

PA870



## 8-Channel Power Amplifier



### Installation & Operations Manual

**Gentner**

Perfect Communication through Technology, Service, and Education.™

# **PA870 Installation and Operations Manual**

## **Gentner Part No. 800-165-001**

### **May 2000 (Rev. 1.2)**

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## **Important Safety Instructions**

**The following safety symbols are used on the PA870:**



**This symbol is used to refer the user to the instruction manual.**



**This symbol indicates dangerous voltages are present.**

**CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE THE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

**DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.**

This equipment meets regulatory compliance standards for CSA C22.2 No. 1-98—Safety Standard for Audio, Video and Similar Electronic Equipment and UL 813—Safety Standard for Commercial Audio Equipment.

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# 1 Introduction

## The PA870 Amplifier

Congratulations on your purchase of the Gentner PA870, an 8-channel power amplifier. This manual is designed to help you install and operate your new amplifier.

The PA870 can power 8 ohm and 70 volt speaker systems simultaneously (it comes configured for 8-ohm operation from the factory). This expands the amplifier's versatility by opening up a wide range of application possibilities, discussed in the Applications chapter on page 11.

The PA870 delivers 25 watts (at 8 ohms and 70 volts) of power to each of the eight channels. It also allows bridging in an 8 ohm, one-channel input/two-channel output configuration for 50 watts of power. Bridge switches simplify bridging setup and protect against damaging cross connections. Four LEDs indicate bridging status. Presence and clip LEDs on the front and back panels notify you of signal status and help you minimize clipping.

The PA870 requires just two rack units of space, so it conveniently fits in a small space that requires multiple channels of amplification. Passive cooling keeps the PA870 operating quietly.

If you have questions about the installation or use of the PA870 which aren't answered in this manual, please contact us at:

**Phone:** 1.800.283.5936 (USA) or 1.801.974.3760

**Fax:** 1.800.933.5107 (USA) or 1.801.977.0087

**Internet:** [www.gentner.com](http://www.gentner.com)

**E-mail:** [tech2@gentner.com](mailto:tech2@gentner.com)



# 2 Installation and Operation

## Mounting

The PA870 Power Amplifier comes with eight Molex plugs already installed, eight Phoenix™-type input connectors, and an AC power cord. You should verify that these items were shipped with your amplifier before you begin installation. If any parts are missing, contact Gentner's Technical Support at 1.800.283.5936 or 1.801.974.3760.

The PA870 is designed to use two rack spaces. Gentner recommends that you install the PA870 in a standard 19" rack using four 10-32-thread, 1/2"-long screws to secure the amplifier's cabinet to rails at least 0.1" thick.

If you install the unit in an enclosed box or cabinet, ensure that ventilation holes are provided so that air circulation can cool the amplifier.



**NOTE: Do not place the amplifier near sources of heat or expose it to moisture, direct sunlight, excessive dust, or vibration.**

## Front Panel

The front panel (see Figure 1, page 6) features an ON/OFF power switch with a red "ON" LED. The other LED indicators show signal presence/clip (one per channel) and bridge status. Each presence/clip LED illuminates green to show signal presence and red when clipping occurs. Each bridge status LED illuminates amber when the channel pair it represents is bridged.

Turn the power switch ON only after the input and speaker connections have been made and the gain controls have been set to minimum.

1. **Power Switch.** Switches amplifier ON.
2. **Power Switch LED.** Illuminates red when the power switch is ON.
3. **Signal/Clip LED.** Illuminates green to show signal presence, red to indicate clipping.
4. **Bridge LED.** Illuminates amber when the bridging switch is ON.

