

### XTRA™ Full Rack Series:

**XPA 2002-70V**  
**XPA 2002-100V**  
**XPA 2003C-70V**  
**XPA 2003C-100V**

**XPA 2004**  
**XPA 4002**  
**XPA 4002-70V**

Full-Rack 2-, 3-, and 4-Channel Mono and Stereo Audio Power Amplifiers



# Extron

## Safety Instructions

### Safety Instructions • English

**WARNING:** This symbol, , when used on the product, is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

**ATTENTION:** This symbol, , when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, [www.extron.com](http://www.extron.com).

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**ATENCIÓN:** Este símbolo, , cuando se utiliza en el producto, avisa al usuario de la presencia de importantes instrucciones de uso y mantenimiento estas estan incluidas en la documentación proporcionada con el equipo.

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### Instructions de sécurité • Français

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**ATTENTION :** Ce pictogramme, , lorsqu'il est utilisé sur le produit, signale à l'utilisateur des instructions d'utilisation ou de maintenance importantes qui se trouvent dans la documentation fournie avec l'équipement.

Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, [www.extron.com](http://www.extron.com).

### Istruzioni di sicurezza • Italiano

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**ATTENZIONE:** Il simbolo, , se usato sul prodotto, serve ad avvertire l'utente della presenza di importanti istruzioni di funzionamento e manutenzione nella documentazione fornita con l'apparecchio.

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**ПРЕДУПРЕЖДЕНИЕ:** Данный символ, , если указан на продукте, предупреждает пользователя о наличии неизолированного опасного напряжения внутри корпуса продукта, которое может привести к поражению электрическим током.

**ВНИМАНИЕ:** Данный символ, , если указан на продукте, предупреждает пользователя о наличии важных инструкций по эксплуатации и обслуживанию в руководстве, прилагаемом к данному оборудованию.

Для получения информации о правилах техники безопасности, соблюдении нормативных требований, электромагнитной совместимости (ЭМП/ЭДС), возможности доступа и других вопросах см. руководство по безопасности и соблюдению нормативных требований Extron на сайте Extron: [www.extron.com](http://www.extron.com), номер по каталогу - 68-290-01.

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**注意:**  产品上的这个标志意在提示用户，设备随附的用户手册中有重要的操作和维护(维修)说明。

关于我们产品的安全指南、遵循的规范、EMI/EMF 的兼容性、无障碍使用的特性等相关内容，敬请访问 Extron 网站，[www.extron.com](http://www.extron.com)，参见 Extron 安全规范指南，产品编号 68-290-01。

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**注意:**  若產品上使用此符號，是為了提醒使用者，設備隨附的用戶手冊中有重要的操作和維護(維修)說明。

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## FCC Class B Notice

**NOTE:** 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.

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 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. There is no guarantee that interference will not occur. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, you are 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.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the user's authority to operate this equipment.

**NOTE:** For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics see the [Extron Safety and Regulatory Compliance Guide](#) on the Extron website.

## Regulatory Notifications

 **WARNING:** Potential risk of severe injury or death.

**AVERTISSEMENT :** Risque potentiel de blessure grave ou de mort.

- The circuit breaker used for this connection should be rated no lower than 20 amps and no greater than 30 amps.
- El disyuntor utilizado para esta conexión no debe tener una capacidad nominal de entre 20 y 30 amperios.
- This product is intended for indoor use and dry environment only. The device must not be exposed to dripping or ingress of water and that other objects filled with liquids, such as glasses, should be placed on the apparatus.
- Este producto está diseñado para uso en interiores y ambientes secos únicamente. El dispositivo no debe exponerse a goteos ni a la entrada de agua y deben colocarse sobre el aparato otros objetos llenos de líquido, como vasos.
- XPA Ultra series are Class I products and must be connected to the MAINS outlet ELECTRICAL with a protective ground connection.
- La serie XPA Ultra son productos de Clase I y deben conectarse a la toma de corriente ELÉCTRICA con una conexión a tierra de protección.
- Where a mains plug or appliance connector is used as the disconnecting device, the disconnecting device must remain easily operative.
- Cuando se utilice un enchufe de red o un conector de aparato como dispositivo de desconexión, el dispositivo de desconexión debe permanecer operativo fácilmente.

## Conventions Used in this Guide

### Notifications

The following notifications are used in this guide:

**DANGER:**

- Will result in serious injury or death.
- Entraînera des blessures graves ou la mort.

 **WARNING:** Potential risk of severe injury or death.

**AVERTISSEMENT :** Risque potentiel de blessure grave ou de mort.

**CAUTION:** Risk of minor personal injury.

**ATTENTION :** Risque de blessure mineure.

**ATTENTION:**

- Risk of property damage.
- Risque de dommages matériels.

