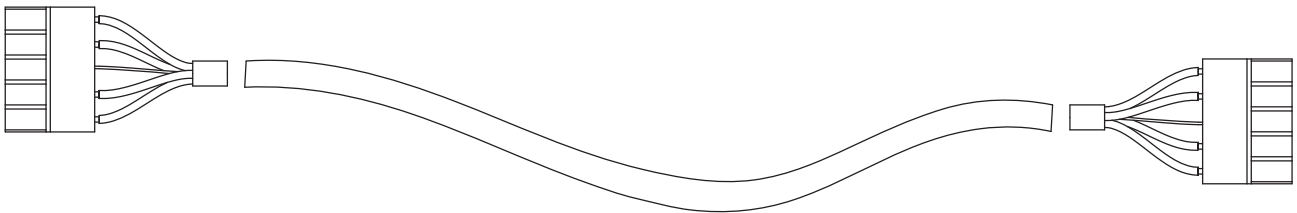


## APPENDIX B: ASSEMBLING LOUDSPEAKER CABLES

**CAUTION:** When wiring loudspeaker cables, it is extremely important that each pin be wired correctly. Make sure the 48 V DC from the external power supply is wired directly (and only) to the 48 V DC pins on the loudspeaker connector, and that the polarity is observed (negative to negative, positive to positive) to avoid damage to the loudspeaker. In addition, make sure that audio pins are wired correctly; polarity reversals for audio signals affect system performance.

### ASSEMBLING PHOENIX-TO-PHOENIX LOUDSPEAKER CABLES

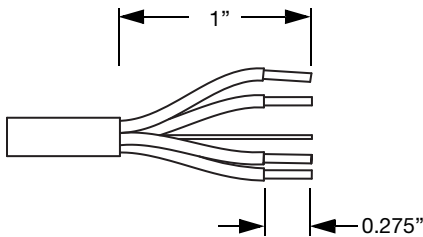
When connecting Phoenix-equipped HMS loudspeakers to the MPS-488HPp power supply (also with Phoenix connectors), you need a Phoenix 5-pin female to Phoenix 5-pin female cable. The following procedure documents how to assemble this cable.



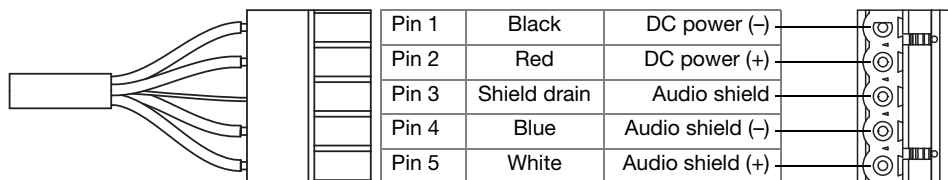
*Assembled Phoenix-to-Phoenix Cable*

To assemble a Phoenix-to-Phoenix cable:

1. If the cable has not yet been stripped, strip one end of the cable. Strip the outer shielding by 1 inch and then strip the black, red, blue, and white wires by 0.275 inch.

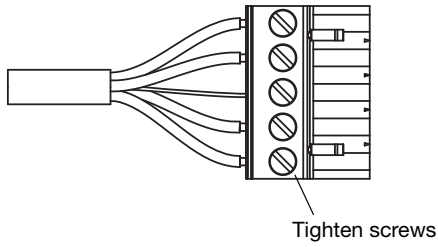


2. Insert the five exposed conductors into the five cable holes in a Phoenix 5-pin female cable mount connector. Use the following wiring scheme.



*Pin Destinations for Phoenix 5-Pin Female Cable Mount Connector*

- Secure the conductors by tightening the five screws in the Phoenix cable mount connector. Screws should be torqued to 5–6 Nm (4.4–5.3 in-lbs).



**CAUTION:** Screws should not be inserted into the Phoenix connector while the connector rests in a mating plug. Doing so will damage the contacts. During assembly, the Phoenix connector should only be held in place externally.

- Repeat the previous steps and attach the other end of the cable to another Phoenix 5-pin female cable mount connector.
- Verify the wiring polarity is correct for both cable ends.