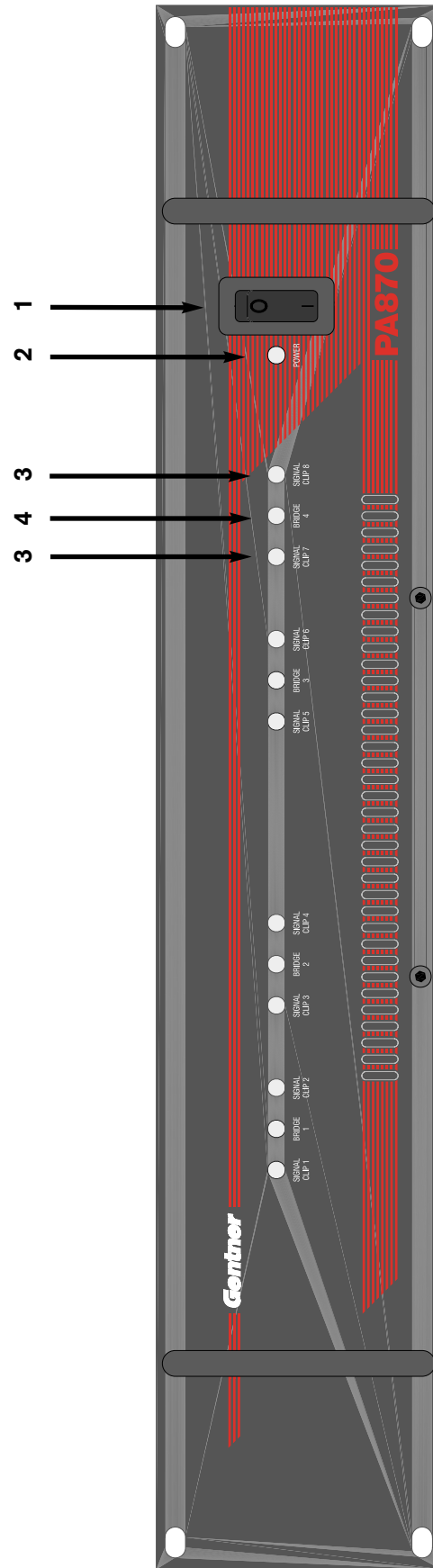


Figure 1. Front Panel



## Rear Panel

1. **LEDs.** Indicate signal presence, clipping, and bridge status.
2. **Bridge Switch.** Enables bridging.
3. **Volume Control.** Controls output level.
4. **Phoenix Line-Level Input Receptacles.** Receives Phoenix input connectors.
5. **AC Power Receptacle.** Connect included power cord here.
6. **Output Binding Posts.** Connect speakers here.
7. **Molex Plug Receptacles.** Receive Molex plugs to facilitate 8Ω or 70V operation.

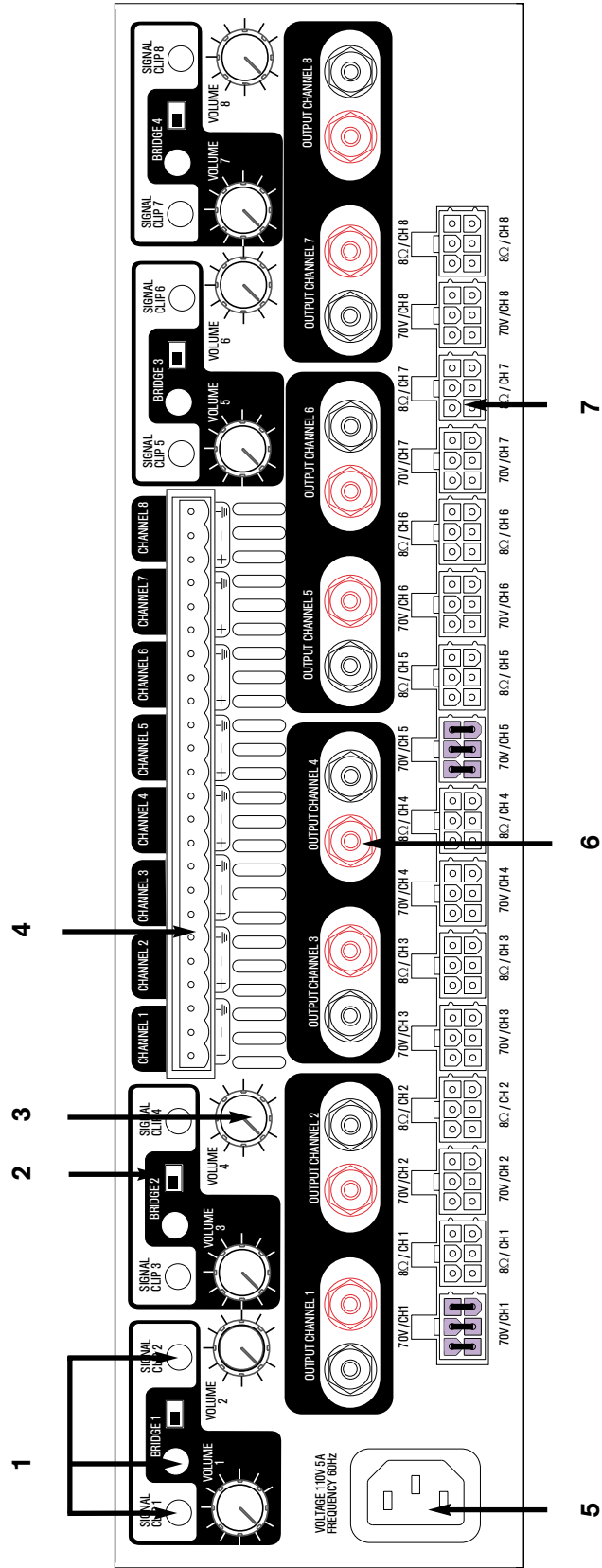
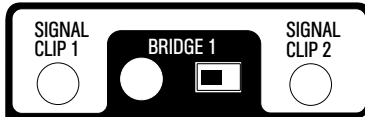