**NOTE:** A note draws attention to important information.

**TIP:** A tip provides a suggestion to make working with the application easier.

## Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C  
[01] R 0004 00300004000080000600 [02] 35 [17] [03]  
Esc X1 * X17 * X20 * X23 * X21 CE ←
```

**NOTE:** For commands and examples of computer or device responses mentioned in this guide, the character “0” is used for the number zero and “O” is the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32  
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t  
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.  
Click the **OK** button.

## Specifications Availability

Product specifications are available on the Extron website, [www.extron.com](http://www.extron.com).

## Extron Glossary of Terms

A glossary of terms is available at <https://www.extron.com/technology/glossary.aspx>.

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# Introduction

## About this User Guide

This user guide contains information about the Extron series of full rack width audio power amplifiers.

The Extron XTRA™ Series is a family of 1U convection cooled power amplifiers with mono, stereo, and multi-channel outputs. These professional grade amplifiers deliver from 200 to 800 watts of continuous output power and are available for low and high impedance applications. Each model offers professional grade signal-to-noise ratio and THD+N performance.

XTRA Series amplifiers are ENERGY STAR® qualified amplifiers with an Extron exclusive, highly efficient, advanced Class D amplifier design. They also feature patented CDRS™ - Class D Ripple Suppression technology that provides a smooth, clean audio waveform and an improvement in signal fidelity over conventional Class D amplifiers. XTRA Series amplifiers are one quarter to one half the size of comparable amplifiers, conserving rack space. The Extron exclusive, high efficiency design generates very little heat and allows the amplifiers to be convection cooled.

The XPA series of amplifiers are full-rack width models with different power outputs:

- The XPA 2002-70V two channel amplifier delivers 200 watts rms per channel for 70 volt high impedance speaker systems.
- The XPA 2002-100V two channel amplifier delivers 200 watts rms per channel for 100 volt high impedance speaker systems.
