



SLS™ 8290V2 User's Guide

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LIMITED WARRANTY AND WARRANTY EXCLUSIONS:

THE LIMITED WARRANTY AND WARRANTY EXCLUSIONS MAY BE FOUND AT THE FOLLOWING URL:
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IMPORTANT SAFETY INSTRUCTIONS



- 1. INSTALLER ASSUMES ALL RESPONSIBILITY AND LIABILITY FOR THE INSTALLATION OF THIS PRODUCT.**
2. Prior to installing this product, read and completely understand the installation instructions. You must read these instructions to prevent personal injury and property damage. Keep the installation instructions in an easily accessible location for future reference.
3. Installation must be performed by qualified, licensed, and insured installers, and installed in accordance with all laws, rules, and regulations applicable to the installation site. Failure to do so could result in serious personal injury or even death. Consult an installation professional if you do not understand the installation instructions.
4. Compliance with local building codes (and, where applicable, national codes) is the responsibility of the installer. Installers should consult with local regulatory authorities for specific codes and/or guidelines for the use of this product.
5. Use proper personal lifting techniques when working with heavy objects to avoid personal injury.
6. Any supplied rigging hardware is intended only for use with the specified loudspeaker. The installer assumes all risk of loss and/or injury arising out of the use of the supplied rigging hardware with any other loudspeaker.
7. This guide is meant only for the purpose of instructing the installer in the intended use of SLS supplied rigging. All other rigging is considered part of the venue and/or installer supplied equipment and is not addressed in this guide.
8. This guide is not a comprehensive source for rigging in general. Installer assumes all responsibility for ensuring that accepted rigging and safety practices are employed. Installer assumes all responsibility for the appropriate use of SLS supplied rigging hardware and follows at a minimum all applicable laws, rules, and regulations in force for each venue.
9. For ceiling installations, the system safety cable must be mounted to the structural steel above the suspended ceiling tile in an auditorium. Do not attach the system safety cable to any wood structure, wood roof joists, or wood frame. For wall installations, the system safety cable must be anchored to the building structure independent of the primary rigging device. In all instances, the safety cable must be mounted in a way that supports a minimum of five times the static weight of the speaker, or greater if a higher requirement is mandated per local laws.
10. Do not install on a structure that is prone to abnormal vibration, movement, or chance of impact. Failure to do so could result in damage to the equipment and/or damage to the mounting surface.
11. Make sure that no water pipes, natural gas lines, electrical wire, or conduit are present where the speaker is to be installed. Cutting or drilling into water pipes, natural gas lines, electrical wire, or conduit could cause serious personal injury or property damage.
12. Prior to installation, always inspect all hardware components for wear, deformations, corrosion, and missing or damaged parts.
13. Prior to suspending any system, always inspect all components (enclosures, rigging frames, pins, eyebolts, track fittings, and so on) for cracks, deformations, corrosion, and missing, loose, or damaged parts that could reduce its strength and safety. Do not suspend the system until the proper corrective action has been taken.