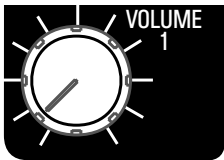
Figure 2. Rear Panel



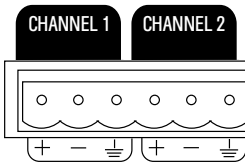
### 1. LED Indicators



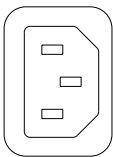
### 2. Bridge Switch



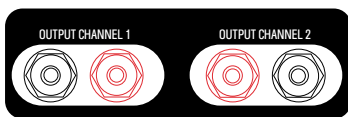
### 3. Volume Control



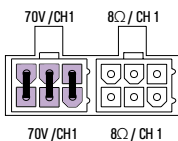
### 4. Phoenix Line-Level Receptacles



### 5. AC Power Receptacle



### 6. Output Binding Posts



### 7. Molex Plug Receptacles

The rear panel controls and connectors of the PA870 amplifier are described below. Refer to Figure 2 (page 7) for the location of each feature.

1. LED Indicators. These LEDs indicate signal presence/clipping and bridge status, and correspond to the LEDs on the front panel.

2. Bridge Switch. There is one bridge switch for each channel pair 1-2, 3-4, 5-6, and 7-8. Channels cannot be bridged outside of these channel pairs. Move the bridge switch to the right to enable bridging on a channel pair after you make the appropriate bridge connections. Note that the shaded areas on the back panel correlate to bridge operation.

3. Volume Control. Rotate the volume control for each channel clockwise to increase the volume. **When bridging channels, use the volume control in the shaded area to control the output level of both channels.** The other volume control does not operate in bridged mode.

4. Phoenix Line-Level Input Receptacles. This bank of receptacles handles all inputs to the amplifier. The amplifier does not accommodate mic-level inputs. When making connections, be sure to match polarity.

5. AC Power Receptacle. Connect the power cord (included with the amplifier) to this receptacle.

6. Output Binding Posts. The output binding posts accept bare wire or banana plugs. Connect the speakers to these posts.

7. Molex Plug Receptacles. A Molex plug (eight are included with your PA870) must be plugged into either the 70V or 8Ω Molex plug receptacle of each channel. Insert a Molex plug into the 70V receptacle to configure a channel for 70V operation. Use the 8Ω receptacle to configure a channel for 8Ω operation. You can set up any combination of 70V and 8Ω channels.