## APPENDIX C: HMS SPECIFICATIONS

### HMS Specifications

ACOUSTICAL	HMS-5	HMS-10	HMS-12	HMS-15
Operating Frequency Range	55 Hz – 18 kHz	55 Hz – 18 kHz	59 Hz – 18 kHz	50 Hz – 18 kHz
	<b>Note:</b> Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.			
Frequency Response	60 Hz – 17.5 kHz $\pm 4$ dB	58 Hz – 17.5 kHz $\pm 4$ dB	63 Hz – 17 kHz $\pm 4$ dB	54 Hz – 16 kHz $\pm 4$ dB
	<b>Note:</b> Free field, measure with 1/3rd octave frequency resolution at 4 meters.			
Phase Response	250 Hz – 18 kHz $\pm 45^\circ$	290 Hz – 18 kHz $\pm 45^\circ$	240 Hz – 18 kHz $\pm 45^\circ$	290 Hz – 18 kHz $\pm 45^\circ$
Linear Peak SPL	120.0 dB	123.5 dB	126.0 dB	128.5 dB
	<b>Note:</b> Free field, measured with pink noise, onset of nonlinearity, referred to 1 meter.			
Dynamic Range	110 dB	110 dB	110 dB	110 dB
Coverage	80° symmetrical	80° symmetrical	100° symmetrical	80° horizontal by 50° vertical
Crossover	1.7 kHz	2.5 kHz	840 Hz	680 Hz
	<b>Note:</b> At this frequency, the transducers produce equal sound pressure levels.			
TRANSDUCERS	HMS-5	HMS-10	HMS-12	HMS-15
Low Frequency	Two 5-inch long-excursion cone drivers	One 10-inch long-excursion cone driver	One 12-inch long-excursion cone driver	One 15-inch long-excursion cone driver
High Frequency	One 2-inch diaphragm compression driver	One 2-inch diaphragm compression driver	One 3-inch diaphragm compression driver	One 3-inch diaphragm compression driver
CONNECTORS	HMS-5	HMS-10	HMS-12	HMS-15
Audio/Power (Wiring)	One Phoenix 5-pin male composite input	One Phoenix 5-pin male composite input	One Phoenix 5-pin male composite input	Two Phoenix 5-pin male composite inputs
Pin 1	DC power (-)	DC power (-)	DC power (-)	DC power (-)
Pin 2	DC power (+)	DC power (+)	DC power (+)	DC power (+)
Pin 3	Audio shield	Audio shield	Audio shield	Audio shield
	<b>Note:</b> Audio shield, chassis/earth through a 1 kOhm, 1000 pF, 15 V clamped network to provide virtual ground lift at audio frequencies.			
Pin 4	Audio signal (-)	Audio signal (-)	Audio signal (-)	Audio signal (-)
Pin 5	Audio signal (+)	Audio signal (+)	Audio signal (+)	Audio signal (+)
AUDIO INPUT	HMS-5	HMS-10	HMS-12	HMS-15
Type	Differential, electronically balanced			
Maximum Common Mode Range	$\pm 15$ V DC, clamped to earth for voltage transient protection			
Input Impedance	10 kOhm differential between pins 4 (-) and 5 (+)			
DC Blocking	Differential DC blocking up to the maximum common mode voltage			
CMRR	$>50$ dB, typically 80 dB (50 Hz – 500 Hz)			
RF Filter	Common mode: 425 kHz; Differential mode: 142 kHz			
TIM Filter	$<80$ kHz, integral to signal processing			
Nominal Input Sensitivity	6.0 dBV (2.0 V rms) continuous is typically the onset of limiting for noise and music	2.0 dBV (1.3 V rms) continuous is typically the onset of limiting for noise and music <b>Note:</b> With the Pad switch enabled, the input sensitivity is 9.5 dBV (3.0 V rms).	2.0 dBV (1.3 V rms) continuous is typically the onset of limiting for noise and music	3.0 dBV (1.4 V rms) continuous is typically the onset of limiting for noise and music
Input Level	Audio source must be capable of producing +16 dBV (6.3 V rms, 9.0 V peak) into 600 ohms to produce the linear peak SPL over the operating bandwidth of the loudspeaker			