14. This product is intended for installation in dry indoor locations only. Do not expose the product to rain or moisture. Moisture can damage the product and cause corrosion of electrical contacts and metal parts. Premature product failure or serious personal injury could occur if this product is used outdoors or in wet indoor environments.
15. No open flame sources should be placed on or near the apparatus. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produces heat.
16. Only clean product with a dry or damp cloth.
17. Do not block any ventilation openings.
18. Hearing damage may result from prolonged exposure to excessive sound pressure levels (SPL). The loudspeaker is easily capable of generating SPL sufficient to cause permanent hearing damage to performers, production crew, and audience members. Caution should be taken to avoid prolonged exposure to SPL in excess of 90 dB.
19. Avoid exposing the speakers to direct moisture. Keep speakers out of extended or intense direct sunlight.
20. The loudspeaker can generate considerable acoustical energy and may move during use. The system must be mounted in a way that allows sufficient clearance for this movement without risk of contact with the building structure, rigging, or other equipment. Installer-supplied hardware must be intended for overhead suspension and comply with ASME B30.20 and be manufactured under product traceability controls. Compliant hardware will be referenced with a working load limit (WLL) and a traceability code. The hardware must be load rated to support a minimum of five times the static weight of the system, or greater if a higher requirement is mandated per local laws. Generally, this type of hardware is available from rigging supply companies, industrial supply catalogs, and specialized rigging distributors. Local hardware stores do not usually stock these products.
21. Installed systems should be inspected at least annually or as required by local laws. The inspection shall include a visual survey of all corners and load-bearing surfaces for signs of cracking, water damage, delamination, or any other condition that may decrease the strength of the rigging frame and speakers. The rigging hardware must be inspected for fatigue at least annually or as required by local laws. The inspection shall include a visual survey of the hardware for signs of corrosion, bending, or any other condition that may decrease the strength of the hardware.
22. Prior to suspending the system, an expert who is trained and experienced in suspending speaker systems should inspect all parts and components. Dolby is not responsible for the application of its products for any purpose or the misuse of this information for any purpose. Furthermore, Dolby is not responsible for the abuse of its products caused by avoiding compliance with inspection and maintenance procedures or any other abuse.
23. THIS PRODUCT IS NOT INTENDED FOR FLOOR-STANDING INSTALLATIONS.
24. No information contained in this guide is intended as a warranty on the part of SLS. Anyone using this information assumes all liability arising from its use. Product abuse, use of the product not in accordance with SLS instructions, or use in an application for which the product has not been designed is not covered under any SLS warranty, nor is SLS liable for any loss or damage.

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Introduction

1.1 8290V2 Overview

The SLS™ 8290V2 is a high-performance loudspeaker for use in cinema auditoriums and professional applications. This speaker contains a PRD500 high-frequency ribbon driver, which is oriented for use when the speaker is installed vertically. You can mount the speaker vertically on a standard speaker pole/socket. To install the speaker horizontally and maintain the correct coverage angle, you need to rotate the ribbon driver 90 degrees.

To attach installer-supplied hardware for hanging the speaker from the building structure, the unit contains twelve 3/8"-16 rigging points at convenient locations on the speaker.

To attach a third-party mounting plate, four 1/4"-20 size attachment points are located on the back of the speaker in a traditional pattern. To fasten third-party hardware to the 8290V2, you can reuse the four bolts that are already installed in these positions on the speaker.

All enclosure fasteners must be in place to ensure that the speaker cabinet is air-tight for proper performance.

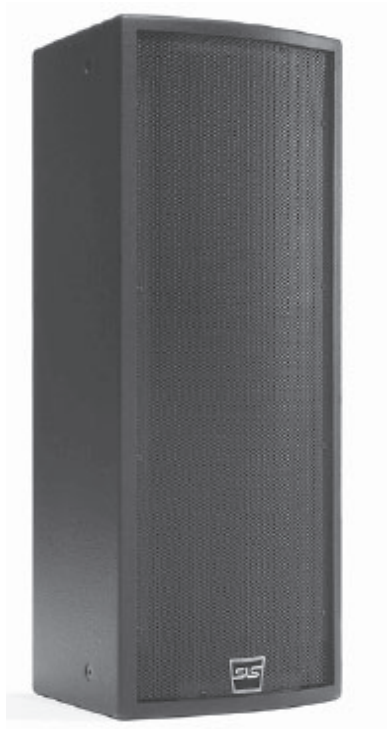


Figure 1-1 SLS 8290V2

1.2 8290V2 Specifications

Following are the 8290V2 general specifications:*

- Frequency response: 53 Hz to 20 Hz
- Sensitivity: 1 watt @ 1 M: 93 dB
- Continuous power rating: 225 watts
- Maximum continuous rated SPL at 1 meter: 117 dB
- Coverage angle: 90 degrees horizontal, 30 degrees vertical
- Drivers: Dual 8-inch low frequency, PRD500 ribbon high frequency
- Dimensions:
 - Width: 11.7 inches (297 millimeters)
 - Height 29.8 inches (756 millimeters)
 - Depth: 11.3 inches (287 millimeters)
- Net weight: 46 pounds (20.9 kilograms)
- Shipping weight: 54 pounds (24.5 kilograms)

* SLS Audio reserves the right to make changes to existing products without notice.