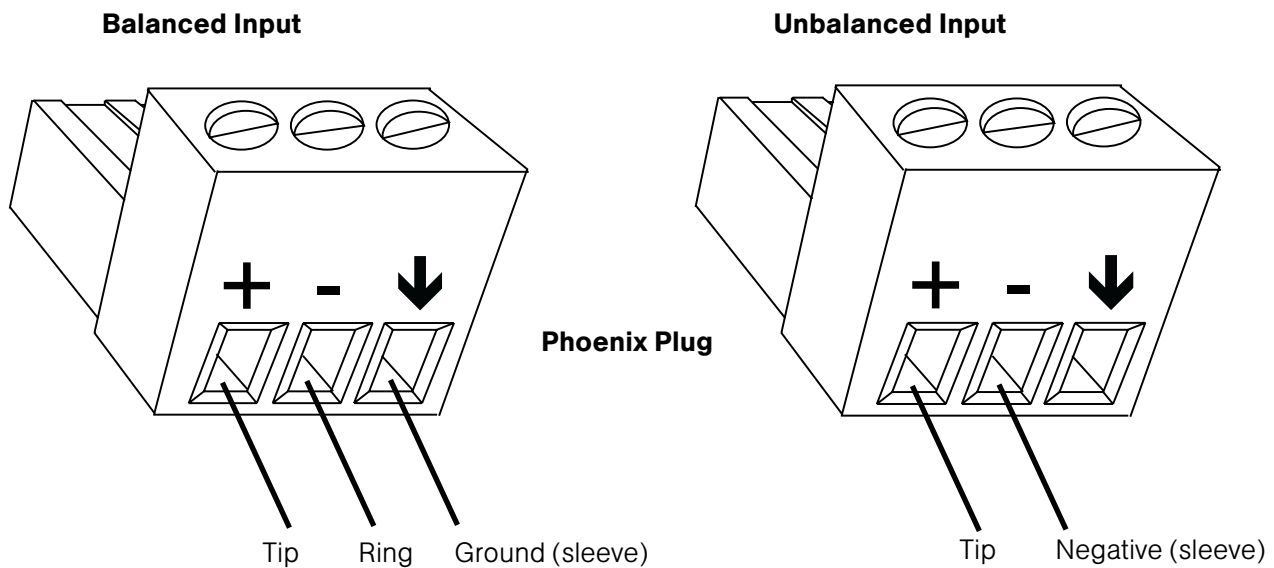
#### Note:

**The PA870 will not operate on a given channel without a Molex plug installed.**

**Channels configured for 70V output cannot be bridged.**

The PA870 can operate with balanced input devices (such as a mixer or equalizer) and unbalanced input devices (such as a CD player or tape deck).

Figure 3 (below) shows rear panel balanced and unbalanced input connections. Note that with the unbalanced input source, the ground terminal is not used.



