

50 watt 6.5 inch Coaxial In-Ceiling Speaker
(Model 14887)

20 watt 4 inch Coaxial In-Ceiling Speaker
(Model 14888)

User's Manual



14887 / 14888

SAFETY WARNINGS AND GUIDELINES

- Turn off and unplug all equipment prior to making electrical connections, including speaker wire connections.
- Reduce the volume level prior to making any change to the audio input source, e.g., changing radio stations or changing CDs.
- When using this speaker as part of a constant voltage speaker system, ensure that the amplifier power is at least 20% higher than the total power settings of the connected speakers.
- Most speaker damage is caused by clipping, which is heard as distortion. If you hear distortion, reduce the volume level until the audio is no longer distorted.
- Take care to ensure that the speaker wire connections are properly polarized. Inverted polarization can result in unnatural or attenuated sound, especially in the bass frequencies.
- Do not use chemical cleaners or solvents to clean this speaker. Use only a soft, dry cloth. Moisten the cloth with warm water for particularly stubborn deposits.

INTRODUCTION

Thank you for purchasing this Coaxial In-Ceiling Speaker!

This 2-way speaker features a built-in step-down transformer, allowing it to be used as part of a 70V or 100V constant voltage speaker array with four (100V) or five (70V) taps. It can also be configured as a conventional 8-ohm speaker for use in a standard home theater audio system. The speaker has a preinstalled back can, which helps deliver superior audio quality.

FEATURES

- 8 ohms nominal impedance
- Compatible with 70V and 100V constant voltage speaker systems
- Built-in step-down transformer with 4 (100V) or 5 (70V) taps
- Preinstalled back can for superior audio quality

PACKAGE CONTENTS

Please take an inventory of the package contents to ensure you have all the items listed below.

1x Coaxial in-ceiling speaker

1x Grille removal tool

1x Cutout template

1x User's manual

CONSTANT VOLTAGE VS 8-OHM SPEAKER SYSTEMS

A constant voltage speaker system differs from a traditional 8-ohm speaker system in that it uses a step-up transformer at the audio source to raise the voltage and lower the current on the transmission line. At the speaker end, a step-down transformer converts the signal back to a normal speaker level voltage. This reduces power loss during transmission, which allows for the use of longer speaker wire runs using smaller gauge wire.

Additionally, a constant voltage speaker system allows for the use of multiple speakers on each channel, without the need for complicated impedance calculations and configurations. In a constant voltage system, all speakers on a given channel are connected in parallel and the complicated impedance calculations are replaced by simple wattage calculations.

For example, if you want to connect two speakers per channel in a traditional 8-ohm speaker system, you must either connect them in series, which results in an overall 16-ohm impedance, or in parallel, which results in an overall 4-ohm impedance. In the first case, the

16-ohms impedance effectively halves the output power of your amplifier, resulting in lower overall volume levels. In the latter case, the 4-ohms impedance means that your amplifier will have to work harder and must be rated as stable at 4 ohms. Adding a third speaker to the mix would complicate it further, producing either a 24-ohm or 2.67-ohm overall impedance. Note that very few amplifiers are stable under 2-ohm loads, so that is usually not an option.

On the other hand, with a constant voltage system, you consider first the RMS output wattage of the amplifier. This should be reduced by 20% to compensate for insertion loss. For example, if using a 100-watt amplifier, the total load from speakers should not exceed 80 watts.

Each individual speaker on a given channel is set to a value such that the total does not exceed the rated power, less 20%. You do not need to worry about making the total as close as possible to the limit; just ensure that the total does not exceed the limit.

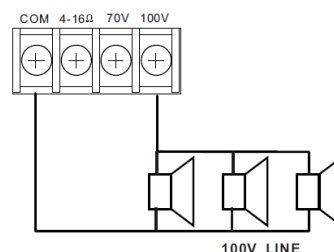
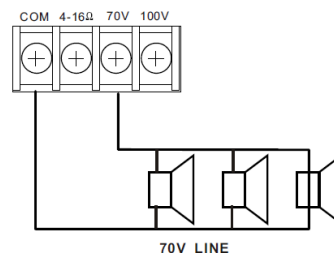
If all speakers are set to the same wattage value, they will all have the same volume level. If one speaker is set to a higher wattage value, it will be louder than the others, while a speaker set to a smaller value will be quieter than the others. This allows you to compensate for the environment in which the speaker is placed. For example, a speaker placed outside would need to be louder than a speaker placed in a small room.

SPEAKER WIRING

If using this speaker as a conventional 8-ohm speaker, most installations will consist of only a single speaker per channel. Wiring a speaker this way is straightforward, with a single two-conductor speaker wire running from the amplifier to the speaker's inputs.

However, when used as part of a constant voltage speaker system, most installations will consist of multiple speakers per channel. In this case, all speakers are connected in parallel, as shown in the diagram to the right.