**HMS Specifications**

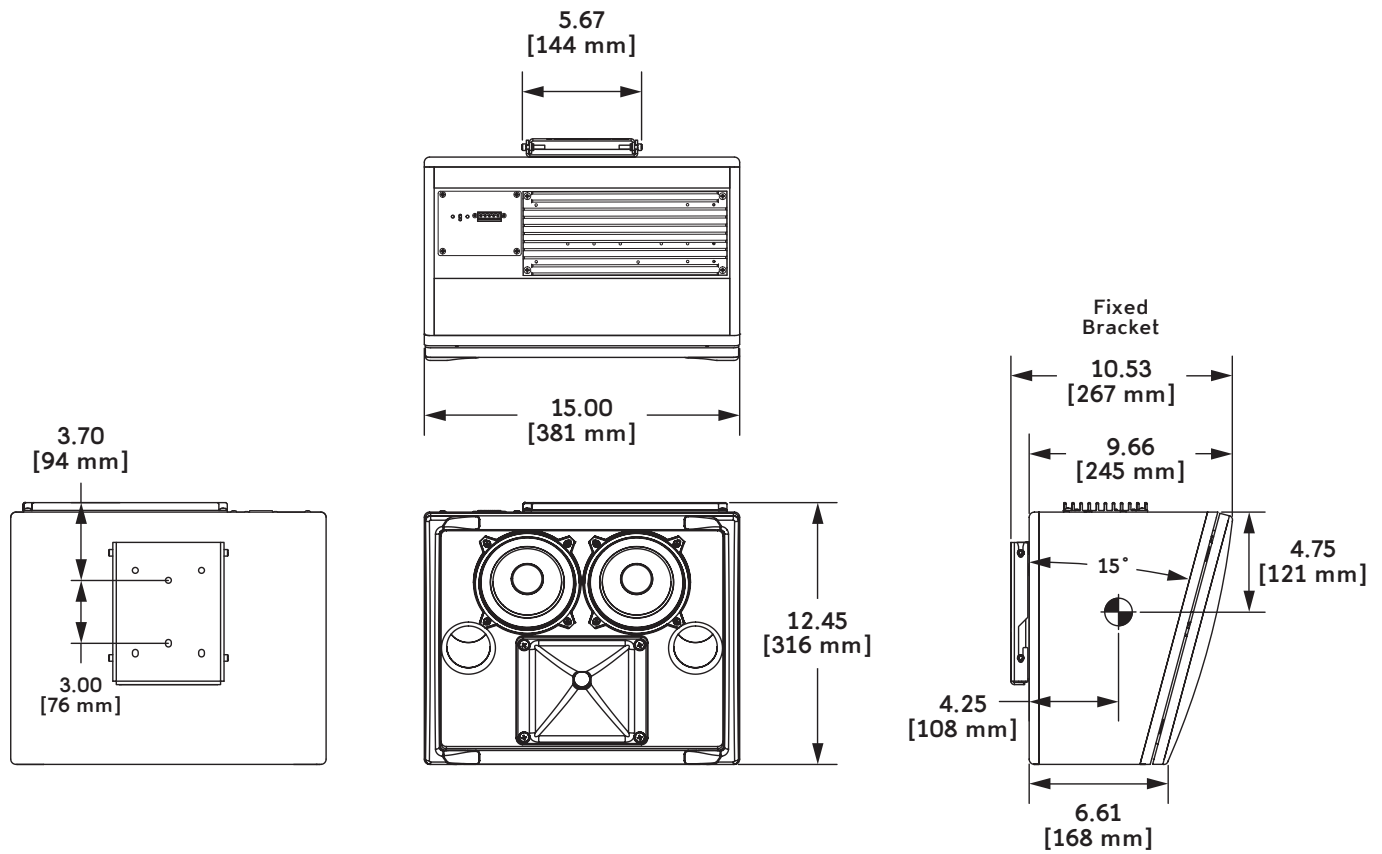
<b>AMPLIFIER</b>	<b>HMS-5</b>	<b>HMS-10</b>	<b>HMS-12</b>	<b>HMS-15</b>
Amplifier Type	3-channel with active crossover	2-channel with active crossover	2-channel with active crossover	2-channel with active crossover
Output Power	300 W	300 W	300 W	600 W
	<b>Note:</b> Wattage rating based on the maximum unclipped burst sine-wave rms voltage the amplifier will produce into the nominal load impedance.			
THD, IM TIM	<.02%	<.02%	<.02%	<.02%
Load Capacity	8 ohms each low channel, 12 ohms high channel	4 ohms low channel, 12 ohms high channel	4 ohms low channel, 8 ohms high channel	2 ohms low channel, 8 ohms high channel
Cooling	Convection	Convection	Convection	Convection
<b>DC POWER</b>	<b>HMS-5</b>	<b>HMS-10</b>	<b>HMS-12</b>	<b>HMS-15</b>
Voltage Requirement	48 V DC	48 V DC	48 V DC	48 V DC
	<b>Note:</b> Requires MPS-488HP IntelligentDC power supply. The MPS-488HP can power up to eight HMS-5, HMS-10, or HMS-12 loudspeakers, or up to four HMS-15 loudspeakers.			
<b>RMS</b>	<b>HMS-5</b>	<b>HMS-10</b>	<b>HMS-12</b>	<b>HMS-15</b>
	Requires RMS option for the MPS-488HP IntelligentDC power supply. Reports voltage and current draw for the attached IntelligentDC loudspeakers to the host computer.			
<b>PHYSICAL</b>	<b>HMS-5</b>	<b>HMS-10</b>	<b>HMS-12</b>	<b>HMS-15</b>
Dimensions	15.00 inches W (381 mm) 12.45 inches H (316 mm) 9.66 inches D (245 mm)	15.50 inches W (394 mm) 19.50 inches H (495 mm) 12.48 inches D (317 mm)	16.80 inches W (427 mm) 25.12 inches H (638 mm) 9.78 inches D (248 mm)	19.00 inches W (483 mm) 29.10 inches H (739 mm) 12.50 inches D (318 mm)
Weight	18.4 lbs (8.3 kg)	26.2 lbs (11.9 kg)	43.0 lbs (19.5 kg)	60.0 lbs (27.2 kg)
Enclosure	Multi-ply hardwood with black-textured finish	Multi-ply hardwood with black-textured finish	Multi-ply hardwood with black-textured finish	Multi-ply hardwood with black-textured finish
Grille Frame	Acoustically transparent, detachable, black cloth-covered frame	Acoustically transparent, detachable, black cloth-covered frame	Acoustically transparent, detachable, black cloth-covered frame	Acoustically transparent, detachable, black cloth-covered frame
Mounting	Rear attachment points (3.94 inches x 3.94 inches, 100 mm x 100 mm)	Rear attachment points (3.94 inches x 3.94 inches, 100 mm x 100 mm)	Rear attachment points (3.94 inches x 3.94 inches, 100 mm x 100 mm)	Rear attachment points (5.00 inches x 2.75 inches, 127 mm x 70 mm); side attachment points with 3/8"-16 threads
FMB-HMS Fixed Mount Bracket	✓	✓	✓	✓
AMB-HMS Adjustable Mount Bracket	✓	✓	✓	✓
HY-HMS Half Yoke	✓	✓	✓	
HY-HMS15 Half Yoke				✓
MUB-HMS U-Bracket	✓	✓	✓	
MUB-HMS15 U-Bracket				✓
WH-HMS Wall Hinge Bracket	✓	✓	✓	

**HMS Specifications**

ENVIRONMENTAL	HMS-5	HMS-10	HMS-12	HMS-15
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)			