1.3 8290V2 Processor Settings Anechoic and Subjective

These processor settings were determined in an anechoic environment, and used to produce frequency response, polar charts, and power-handling specifications.

Crossover Section	Frequency	Slope
Highpass filter	50 Hz	24 dB octave (second order) Butterworth

Limiting Section	Threshold/RMS Voltage	Attack	Release
See Appendix B	30 V	16 ms	256 ms

Equalization Section

Digital signal processor (DSP) parametric filter algorithms vary between DSP manufacturers, so values derived from one DSP do not necessarily translate accurately to another manufacturer DSP. We recommend that Q values be used as a starting point when programming filter values (such as these) are typically more accurate mathematical representations of the original filter values. A calibrated microphone and quality transfer-function-based measurement system, such as SysTune or SMAART, should be used to tune the system to the specific room acoustic properties.

Installing the SLS 8290V2

This chapter provides instructions for installing the SLS™ 8290V2.



Warning: TO PREVENT INJURY, THIS APPARATUS MUST BE SECURELY ATTACHED TO THE BUILDING STRUCTURE IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS. CONSULT A PROFESSIONAL MECHANICAL OR STRUCTURAL ENGINEER TO OBTAIN APPROVAL FOR ALL ATTACHMENTS TO THE BUILDING STRUCTURE. THIS APPARATUS MUST BE INSTALLED BY LICENSED PROFESSIONAL INSTALLERS. IF NOT ATTACHED TO THE BUILDING STRUCTURE PROPERLY, THIS APPARATUS COULD FALL AND CAUSE PERSONAL INJURY OR DEATH. SUSPENSION OF HARDWARE COMPONENTS MUST BE CALCULATED WITH A GIVEN SAFETY FACTOR TO BE WITHIN THEIR RESPECTIVE LOAD LIMITS. INSPECT ALL COMPONENTS BEFORE INSTALLATION. THIS APPARATUS IS NOT INTENDED FOR FLOOR-STANDING INSTALLATIONS. ALL LOCAL BUILDING AND SEISMIC CODES MUST BE ADHERED TO.

2.1 Tools Required

- 7/32" Allen wrench to remove the existing bolts for the hang points. After removal, you can attach installer-supplied rigging hardware to the available 3/8"-16 installation points.
- 5/32" Allen wrench to remove the bolts to install any third-party mounting bracket to the available 1/4"-20 installation points.
- #2 Phillips screwdriver for removing the speaker grill (if the PRD500 ribbon driver needs reorientation).
- 9/64" Allen wrench to remove the PRD500 ribbon driver (if ribbon driver needs reorientation).

The installer must supply 3/8"-16 eyebolts to provide rigging points for the installer-supplied rigging hardware. Safe overhead rigging practices require an understanding of the proper rigging methods and are outside the scope of this manual. All installer-supplied rigging hardware must have a minimum 5:1 safety factor based on the weight of the 8290V2.