- The XPA 2003C-70V three channel amplifier delivers two channels of 200 watts rms into 4 ohms or 100 watts rms into 8 ohms. It delivers a third channel with 200 watts rms into a 70 volt line for high impedance speaker systems.
- The XPA 2003C-100V three channel amplifier delivers two channels of 200 watts rms into 4 ohms or 100 watts rms into 8 ohms. It delivers a third channel with 200 watts rms into a 100 volt line for high impedance speaker systems.
- The XPA 2004 four channel amplifier delivers 200 watts rms per channel into 4 ohms or 100 watts rms per channel into 8 ohms. It features a bridged mode that provides two channels of 400 watts rms output into 8 ohms.
- The XPA 4002 two channel low impedance amplifier delivers 400 watts rms per channel into 4 ohms or 200 watts rms per channel into 8 ohms. It features a bridged mode that provides a single 800 watt output into 8 ohms.
- The XPA 4002-70V two channel amplifier delivers 400 watts rms per channel for 70 volt high impedance speaker systems.

## Terms Used in this User Guide

The terms “amplifier” and “power amplifier” are used interchangeably in this guide to refer to each model.

## Features

**Extron Patented Class D Ripple Steering (CDRS™) technology** — CDRS is an Extron patented technology that provides a smooth, clean audio waveform and an improvement in signal fidelity over conventional Class D amplifier designs. CDRS eliminates the high frequency switching ripple characteristic of Class D amplifiers, a source of RF emissions, which can interfere with sensitive A/V equipment such as wireless microphones.

**Professional grade signal-to-noise and THD performance** — Delivers professional grade performance with 100 dB signal-to-noise ratio and THD of less than 0.1%.

**Front and rear panel LED indicators** —

- Display limiter/protect status when audio limiting or amplifier malfunction occurs.
- Indicate the presence of input signals.

**Audio level adjustment** — Potentiometers to adjust the audio level from  $\infty$  (full attenuation) to 0 dB (no attenuation).

**IEC power switch** — Rear panel IEC rocker power switch.

**1U full rack enclosure** — The capability to deliver full-sized amplifier power in one half the size of many comparable power amplifiers.

