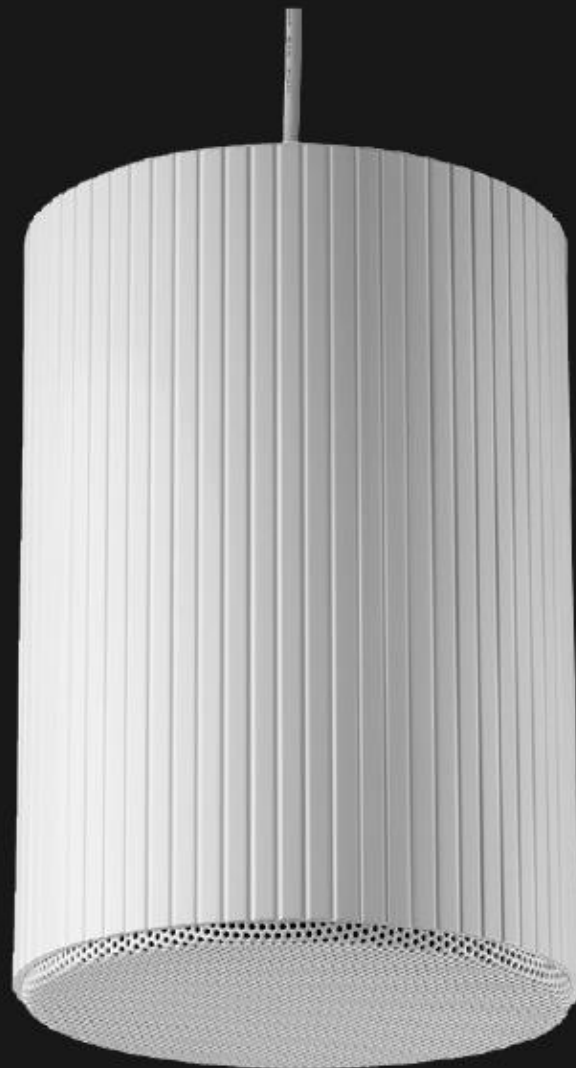


# 15-Watt 6-Inch Pendant Speaker

User's Manual



14890

## 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.
- The speaker has a steel safety wire with a loop running through the wire bundle. Ensure that the safety wire is securely attached to a truss or beam inside the ceiling, which is capable of supporting the weight of the speaker.

## INTRODUCTION

Thank you for purchasing this Pendant Speaker!

This public address speaker is designed to be suspended from a ceiling in a manner similar to a suspended light fixture. It features a built-in step-down transformer with three taps, allowing it to be used as part of a 70V or 100V constant voltage speaker array.

## FEATURES

- Built-in step-down transformer with three taps for use in a 70V or 100V constant voltage speaker array
- 6-inch main driver
- 150Hz ~ 14kHz frequency response
- 92dB sound pressure level
- Steel safety wire supports the weight of the speaker

## PACKAGE CONTENTS

1x Pendant speaker

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.

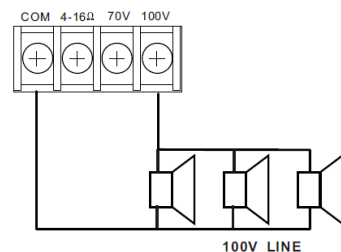
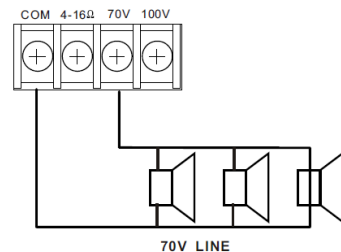
Each individual speaker on a given channel is set to a value such that the total does not exceed the rated power, less 20%. You do not need to worry about making the total as close as possible to the limit; just ensure that the total does not exceed the limit.

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

Most constant voltage speaker installations will consist of multiple speakers per channel, with all speakers 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 this speaker.

1. Determine the desired mounting location for the speaker.
2. Using a 1/4" drill bit, drill a hole through the ceiling for the speaker/safety wire cable bundle to pass through.
3. Feed the cable through the hole in the ceiling.
4. While supporting the speaker at the desired height, take out the slack from the cable within the ceiling and secure the safety wire to a beam, truss, or other solid support.
5. Multiply the rated RMS power output of your amplifier by 0.8 to determine the maximum total wattage for the speaker array.

*Example: If you are using the 14886 120-watt PA amplifier, the maximum wattage of the connected speaker array is  $120 \times 0.8 = 96$  watts.*

6. Determine which transformer tap to use on this speaker. The following table indicates the wattage values for each of the three taps in 70V and 100V systems.

Transformer Taps	Green	Yellow	Red
70V Array	1.85 watts	3.75 watts	7.5 watts
100V Array	3.75 watts	7.5 watts	15 watts

7. Run speaker wire from the amplifier to the speaker installation location.

*Important Safety Warning! You must use in-wall rated speaker wire for residential installations or plenum rated speaker wire for commercial installations.*

8. Connect the positive lead of the speaker wire to the Green, Yellow, or Red lead on the speaker, then connect the negative lead to the Blue lead on the speaker. Use electrician's tape, wire nuts, or heat shrink tubing to protect and isolate the electrical connections. Similarly, the unused taps should be have their exposed conductors taped or otherwise protected from accidental contact.

9. Connect the speaker wire to the speaker output terminals on the amplifier, taking care to maintain proper polarity.

*Congratulations, your pendant PA speaker is installed and ready for use!*

## **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

<b>Model</b>	14890
<b>Woofer Size</b>	6-inches
<b>Input</b>	70V or 100V
<b>70V Power Taps</b>	1.85, 3.75, or 7.5 watts
<b>100V Power Taps</b>	3.75, 7.5, or 15 watts
<b>Transformer Impedance</b>	2.6k, 1.3k, or 670 ohms
<b>Frequency Response</b>	150Hz ~ 14kHz
<b>SPL (1 watt@1 meter)</b>	92dB
<b>Safety Wire Length</b>	About 50"
<b>Dimensions</b>	ø6.8" x 9.8" (ø172 x 250 mm)
<b>Weight</b>	5.7 lbs. (2.6kg)

## 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.