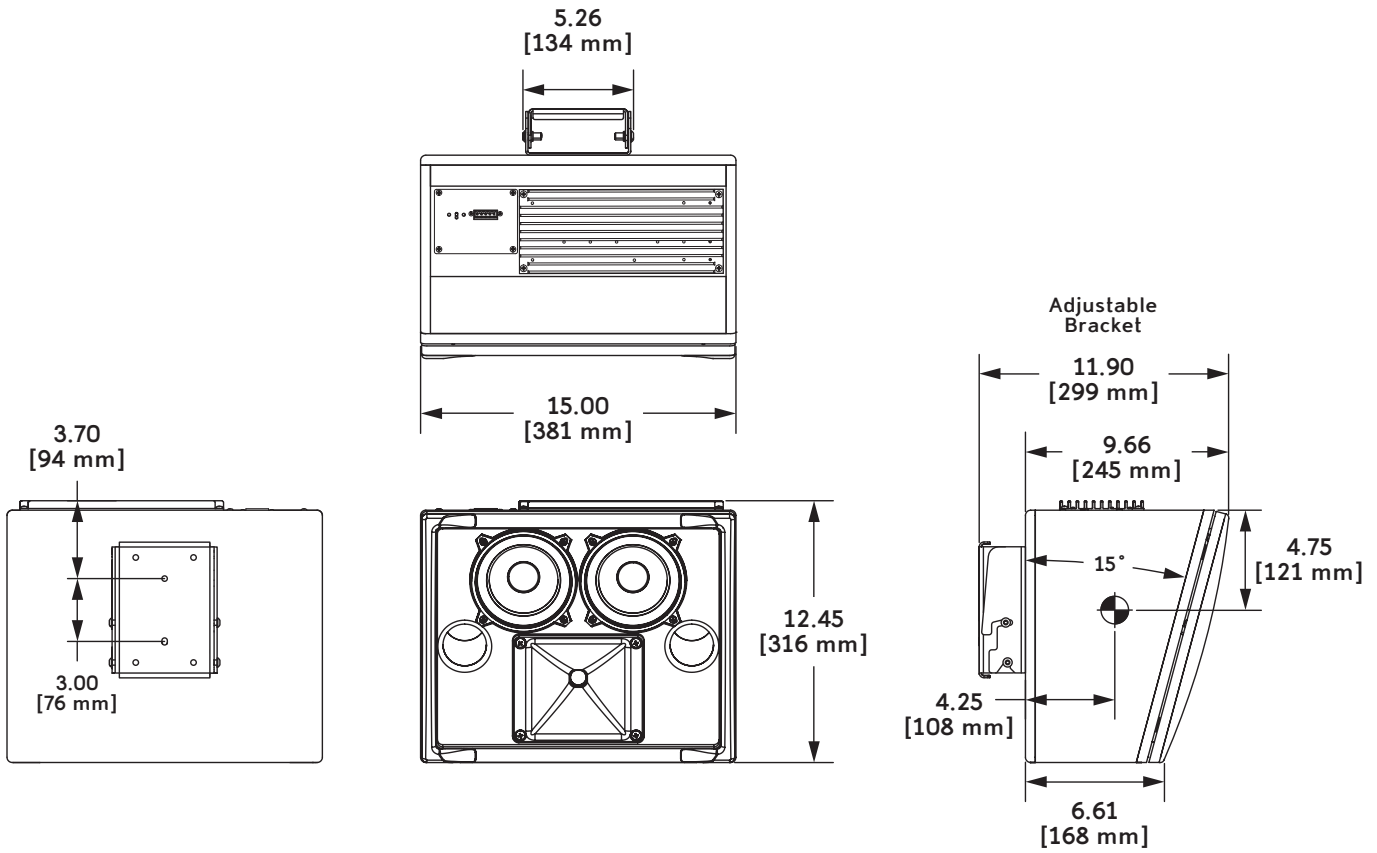
**HMS DIMENSIONS**

**HMS-5 Dimensions with FMB-HMS**



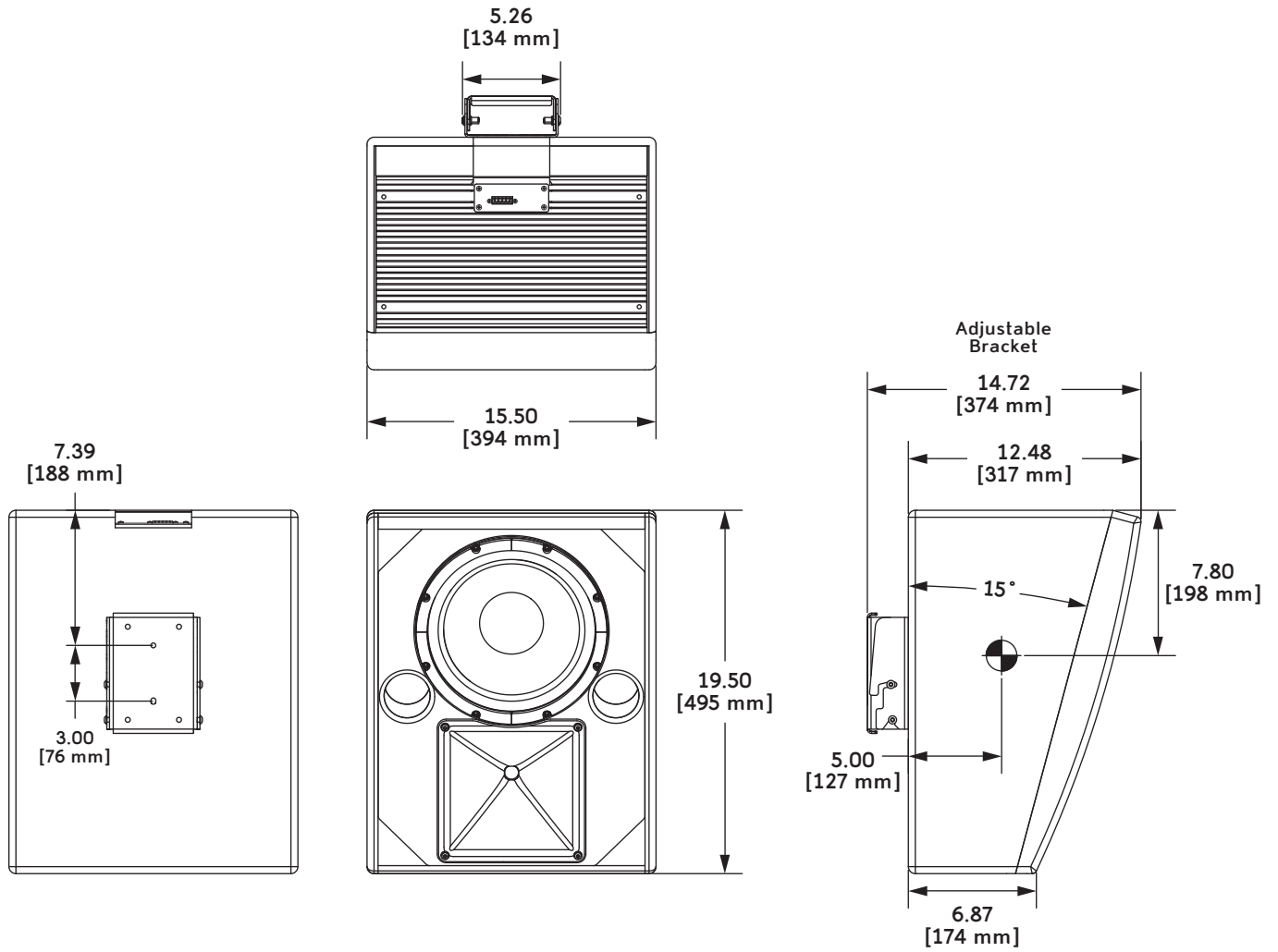
*HMS-5 Dimensions with FMB-HMS Fixed Mount Bracket*