**High pass filtering** — A high pass filter (XPA 2002-70V, XPA 2002-100V, XPA 4002-70V, XPA 2003C-70V, and XPA 2003C-100V only) toggle switch prevents saturation of speaker input transformers by low frequency signals. Saturation can result in severe distortion of the speaker output signal.

**Bridged output mode** — The XPA 2004 has a toggle switch to input channels 1 and 3 and output each input as a single bridged output channel at twice the power of a single channel. Input 1 is output over the positive terminals of output channels 1 and 2. Input 3 is output over the positive terminals of output channels 3 and 4.

The XPA 4002 has a toggle switch to input channel 1 and output a single bridged output channel at twice the power using the positive terminals of channels 1 and 2.

**Convection cooled, fanless operation** — Ensuring quiet reliable operation. All models generate substantially less heat than similar power amplifier designs.

**Automatic clip limiter** — Detects actual onset of clipping by comparing input and output waveforms. Gain is automatically reduced with a slow attack and fast release to eliminate clipping. This advanced limiter design protects the speakers from clipping distortion and offers superior sonic characteristics compared to limiters that use signal compression.

**Rear panel recessed, detented attenuation controls** — Provide attenuation of input signals for adjusting audio system gain staging as well as multi-zone applications. They are located on the rear panel to prevent users from tampering with level adjustments.

**Remote standby** — Standby control that remotely shuts off all amplifier output while power remains active at the amplifier.

**Power factor correction** — Features power factor correction technology that smoothes out the high peak currents of the current draw of the amplifier, thus minimizing the presence of high frequency harmonics on the AC power line, and therefore preventing audible artifacts from being transmitted to other audio equipment in the system.

**Class 2 wiring** — The outputs from the amplifiers support Class 2 wiring that meets UL requirements.

**ENERGY STAR® qualified** — All models are ENERGY STAR qualified amplifiers that conserve energy and reduce costs.

# Installation

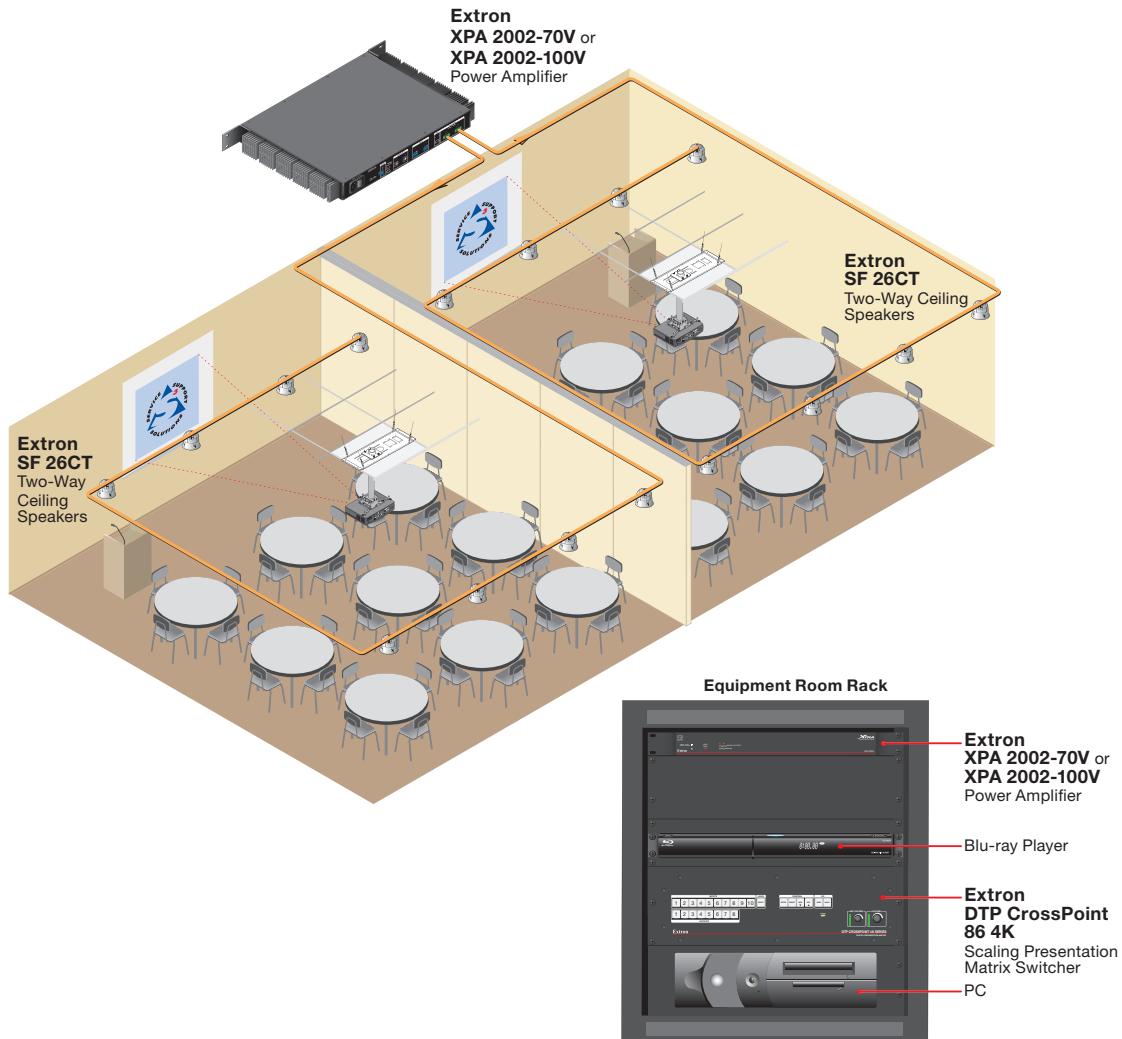
This section discusses how to install the XTRA Series of full rack power amplifiers.

**WARNING:** Installation and service must be performed by authorized personnel only (see [UL Rack Mounting Guidelines](#) on page 20).

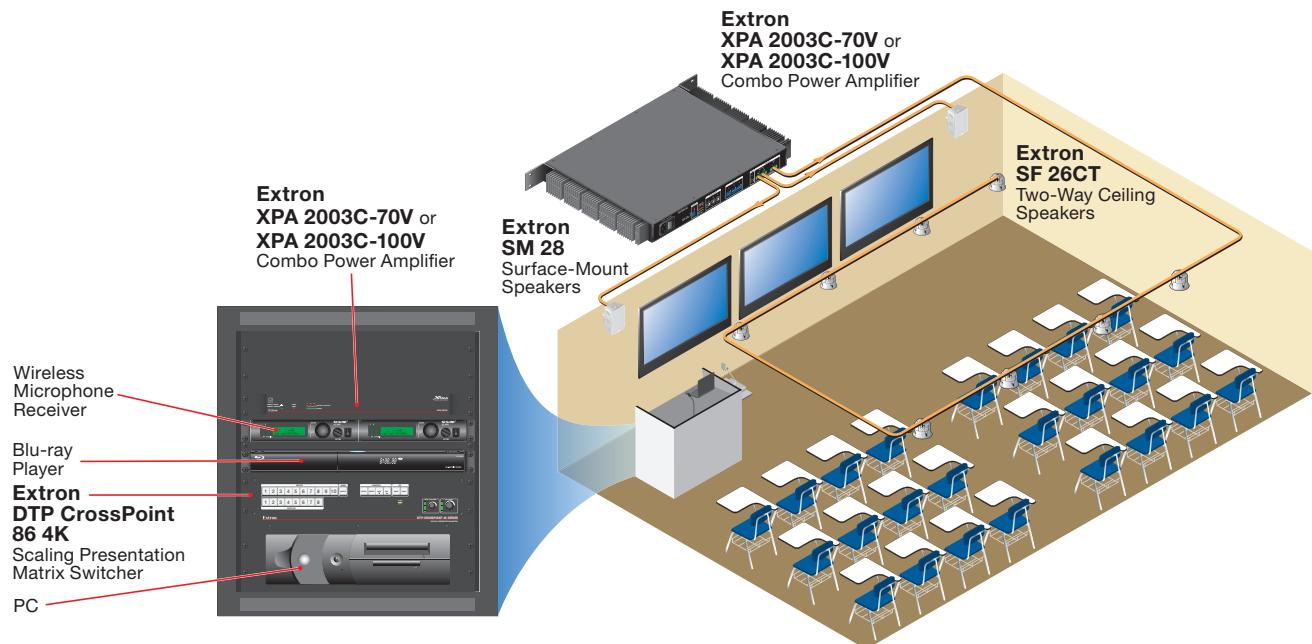