Warning: THE THREADS OF 3/8"-16 INSTALLER-SUPPLIED RIGGING HARDWARE THAT ATTACH TO THE APPARATUS MUST EXTEND A MINIMUM OF 1.25 INCHES (31.8 mm) INTO THE CABINET BUT NOT EXCEED 2.25-INCHES (57.2 mm). HARDWARE MUST HAVE A 5:1 SAFETY FACTOR, OR GREATER IF A HIGHER REQUIREMENT IS MANDATED PER LOCAL LAWS. THE 3/8"-16 INSERTS ON THE CABINET SIDES SHOULD NOT BE USED FOR EYEBOLTS THAT PULL AT AN ANGLE GREATER THAN 45 DEGREES TO THE LOAD. HARDWARE MUST BE SECURELY TIGHTENED AND THE WEIGHT EVENLY DISTRIBUTED THROUGH THE FOUR ATTACHMENT POINTS.

2.2 Installing in Vertical and Horizontal Positions

By default, the speaker is configured for installations in tall (vertical) positions as shown by the left image in the following figure.

If you are installing the unit horizontally (right image in following figure), you must rotate the PRD500 ribbon driver 90 degrees to provide the correct dispersion of high-frequency audio.

To rotate the ribbon driver:

1. Remove the screws located around the edges of the speaker grill using a Phillips screwdriver. Gently pull the grill off.
2. Remove the four screws holding the PRD500 in place with the 9/64" Allen wrench.
3. Remove the driver, rotate it 90 degrees and reinstall. Do not disconnect the driver wiring.
4. Reinstall the PRD500 and the speaker grill.

The following figure shows examples of the 8290V2 rigging points.

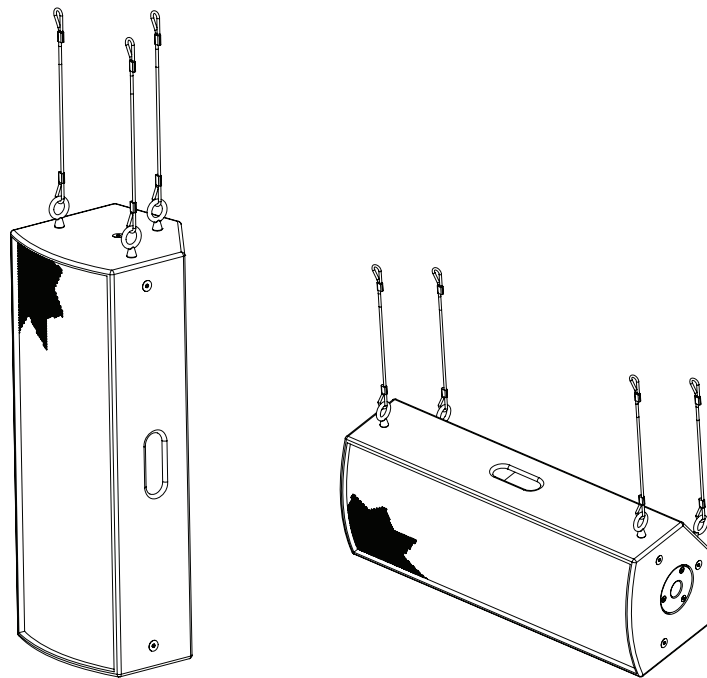


Figure 2-1 Example Rigging Points for Installer-Supplied Hardware

2.3 Installing with Third-Party Hardware



Warning: CONSULT A PROFESSIONAL MECHANICAL OR STRUCTURAL ENGINEER TO APPROVE ALL ATTACHMENTS TO BUILDING STRUCTURE. THIS APPARATUS MUST BE INSTALLED BY LICENSED PROFESSIONAL INSTALLERS. IF NOT INSTALLED ON THE BUILDING STRUCTURE PROPERLY, THIS APPARATUS COULD FALL, CAUSING PERSONAL INJURY OR DEATH. SUSPENSION OF HARDWARE COMPONENTS MUST BE CALCULATED WITH A GIVEN SAFETY FACTOR TO BE WITHIN THEIR RESPECTIVE WORKING LOAD LIMITS. INSPECT ALL COMPONENTS BEFORE INSTALLATION. ALL LOCAL BUILDING AND SEISMIC CODES MUST BE ADHERED TO. USE AN APPROPRIATE SIZE AND QUANTITY OF BOLTS TO SECURE HARDWARE TO STRUCTURE AS SPECIFIED BY THIRD-PARTY INSTRUCTIONS. IF A THIRD-PARTY BRACKET IS USED, HARDWARE MUST BE SECURELY TIGHTENED.