### HMS-5 Dimensions with AMB-HMS



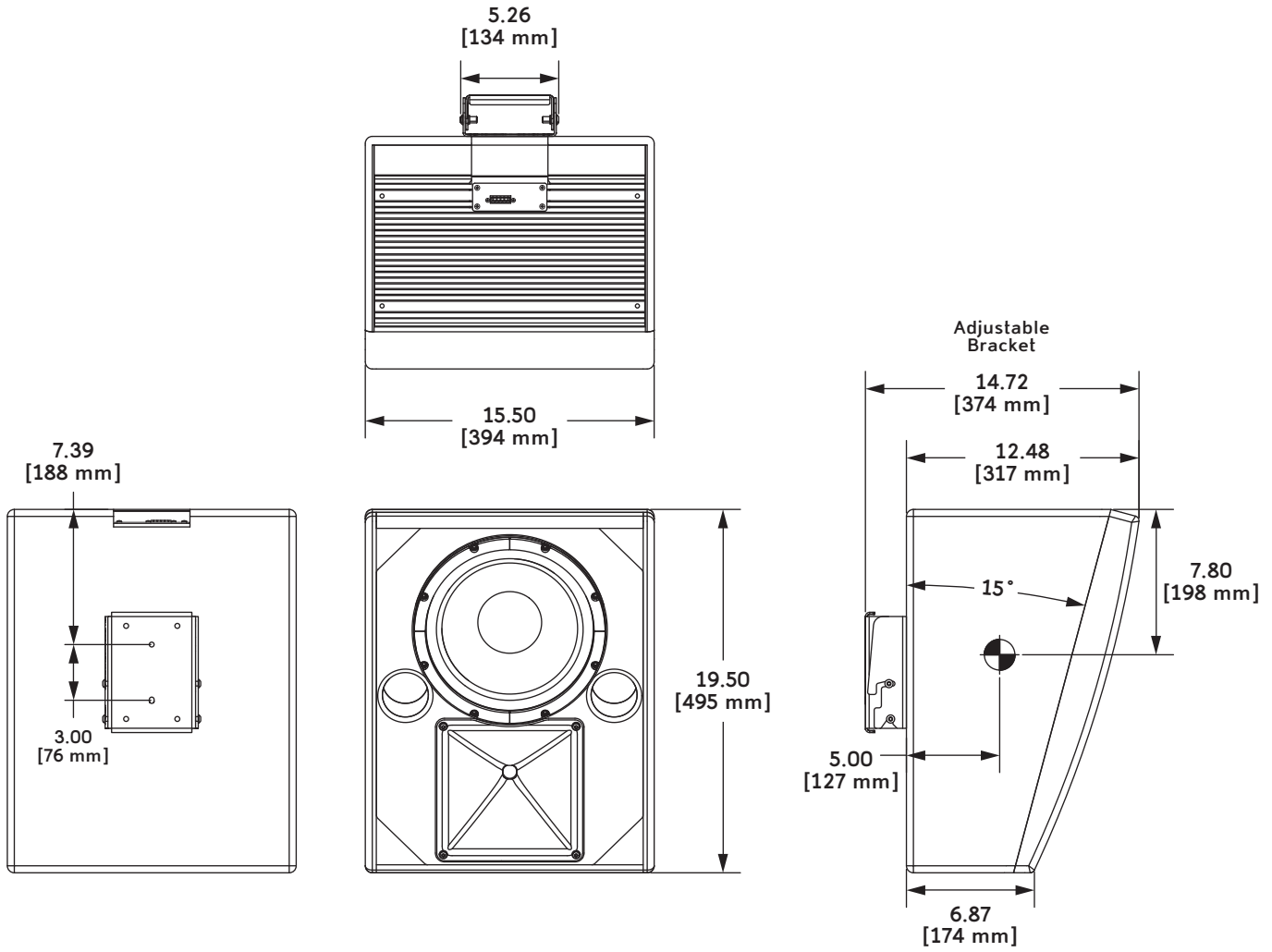
HMS-5 Dimensions with AMB-HMS Adjustable Mount Bracket