**AVERTISSEMENT :** L'installation et l'entretien doivent être effectués par le personnel autorisé uniquement (voir [UL Rack Mounting Guidelines](#)).

## Application Examples

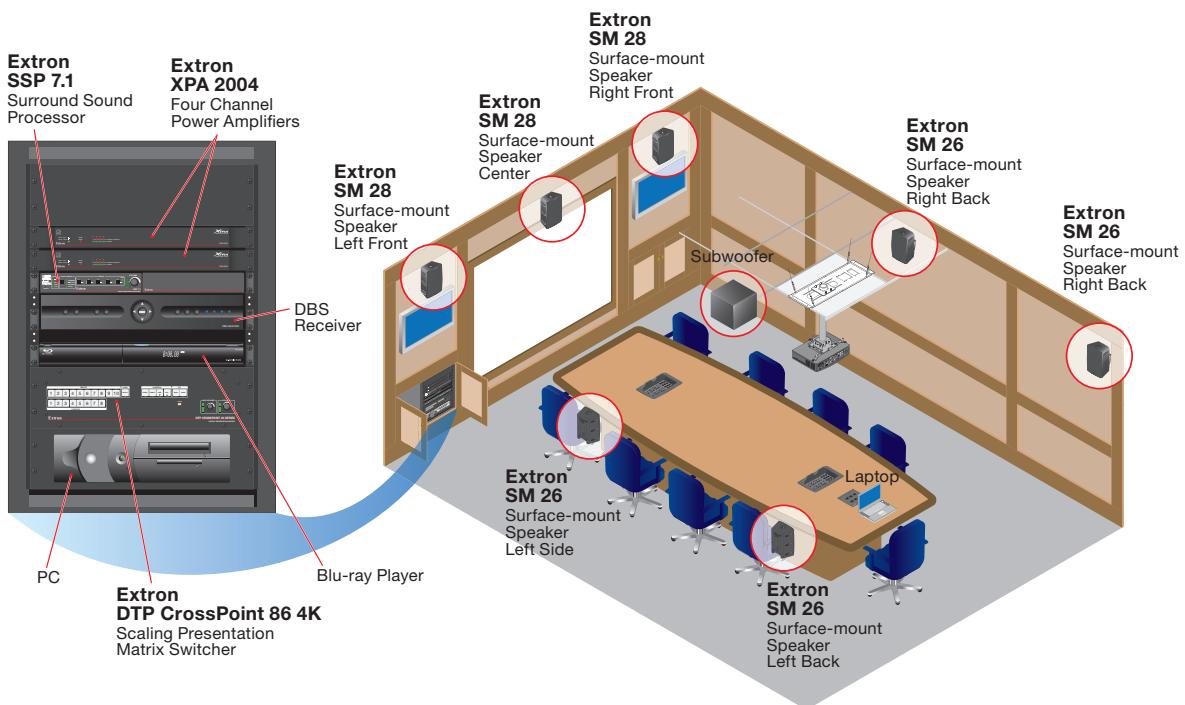
The following application examples for the XPA 2002-70V, XPA 2002-100V, XPA 2003C-70V, XPA 2003C-100V, XPA 2004, XPA 4002, and XPA 4002-70V.



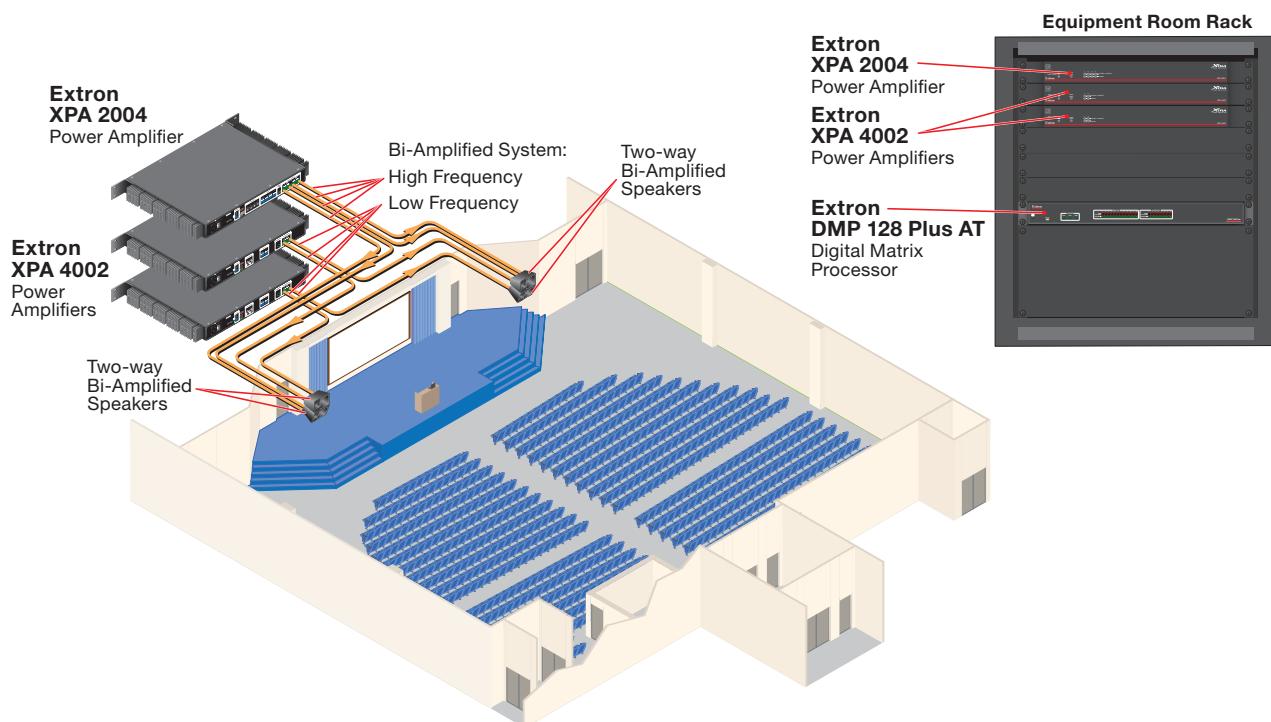
**Figure 1.** XPA 2002-70V and XPA 2002-100V Application Example



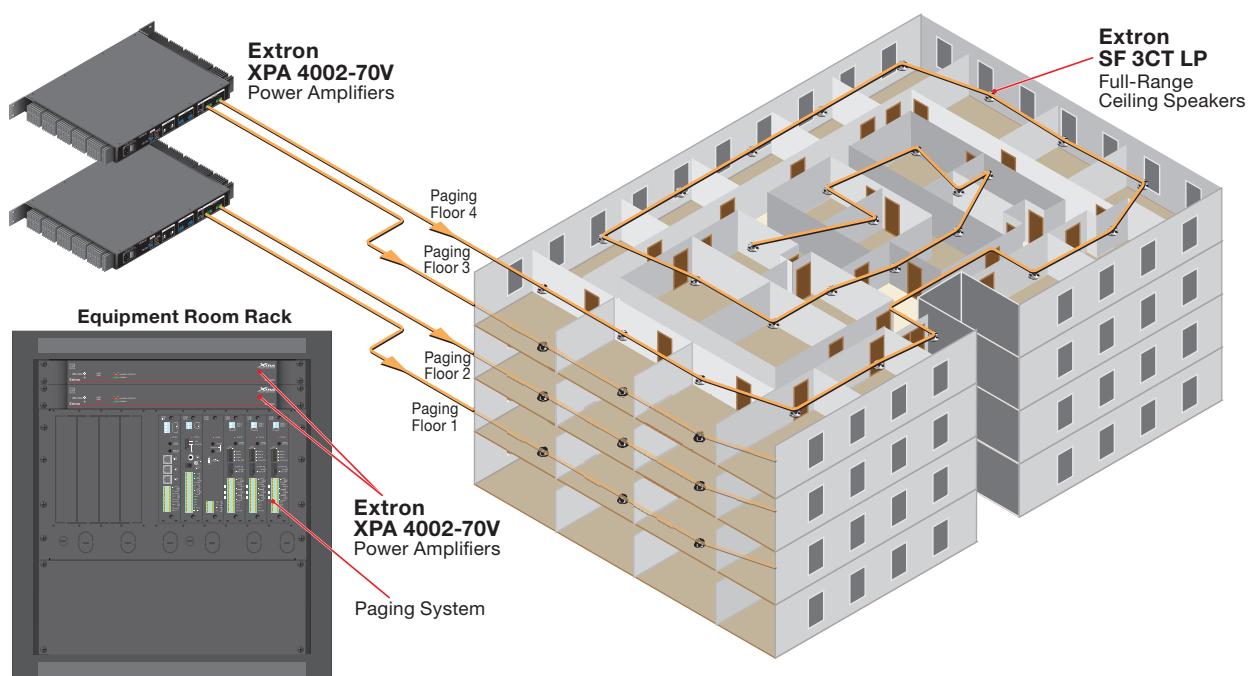
**Figure 2.** XPA 2003C-70V and XPA 2003C-100V Application Example



**Figure 3.** XPA 2004 Application Example



**Figure 4. XPA 4002 Application Example**

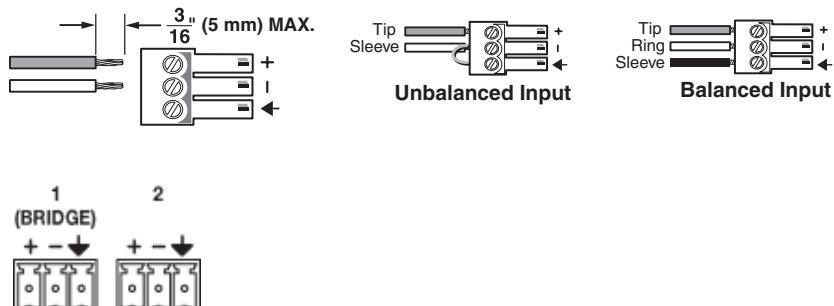


**Figure 5. XPA 4002-70V Application Example**

## Installing the XPA Amplifier

1. **Power off** — Turn off all equipment including the XPA amplifier by toggling the power switch off and disconnecting the power cord. Verify that the amplifier is disconnected from the power source before proceeding.
2. **Mount the amplifier** — For diagrams of typical application examples, see [Application Examples](#) starting on page 3. For further mounting instructions, see [Mounting the XTRA Series Power Amplifiers](#) starting on page 20).
3. **Wire the source(s)** — Wire the input to the 3.5 mm input connectors of the amplifier, as shown in the following illustration (see [Figure 6](#) on page 10).

**NOTE:** Control signal ground pins may be labeled as  $\pm$  or G. Audio ground pins may be labeled as  $\pm$  or  $\downarrow$ . The wiring and function are the same, whichever way your product is labeled.

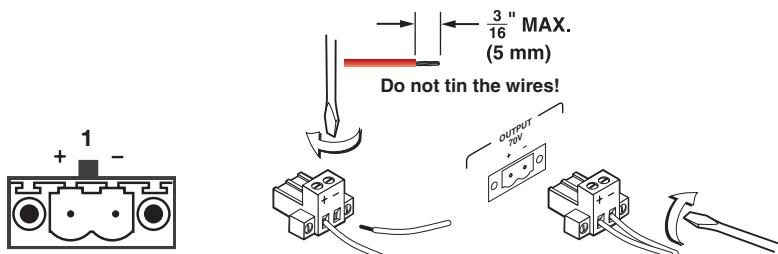


**Figure 6.** **Wiring 3-pole Connectors**

**NOTE:** The wires must not be tinned: tinned wire does not hold tight in the captive screws and can break easily after several bends.

4. **Wire the outputs** — Wire speakers to the output connectors of the amplifier using the included 2-pole (70 V or 100 V) or 4-pole (8 ohm or 4 ohm) captive screw connector.

**2-pole (70 V or 100 V) output connector wiring:**

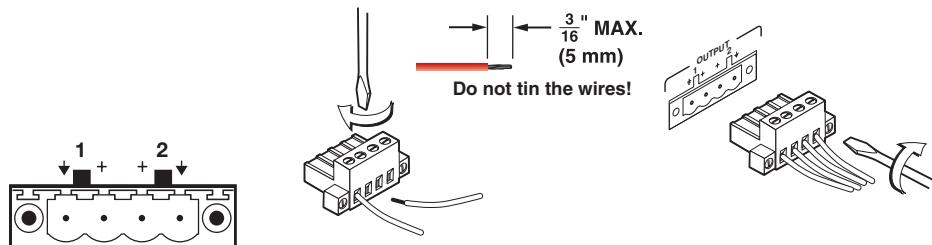


**Figure 7.** **Wiring 2-pole Connectors**

### ATTENTION:

- Do not short out the + and - connectors with each other or to ground. Doing so will short the outputs and may damage the amplifier.