You can use a third-party bracket for both sidewall and overhead installations if the hardware is rated for the application and the weight of the 8290V2. These brackets typically use the four 1/4"-20 inserts on the rear of the enclosure, which are provided in an industry-standard layout. To fasten the third-party bracket to the speaker, you can use the 1/4" bolts that are already located in the inserts. Be sure to follow the third-party hardware installation instructions.

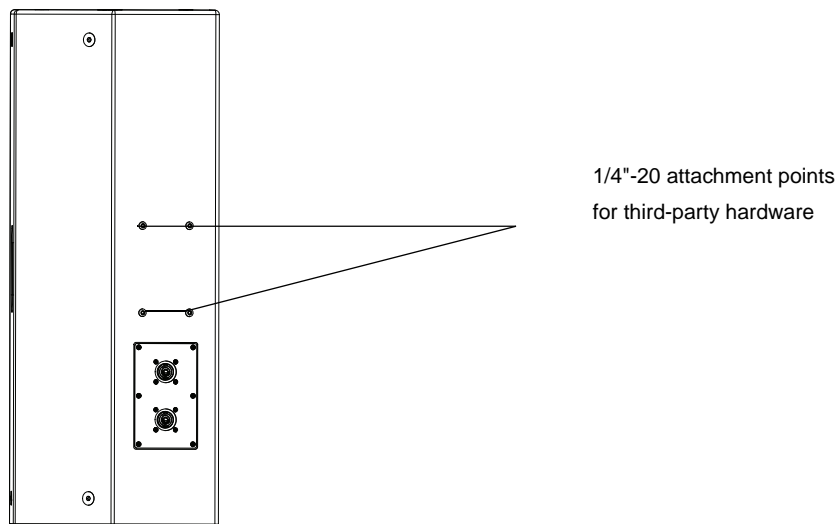


Figure 2-2 Four Attachment Points for Third-Party Hardware

For instructions on installing in vertical and horizontal positions, see [Section 2.2](#).

2.4 Connecting the Safety Cable

After attaching the 8290V2 to the building structure, you must connect a secondary safety attachment point to an independent point on the building structure. Any of the unused 3/8"-16 rigging points are available for attaching an installer-supplied forged eyebolt. Based on the weight of the 8290V2, all installer-supplied safety rigging hardware must have a minimum 5:1 safety factor, or greater if a higher requirement is mandated per local laws. Remove all slack to avoid any shock loading of the cable in case of a primary rigging failure.



Warning: INSTALLER-SUPPLIED RIGGING HARDWARE MUST HAVE A MINIMUM 5:1 SAFETY FACTOR BASED ON THE WEIGHT OF THE APPARATUS. YOU MUST SECURELY TIGHTEN THE HARDWARE. REMOVE ALL SLACK FROM THE CABLE. REPLACE THE CABLE IF IT HAS BEEN PULLED DUE TO A PRIMARY RIGGING FAILURE.

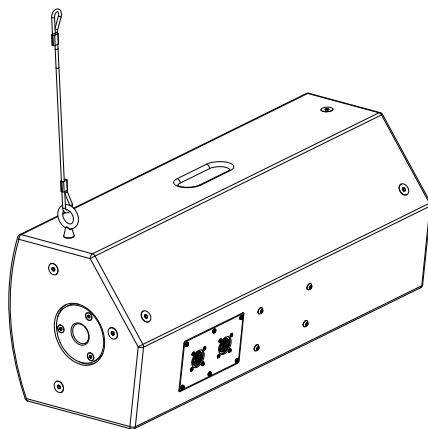


Figure 2-3 Example Safety Cable Connection with Third-Party Hardware

2.5 Connecting Audio

The SpeakOn™ NL4 connector accepts 16- to 12-gauge wire. Always use industry-standard practices for selecting wire gauge, based on the product power rating and cable length. Per IEC standard, a positive voltage on the positive marked input results in the low-frequency drivers moving outward. Always tie down the cable to available hardware to minimize any buzzing or pullouts.