### HMS-10 Dimensions with FMB-HMS



HMS-10 Dimensions with FMB-HMS Fixed Mount Bracket

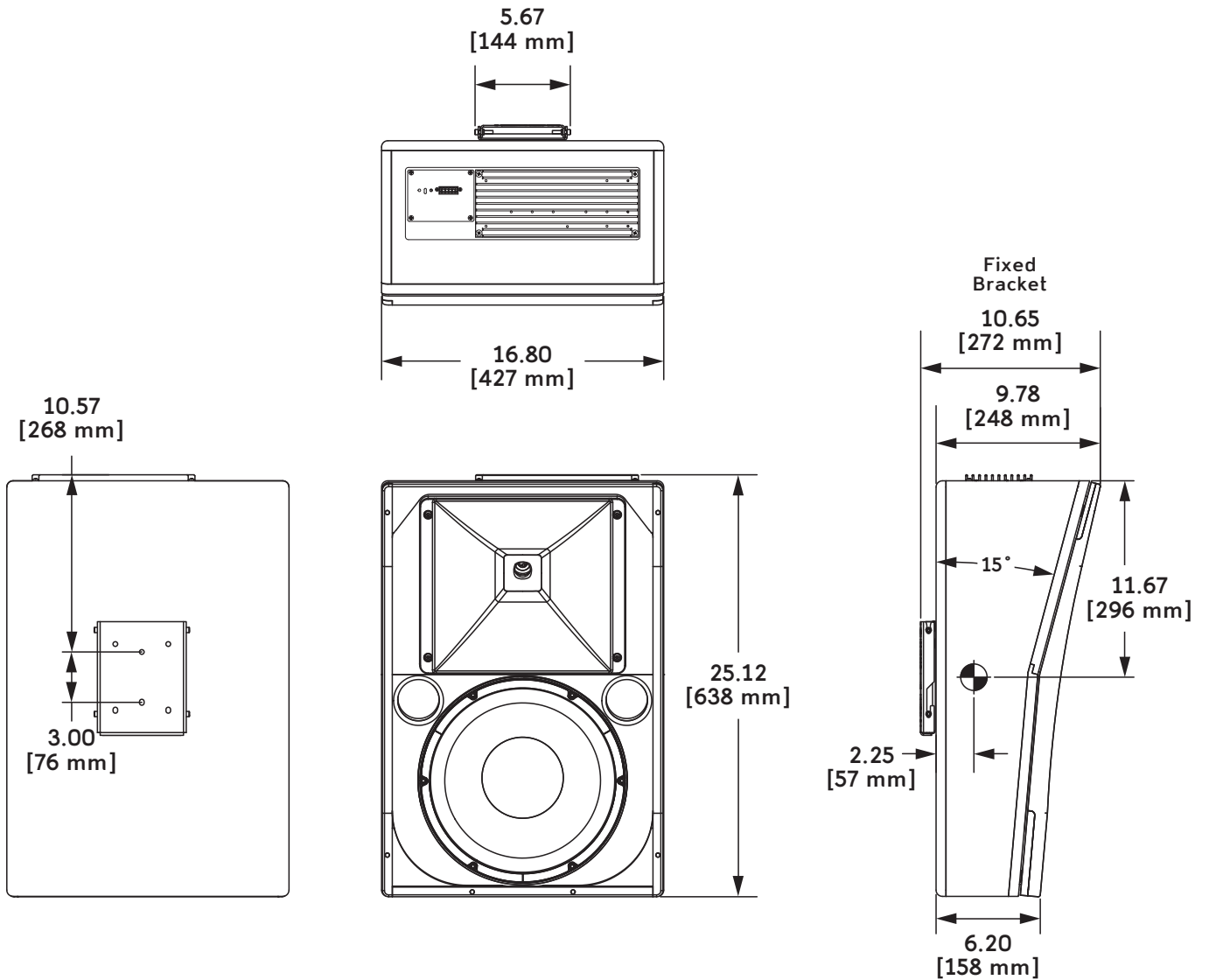
### HMS-10 Dimensions with AMB-HMS



HMS-10 Dimensions with AMB-HMS Adjustable Mount Bracket