- Ne créez pas de court-circuit entre les connecteurs «+» et «-» ou entre eux et la mise à la terre : cela pourrait créer un court-circuit aux sorties et endommager l'amplificateur.

#### 4-pole (8 ohm or 4 ohm) output connector wiring:



**Figure 8. Wiring 4-pole Connectors**

#### ATTENTION:

- Do not short the + and  $\downarrow$  outputs to each other. Doing so may damage the amplifier.
- Ne pas créer un court circuit entre les sorties + et  $\downarrow$  au risque d'endommager l'amplificateur.

For complete wiring details, see the starting on page 10.

5. **Bridge outputs (XPA 2004, and XPA 4002)** — Bridging the output of input 1 (XPA 4002) or inputs 1 and 3 (XPA 2004) doubles the output of each respective input (see the **Bridged Mode Output** on page 16 section for further details). The bridge output mode toggle switch is shown at right.

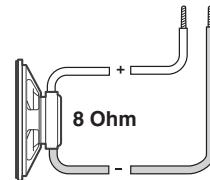
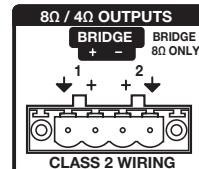


#### Bridge mode — XPA 4002

Bridging takes the signal from input 1 and outputs the combined output of 800 watts from the + terminals of output channels 1 and 2 (see the diagram at right). Toggle the bridged output mode switch up (bridged) or down (unbridged).

#### Bridge mode — XPA 2004

Bridging takes the signal from input 1, input 3 or both and outputs the combined output of 400 watts from the + terminals of output channels 1 and 2 (Bridge A), or output channels 3 and 4 (Bridge B), or both (see the diagram at right). Toggle the bridged output mode switch up (bridged) or down (unbridged) for the appropriate input channel.

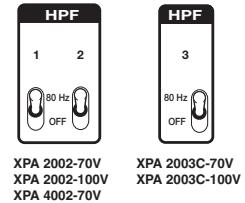


#### NOTES:

- When you are bridging outputs, the minimum load impedance is 8 ohms.
- Adjust the attenuation level to  $\infty$  before powering the amplifier back up in step 8 (see on page 10). On some models, this adjustment is referred to as **level**, but the function is the same, whichever way your product is labeled.

- 6. Set the high pass filter** — Use a small screwdriver to toggle this switch between off (no filtering) and 80 Hz (default).

- The XPA 2002-70V, XPA 2002-100V, and XPA 4002-70V have two switches, one for each output channel.
- The XPA 2003C-70V and the XPA 2003C-100V have one switch for the 70 V (XPA 2003C-70V) or 100 V (XPA 2003C-100V) line distribution output channel (channel 3).