To wire speakers in parallel, connect the first speaker to the amplifier as normal. Connect the positive terminal on the first speaker to the positive terminal of the second speaker, and the negative terminal on the first speaker to the negative terminal on the second. Repeat for each additional speaker in the array.



INSTALLATION

Perform the following steps to install and setup this speaker for operation.

1. Power off and unplug all equipment that will be connected to this speaker.
2. If you will be using this speaker as a standard 8-ohm speaker, set the tap knob to the 8Ω position.
3. If you will be using this speaker as part of a 70V or 100V constant voltage speaker array, set the tap knob to one of the 70V or 100V wattage positions. The total wattage rating of all speakers in the array must not exceed 80% of the amplifier's RMS power rating.

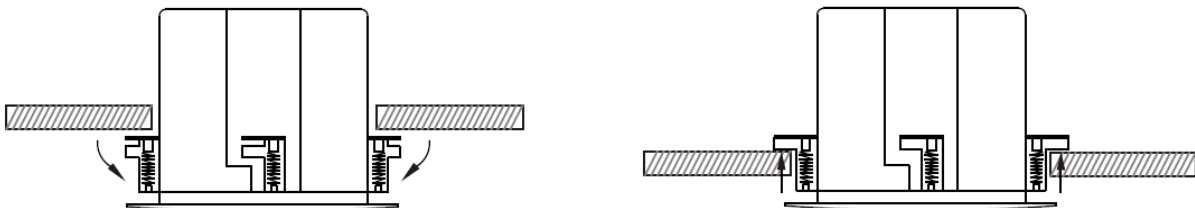
Example: If using two model 14887 speakers and two model 14888 speakers in a single 70V speaker array using the model 14886 120-watt amplifier, set the taps on the two 14887 speakers to 25 watts and the taps on the two 14888 speakers to 20 watts. This produces a total load of 90 watts, which is less than the 96 watt maximum that represents 80% of the 120-watt amplifier's rated power output.

Note: Use only one of these options. Do not mix speakers set for low impedance operation with speakers set for constant voltage operation.

4. Determine the mounting location of the speaker. Use a stud finder or probe to ensure that the desired location is unobstructed.
5. Using the included installation mask and a pencil, mark the cutout hole at the desired location.
6. Use a drywall saw or other tool appropriate for the ceiling material to cut the mounting hole.
7. Run speaker wire from the amplifier to the speaker installation location.

Important Safety Warning! If installing this speaker in the ceiling, you must use in-wall rated speaker wire for residential installations or plenum rated speaker wire for commercial installations.

8. Connect the speaker wire to the speaker, taking care to ensure that polarity is properly maintained.
9. Use the included grille removal tool to remove the speaker grille.
10. Use a screwdriver to turn the mounting tabs inward.



11. Insert the speaker into the hole, then use the screwdriver to turn the mounting tabs outward and tighten them until the speaker is securely seated against the ceiling.
12. Replace the speaker grille.

TROUBLESHOOTING

Q1: The sound from one of the speakers is muddy, with attenuated bass response.

A1: Double check the polarity of the speaker wire connections.

Q2: The sound from one of the speakers is louder or quieter than the other speakers in a constant voltage system.

A2: Check the wattage settings of the affected speaker. If it is higher than that of the other speakers, it will be louder. Similarly, if it is set to a lower value, it will be quieter than the other speakers. To get the same volume level, set the switch to the same wattage setting as is used on the other speakers.

Q3: The sound from all the speakers is scratchy, harsh, or fuzzy sounding.

A3: You are hearing audible distortion, which can cause damage to both the speakers and the amplifier. Reduce the volume level until distortion can no longer be heard in any part of the audio signal.

SPECIFICATIONS

Model	14887	14888
Woofer Size	6.5-inches	4-inches
Input	8 ohms, 70V, or 100V	8 ohms, 70V, or 100V
70V Power Taps	3, 6, 12.5, 25, and 50 watts	1.25, 2.5, 5, 10, or 20 watts
100V Power Taps	6, 12.5, 25, and 50 watts	2.5, 5, 10, or 20 watts
Transformer Impedance	1.7k, 800, 400, 200, or 100 ohms	4k, 2k, 1k, 500, or 240 ohms
Frequency Response	90Hz ~ 20kHz	110Hz ~ 16kHz
SPL (1 watt@1 meter)	90dB	88dB
Cutout Diameter	ø9.8" (ø250mm)	ø7.1" (ø180mm)
Dimensions	ø11.0" x 7.5" (ø280 x 190 mm)	ø8.4" x 5.3" (ø213 x 135 mm)
Weight	6.2 lbs. (2.8kg)	4.2 lbs. (1.9kg)

REGULATORY COMPLIANCE

Notice for FCC



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.

Modifying the equipment without authorization may result in the equipment no longer complying with FCC requirements for Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice for Industry Canada

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

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