**Figure 3. Balanced/Unbalanced Input Device Connections**



# 3 Applications

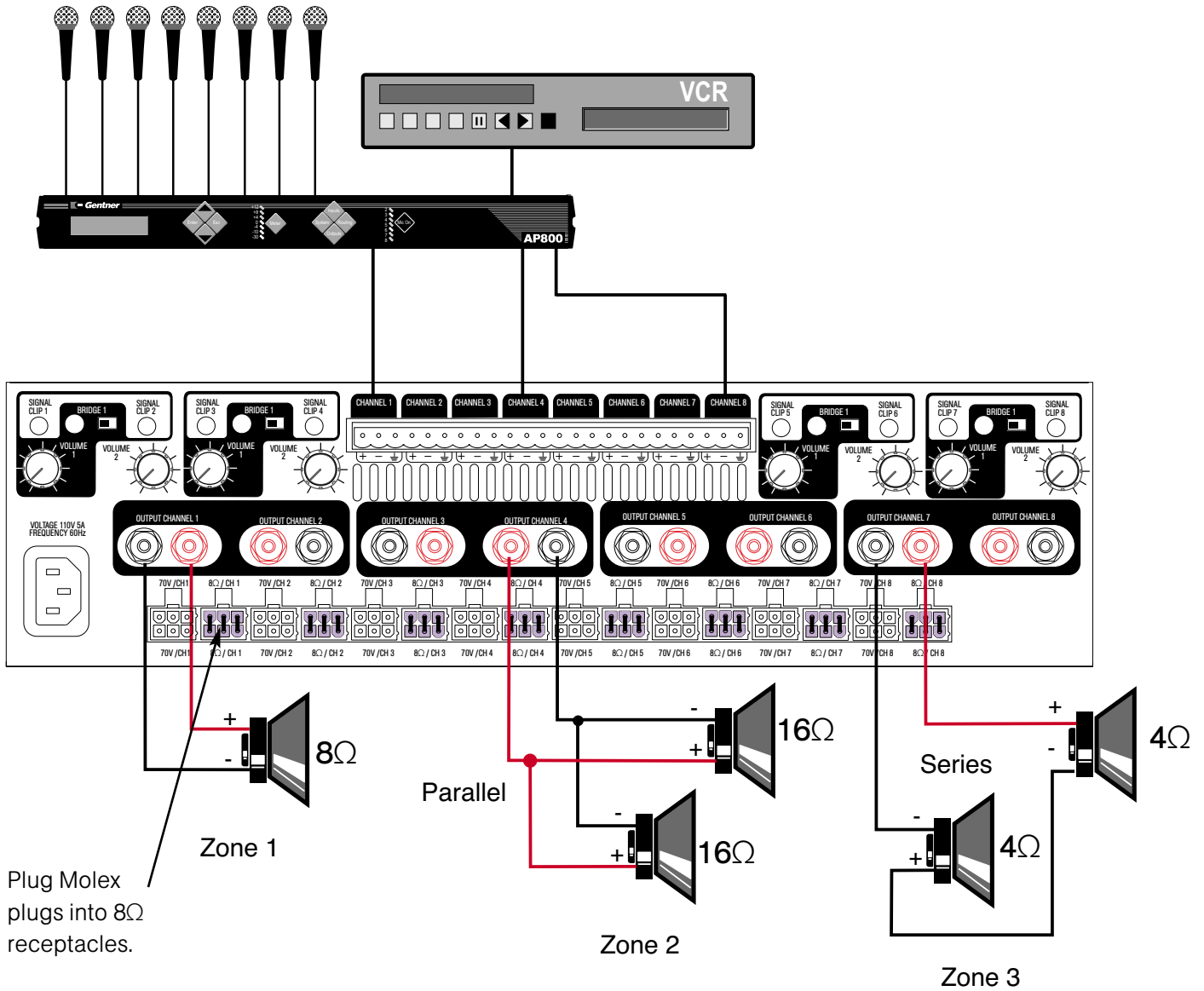
## 8 Ohm Output

The PA870 Power Amplifier is suitable for a wide variety of sound reinforcement applications. These applications include multiple zones and room combining configurations such as:

- Boardrooms
- Conference Rooms
- Courtrooms
- Meeting Rooms
- Training Rooms
- Small Auditoriums
- Houses of Worship
- Intercom Systems
- Medical Facilities

When configured for 8 ohm, non-bridged output, the amplifier provides a maximum power output of 25 watts per channel.

Figure 4 (page 12) shows a complete 8 ohm installation.



Three of eight zones shown.