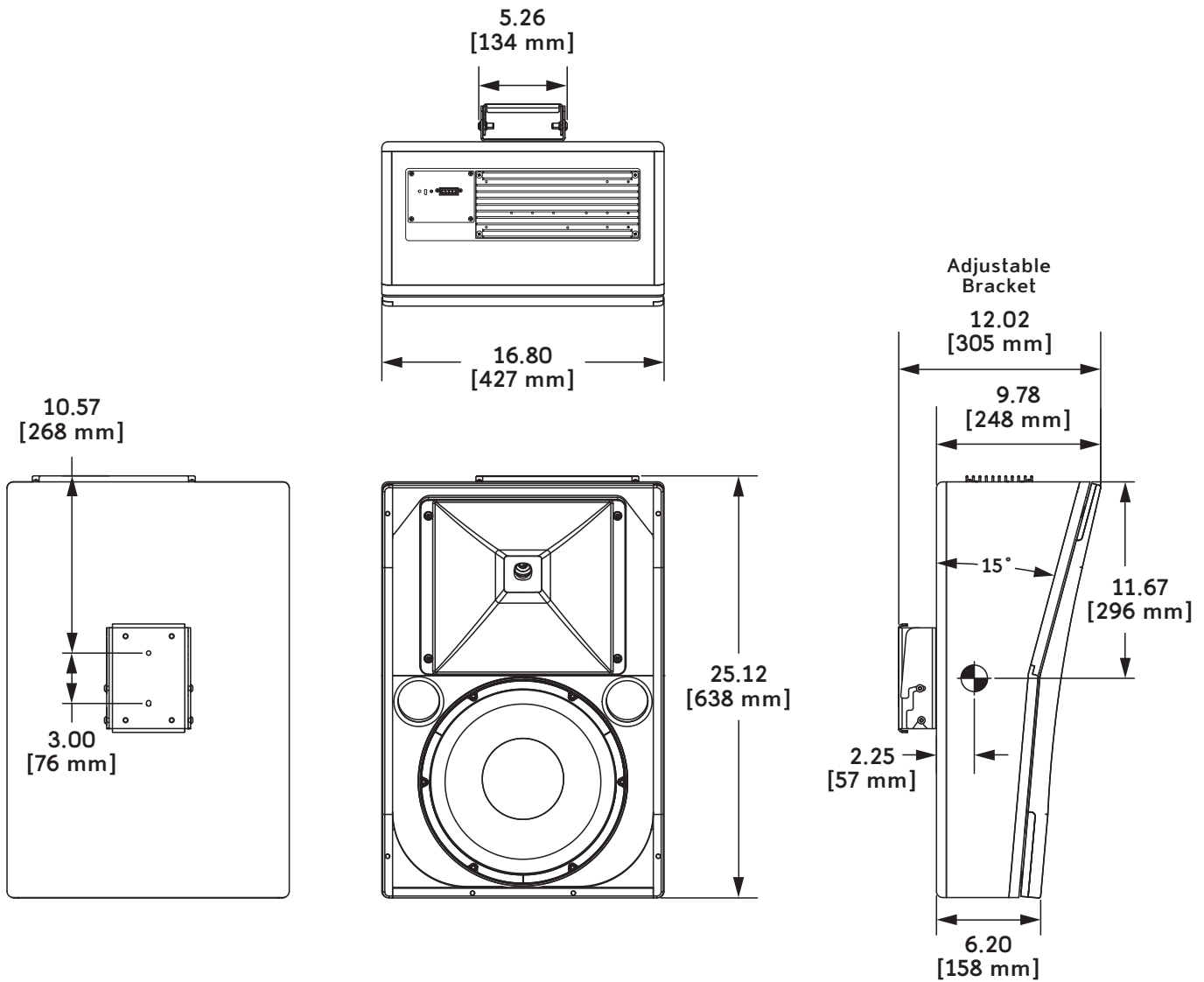


### HMS-12 Dimensions with FMB-HMS



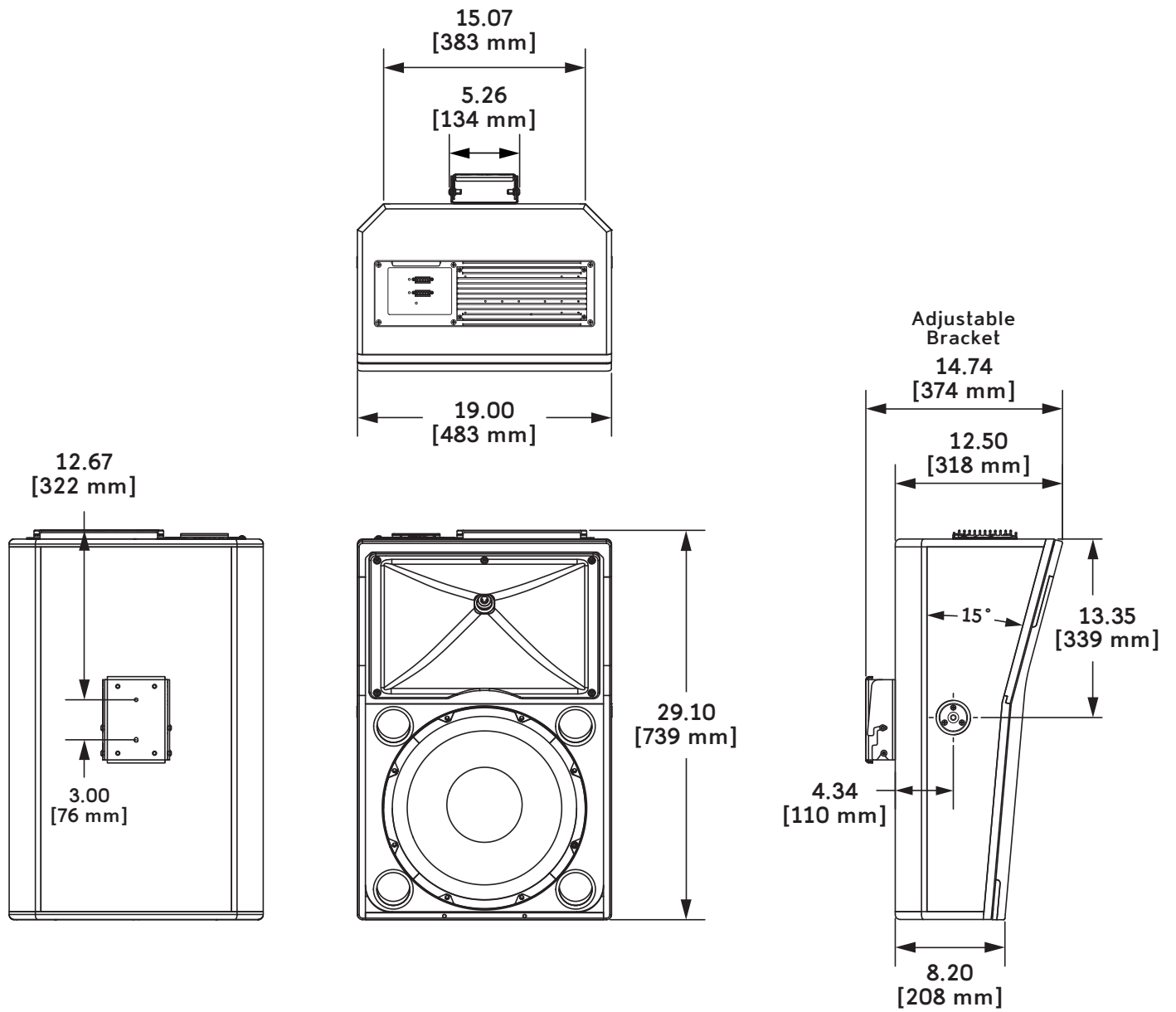
HMS-12 Dimensions with FMB-HMS Fixed Mount Bracket