Warning: TURN OFF ALL AMPLIFIERS WHEN CONNECTING THE LOUDSPEAKER WIRING.

If possible, play sound through the speaker to identify any connection issues or rattling.

2.6 Dimensions

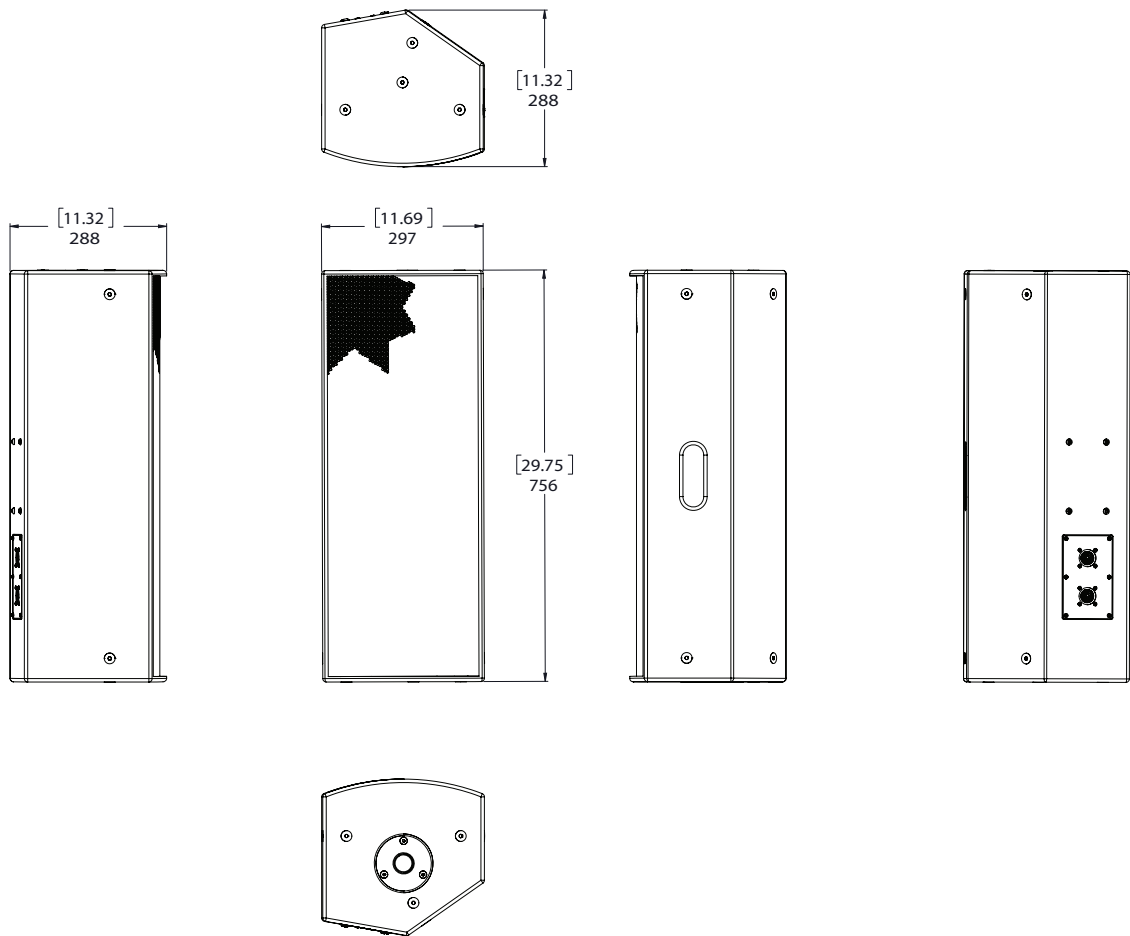


Figure 2-4 Dimensions in [Inches] and Millimeters

Environmental Compliance and Regulations

A.1 EU Environmental Regulations and Compliance

Following are the 8290V2 environmental regulations and compliance information.