**Figure 4. Typical 8 Ohm Configuration**

## Bridged Output

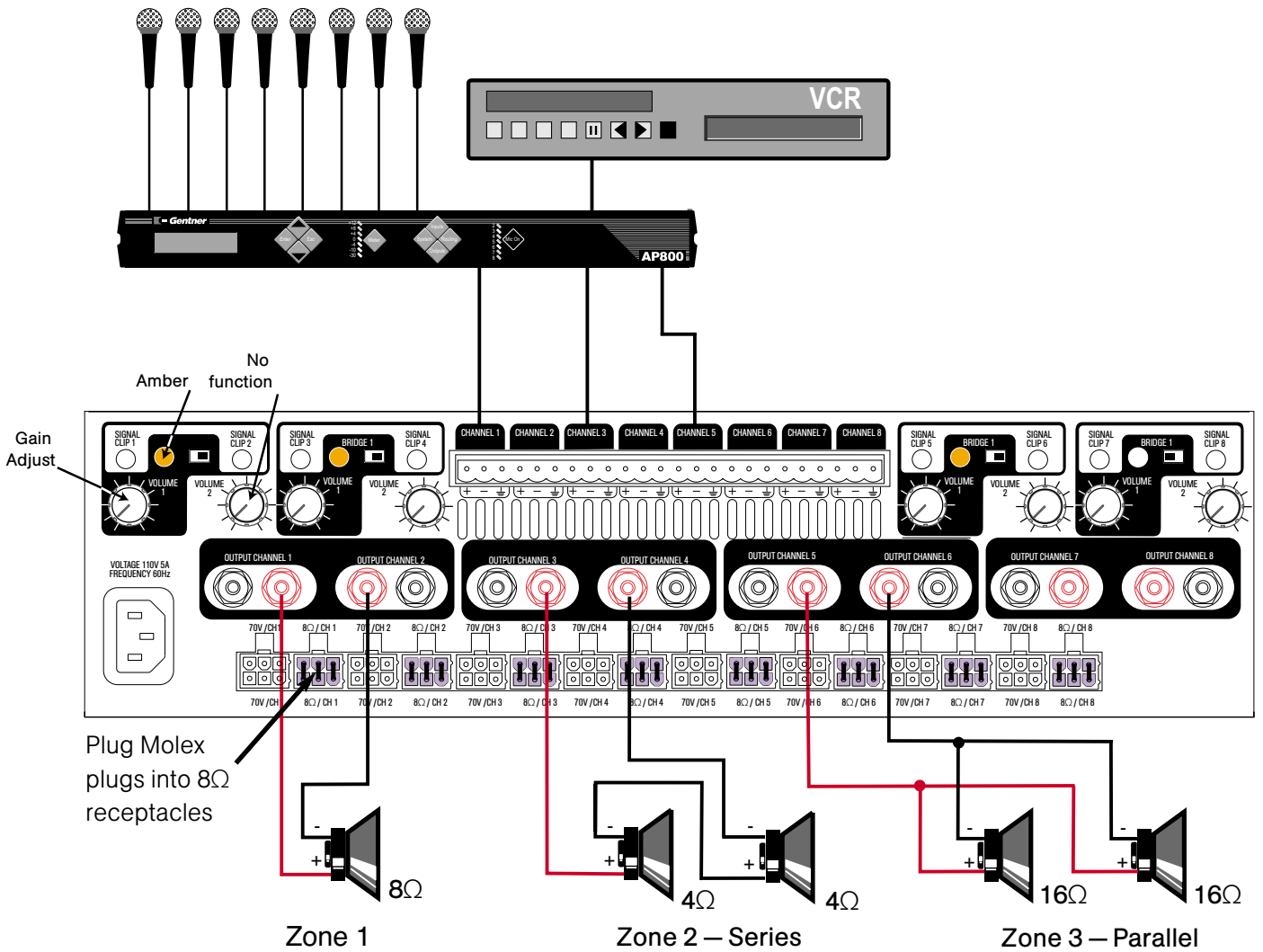
Channel pairs 1-2, 3-4, 5-6, and 7-8 may be bridged in a one-channel input/two-channel output configuration for a maximum of 50 watts of output power— into 8 ohms—per bridged channel pair. Ensure that the Molex plug is in the 8 ohm receptacle for each bridged pair.



**NOTE: Channels configured for 70V output cannot be bridged.**

Figure 5 (below) shows a balanced input/bridged output configuration.

After you make the appropriate connections for bridging both channels, insert the Molex plug into the 8 ohm receptacle and slide the bridge switch for the channel pair to the right (ON). The amber LED next to the switch will indicate that bridging is active.



**Figure 5. Typical Bridged Output Configuration**

# 70 Volt Output

The PA870 produces up to 25 watts per channel in the 70 volt mode. The PA870 cannot operate as bridged in the 70 volt mode. Refer to Figure 6 (below) to configure your PA870 for 70 volt output. Ensure that the Molex plug is connected to the 70V receptacle.