**HMS-12 Dimensions with AMB-HMS**



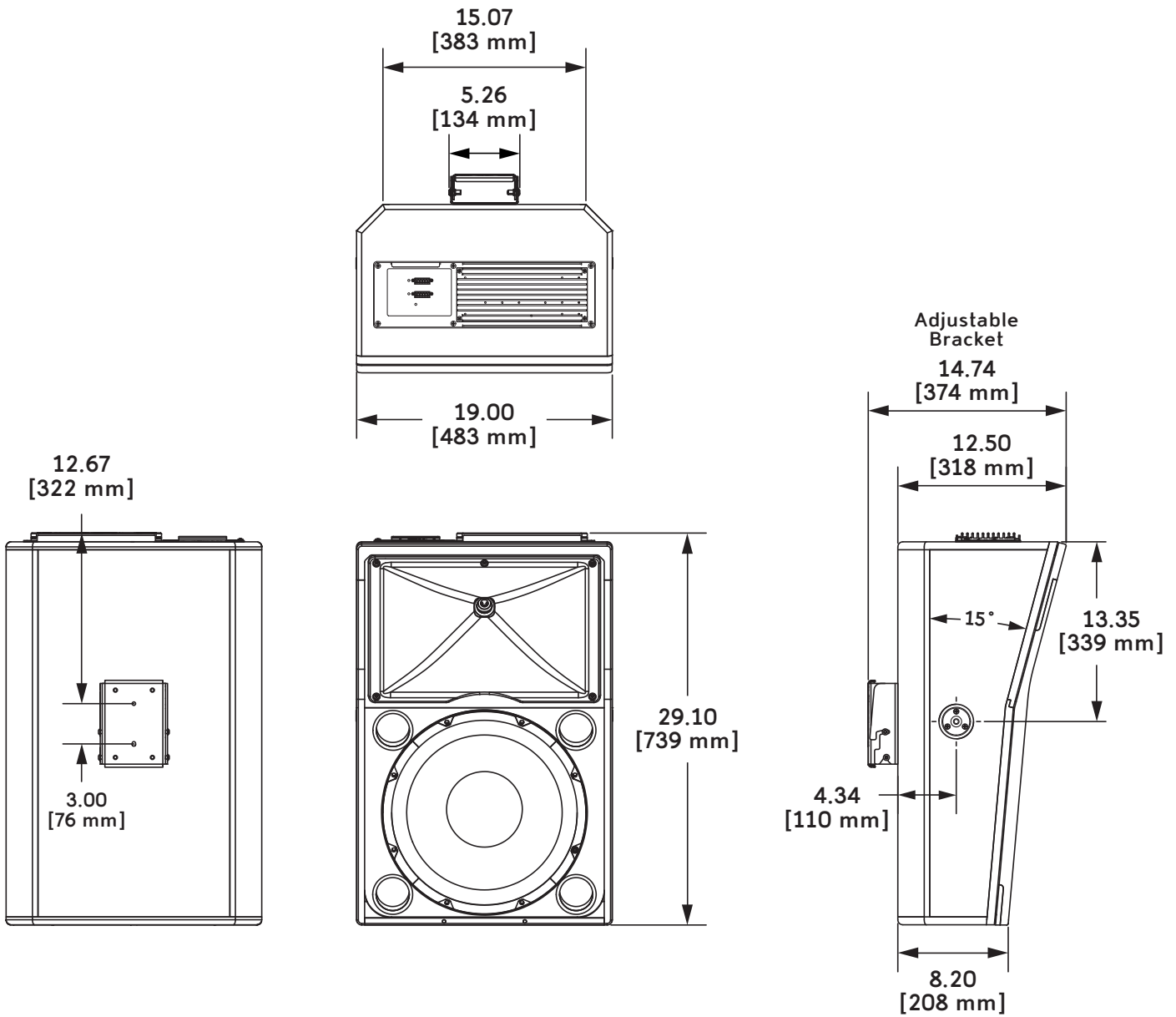
*HMS-12 Dimensions with AMB-HMS Adjustable Mount Bracket*

### HMS-15 Dimensions with FMB-HMS



HMS-15 Dimensions with FMB-HMS Fixed Mount Bracket

### HMS-15 Dimensions with AMB-HMS



HMS-15 Dimensions with AMB-HMS Adjustable Mount Bracket

**FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENT**

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

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

**INDUSTRY CANADA COMPLIANCE STATEMENT**

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

**AVIS DE CONFORMITÉ À LA RÉGLEMENTATION D'INDUSTRIE CANADA**

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

**EN 55032 (CISPR 32) STATEMENT**

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







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

© 2016  
Meyer Sound. All rights reserved.  
HMS Operating Instructions  
PN 05.198.005.01 A