Restriction of Hazardous Substances Directive (RoHS)

All Dolby® products comply with the requirements of the EU RoHS Directive. For the Dolby Declarations of Conformity, go to

<http://www.dolby.com/us/en/about/environmental-commitment.html>

Product End-of-Life Information

This product is electronic equipment and should be disposed of in accordance with all applicable laws. Do not dispose as household waste. Do not dispose of the product in a fire. Please dispose of this product by taking it to your local electronic waste collection point or recycling center. For information regarding where to recycle electronic equipment, contact your local dealer. For additional information regarding Waste Electrical and Electronic Equipment (WEEE) and product disposal go to

<http://www.dolby.com/us/en/about/environmental-commitment.html>

A.2 Russian Environmental Regulations and Compliance

Following is the 8290V2 Russian environmental compliance information.

Restriction of Hazardous Substances (RoHS) Directive

This product complies with Russian EAC RoHS requirements.



Setting System Limiters

B.1 Setting up System Limiters

This documentation explains how to set up system limiters to protect your loudspeaker and provide maximum performance when the digital signal processor (DSP), amplifier, and loudspeaker hardware are all variables. The following procedure provides a limiter setting threshold that can protect loudspeakers in a majority of use cases. However, the speaker drivers may still be vulnerable to content issues, such as sustained feedback or large, low-frequency transients below box tuning. Good system design and common sense should be the rule.

1. Obtain an audio source (to generate pink noise) and a true RMS voltage meter with a bandwidth of at least 20 kHz that can average a reading over a period of at least 10 seconds.
2. Complete the room tuning and set the amplifier gain.
To prevent future user error, consider setting the amplifiers at full gain, unless the amplifier gain setting is hardware or software protected. In such a case, you can optimize the amplifier gain to achieve the best signal-to-noise ratio.
3. After completing the room tuning and setting the amplifier gain, bypass the limiter on the DSP that you are using for protection, and leave all other DSP functions for that output engaged. For example, the highpass filter, crossovers, equalization, and so on.
4. Mute all system outputs except the output that is currently being calibrated.
5. Place the voltage meter across the amplifier +/- output terminals and turn up the pink noise source until the reading on the meter is slightly above the specified Threshold/RMS voltage (see [Section 1.3](#)) rating for that speaker driver and its recommended processor settings.
6. Play the pink noise only long enough to obtain a stable RMS average voltage reading. For high-frequency drivers, this is typically five seconds, and for full range loudspeakers or subwoofers, it is typically ten seconds.
7. Set the limiter to a minimum ratio of 100:1, and then input the attack and release times recommended by the speaker manufacturer.
8. Engage the limiter, and decrease the threshold until the voltage is lowered to the specified rating, without changing the pink noise gain.
9. Repeat the above procedure for each driver and/or passive loudspeaker you are using.
10. If a predictive peak stop limiter is available on the DSP, engage it at 6 dB above the RMS setting.
11. Monitor for amplifier clipping. If clipping occurs during system use, lower the peak-stop threshold until the amplifier clips slightly. Alternatively, you can engage the self-contained limiter circuit in the amplifier (if it has such a limiter circuit).

You need to perform this procedure only once, as long as the combined amplifier-limiter does not change. However, amplifier gain changes modify the limiter action. If the amplifier gain is decreased, protection engages early, which limits driver output. If the amplifier gain is increased, protection engages only after the driver reading is above the safe RMS voltage.