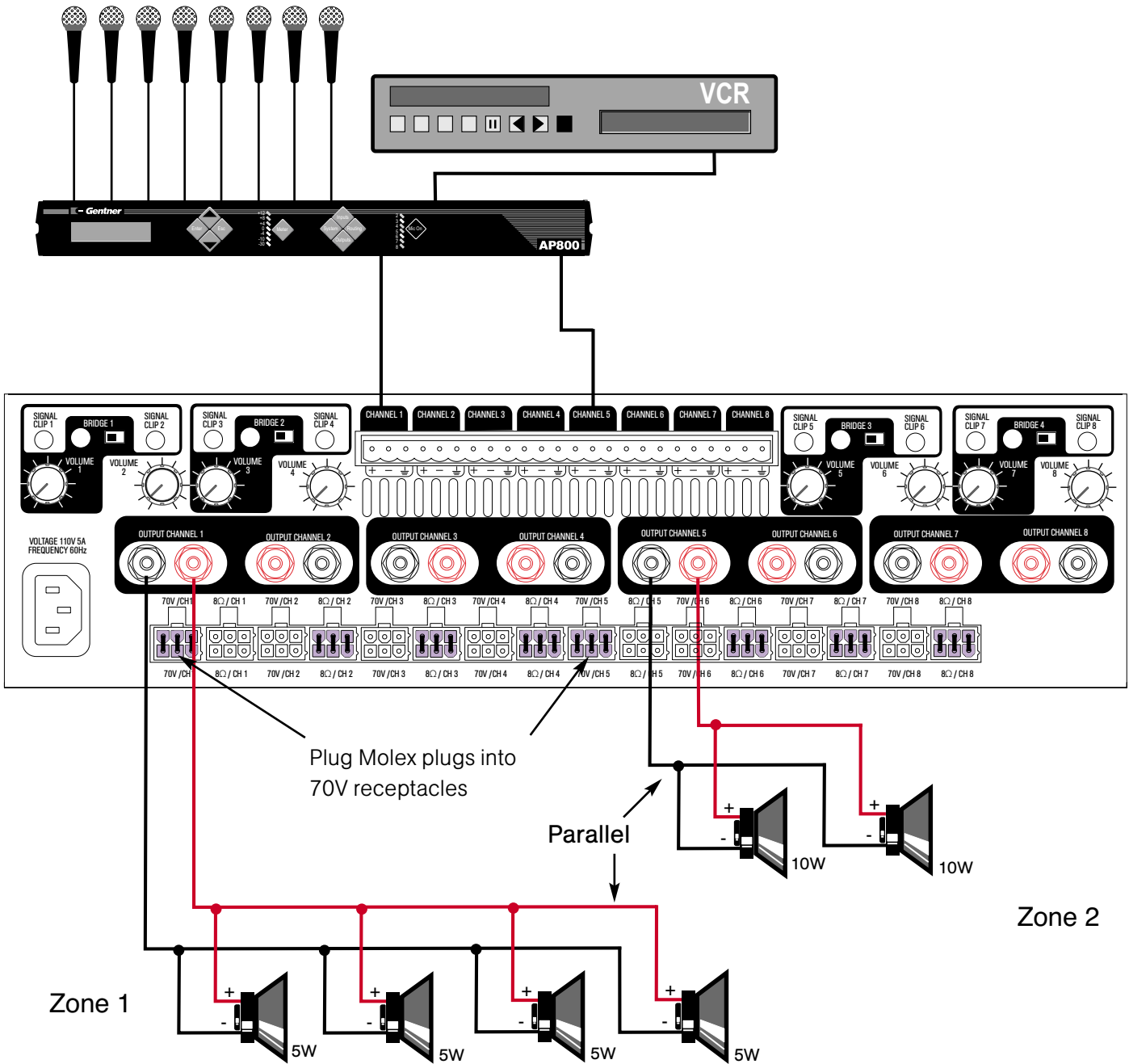


Figure 6. Typical 70 Volt Configuration



# 4 Appendices

## Specifications

### DIMENSIONS (W/H/D):

19" (48cm) x 13" (33cm) x 3½" (9cm)

### WEIGHT:

30 lbs. (13.6 kg)

### POWER REQUIREMENTS:

120VAC, 50-60Hz.

### POWER CONSUMPTION:

600 watts

### CONNECTORS (each channel):

Input: Removable Phoenix (line-level only)

Output: "Touch-proof" binding posts

### AUDIO PERFORMANCE

#### General Voltage Gain (dB):

Single Input: 26dB

Differential Input: 32dB

Sensitivity (for rated power @ 8 ohms): 1.0 Vrms

Distortion: SMPTE-IM, less than 0.05%

Frequency Response: 20Hz-20KHz, ±1dB, full rated power

Damping Factor: Greater than 120

Noise: 105dB below rated output (A weighted)

Input Impedance: 10kOhms balanced, 5k unbalanced

#### 8 Ohm Configuration

Output Power Per Channel from 20Hz-20kHz: 25 watts into 8 $\Omega$

THD: <.05% at rated power

Crosstalk: Better than 90dB

Intermod Distortion: Better than .025%

#### 70 Volt Configuration

Output Power Per Channel from 80Hz-20kHz: 25 watts into 8 $\Omega$

THD: <.05% at rated power

High Pass Filter: -3.5dB @60Hz

Crosstalk: Better than 85dB

Intermod Distortion: Better than .025%

#### Bridged Configuration

Output Power Per Bridged Channel Pair from 20Hz-20kHz: 50 watts into 8 $\Omega$

THD: <.05% at rated power

Crosstalk: Better than 90dB

Intermod Distortion: Better than .025%

### CONTROLS

Front:

AC switch, AC circuit breaker.

Back:

Bridge switch, Ch. 1 to Ch. 8 gain knobs

Indicators:

Power On: Red On/Off switch

Signal Presence/Clip: Green/Red LED (front/rear)

Bridging: Amber LED (front/rear)

### PROTECTION

Cooling:

Passive

Amplifier Protection:

Full short circuit protection, thermal, open circuit, ultrasonic, and RF protection. Stable into reactive or mismatched loads.

Load Protection:

On/Off muting, DC fault protection

## Troubleshooting

### Problem

No sound

### Possible Causes

Amp not connected to AC power

Power switch is OFF

Gain control(s) adjusted too low

Channel input(s) incorrectly wired

Speaker(s) not connected

Mismatch between channel input and output connections

Circuit breaker for power switch is tripped (turn the switch off, then on again to reset circuit breaker)

Molex plug not connected to either the 8Ω or 70V receptacle of a given channel.

Low 70V audio

Molex plug is in the 8Ω receptacle rather than the 70V receptacle.

Low 8Ω audio

Molex plug is in the 70V receptacle rather than the 8Ω receptacle.

8Ω speaker low frequency audio is low or absent

Molex plug is in the 70V receptacle rather than the 8Ω receptacle.

8Ω speaker audio is excessively distorted at high volume

Molex plug is in the 70V receptacle rather than the 8Ω receptacle.

Molex plugs are in both the 70V and 8Ω receptacles of a given channel.

## Warranty

Gentner Communications Corporation (Manufacturer) warrants that this product is free of defects in both materials and workmanship. Should any part of this equipment be defective, the Manufacturer agrees, at its option, to:

A. Repair or replace any defective part free of charge (except transportation charges) for a period of one year from the date of the original purchase, provided the owner returns the equipment to the Manufacturer at the address set forth below. No charge will be made for parts or labor during this period;

B. Furnish replacement for any defective parts in the equipment for a period of one year from the date of original purchase. Replacement parts shall be furnished without charge, except labor and transportation. This Warranty excludes assembled products not manufactured by the Manufacturer whether or not they are incorporated in a Manufacturer product or sold under a Manufacturer part or model number.

THIS WARRANTY IS VOID IF:

A. The equipment has been damaged by negligence, accident, act of God, or mishandling, or has not been operated in accordance with the procedures described in the operating and technical instructions; or,

B. The equipment has been altered or repaired by other than the Manufacturer or an authorized service representative of the Manufacturer; or,

C. Adaptations or accessories other than those manufactured or provided by the Manufacturer have been made or attached to the equipment which, in the determination of the Manufacturer, shall have affected the performance, safety or reliability of the equipment; or,

D. The equipment's original serial number has been modified or removed.

E. The equipment is not returned in Gentner-approved packaging.

NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, APPLIES TO THE EQUIPMENT, nor is any person or company authorized to assume any warranty for the Manufacturer or any other liability in connection with the sale of the Manufacturer's products.

Manufacturer does not assume any responsibility for consequential damages, expenses, or loss of revenue or property, inconvenience, or interruption in operation experienced by the customer due to a malfunction in the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

In case of unsatisfactory operation, the purchaser shall promptly notify the Manufacturer at the address set forth below in writing, giving full particulars as to the defects or unsatisfactory operation. Upon receipt of such notice, the Manufacturer will give instructions respecting the shipment of the equipment, or such other matters as it elects to honor this warranty as above provided. This warranty does not cover damage to the equipment during shipping and the Manufacturer assumes no responsibility for such damage. All shipping costs shall be paid by the customer.

This warranty extends only to the original purchaser and is not assignable or transferable.

Gentner Communications Corporation · 1825 Research Way  
Salt Lake City, UT 84119

## Warranty Registration

Please register your PA870 online by visiting Gentner Technical Support on the Web at **[www.gentner.com](http://www.gentner.com)**. When your product is properly registered, Gentner Communications will be able to serve you better should you require technical assistance or desire to receive upgrades, new product information, etc.

# ***Gentner***<sup>®</sup>

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Manual Part No. 800-165-001 Rev. 1.0