- Setting the switch to 80 Hz prevents the saturation of speaker input transformers by low frequency signals. Saturation can result in severe distortion of the speaker output signal.



- 7. If desired, wire a contact closure device to the remote standby connector.** Connecting pin 2 to ground (pin 1) places the amplifier in standby mode. Standby mode turns off all outputs, although the amplifier is still receiving power.



Use the included 2-pin, 3.5 mm captive screw connector to jumper the pins.

- 8. Turn on the amplifier** — Reconnect all power cords and switch on all other equipment before powering up the power amplifier.

The mains plug or appliance coupler shall remain readily operable.

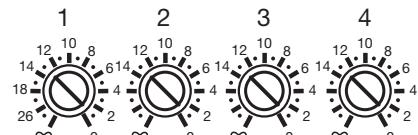
#### ATTENTION:

- The amplifier must be powered up last. The front panel LED of the amplifier should light green.
- L'amplificateur doit être allumé en dernier. Le LED situé sur le panneau de l'amplificateur devrait s'allumer en vert.

- 9. Adjust the attenuation level using the rear panel adjustment potentiometers (shown below).**

To adjust the input level of the XPA amplifier, do the following:

- If connecting to a source device with a volume control (variable output), ensure that the volume on the source device is set to its lowest point, then adjust the level of the XPA fully counterclockwise.
- Set the source device's volume to its maximum volume level. No sound should come out.
- Return to the XPA amplifier and raise the level until sound distortion occurs, then lower the level slightly until any distortion disappears. This setting ensures that, whatever the source device volume setting may be, no clipping occurs.



**NOTE:** When setting volume control through a source device, ensure that the volume of the device is set to variable out. Consult the user manual of the device for detailed instructions on its calibration.

# Operation

This section discusses how to operate the XPA power amplifiers. Topics that are covered, include:

- **Front Panel Features and Operation**
- **Rear Panel Features and Operation**
- **Troubleshooting**

## Front Panel Features and Operation

The XPA power amplifier front panels are shown below.

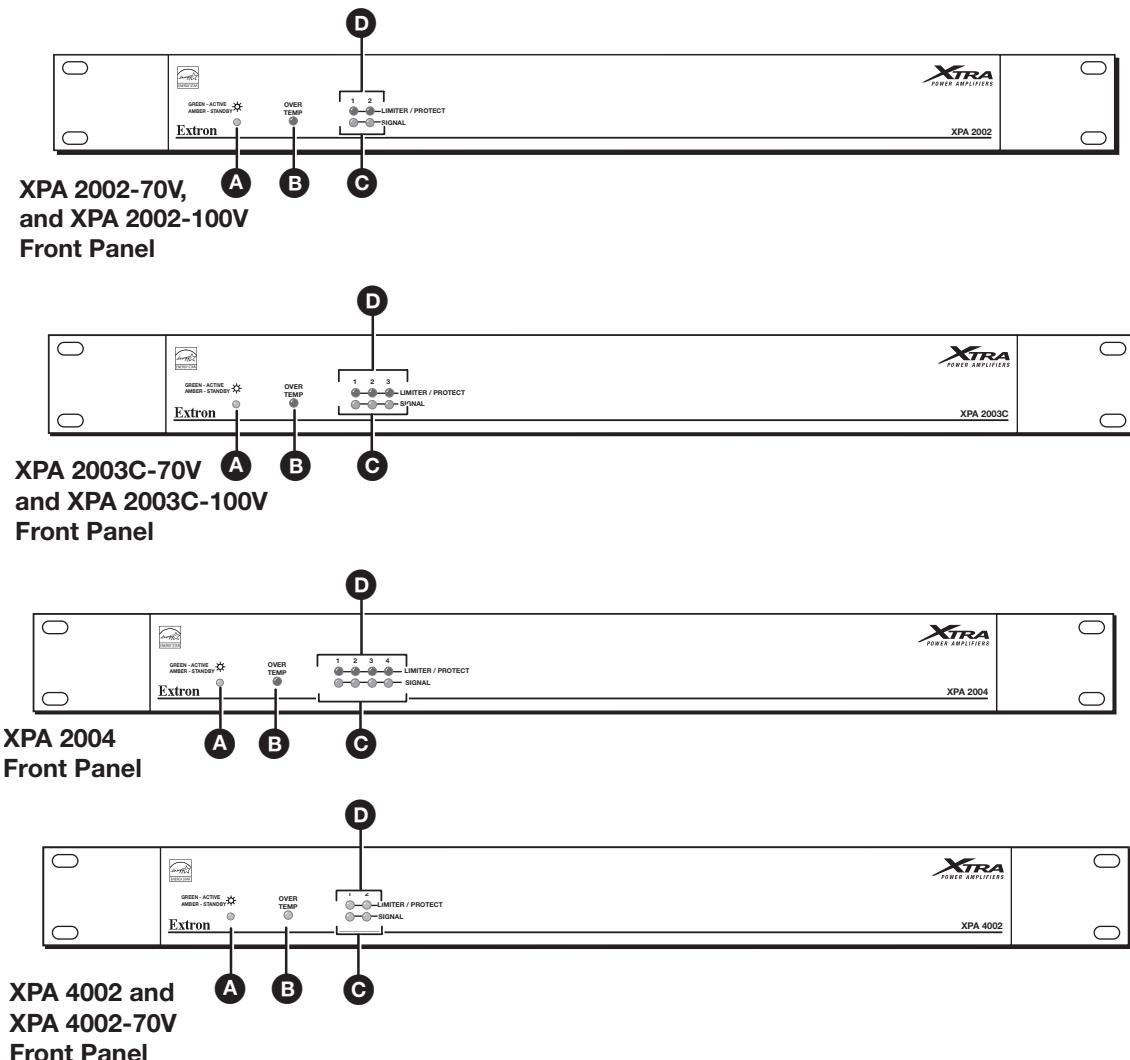
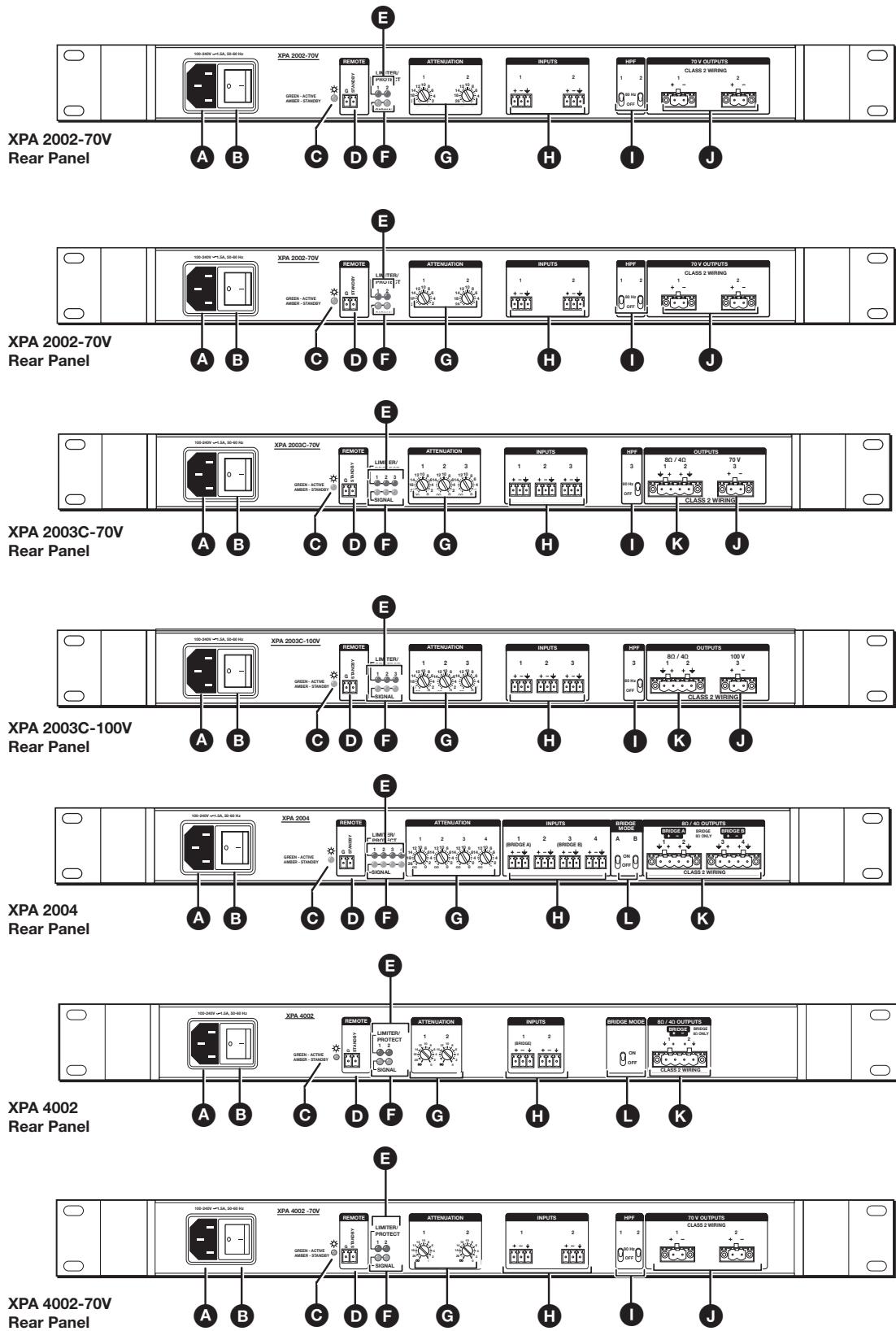


Figure 9. XPA Power Amplifier Front Panels

- A Power indicator LED** — (see [figure 9](#) on the previous page) This LED lights:
- Green when the amplifier is receiving full power.
  - Amber when the amplifier is in Standby mode. Standby mode turns off all outputs from the amplifier, although the amplifier is still receiving power (see [Rear Panel Features and Operation, C](#) page 11).
- B Over Temp indicator LED** — This LED lights red when the amplifier exceeds the recommended operating temperature for optimal lifetime. The LED turns off after the amplifier has cooled down sufficiently.  
Should the LED light, check the following:
- Verify that the placement of the amplifier allows for adequate ventilation and airflow.
  - Avoid placing other equipment on top of the amplifier.
  - Verify that the operating temperature is within the specified range.
- C Signal indicator LEDs (channels 1, 2, 3, and 4)** — These LEDs (representing input channels 1, 2, 3, and 4) light green only when an input signal is detected on the corresponding channel.
- NOTE:** These LEDs are also located on the rear panel.
- D Limiter/Protect indicator LEDs (channels 1, 2, 3, and 4)** — These LEDs (representing output channels 1, 2, 3, and 4) light red in the following circumstances:
- When audio clipping occurs, the corresponding LED turns on while the amplifier is limiting.
  - When the amplifier overheats, both Over Temp and Limiter/Protect indicator LEDs are lit. The LEDs are not lit after the amplifier recovers from the overheated condition.
  - When the output leads are shorted, the LED of the corresponding channel is lit until the short is removed.
- NOTE:** These LEDs are also located on the rear panel.

## Rear Panel Features and Operation

The XPA power amplifier rear panels are shown below.



**Figure 10. XPA Power Amplifier Rear Panels**

- |   |   |
|---|---|
| <b>A</b> AC power connector             | <b>G</b> Attenuation adjustment                                       |
| <b>B</b> Power switch                   | <b>H</b> Balanced or unbalanced stereo/<br>mono audio input connector |
| <b>C</b> Power indicator LED            | <b>I</b> High pass filter toggle switch                               |
| <b>D</b> Remote standby connector       | <b>J</b> Mono audio output connector                                  |
| <b>E</b> Limiter/Protect indicator LEDs | <b>K</b> Stereo audio output connector                                |
| <b>F</b> Signal indicator LEDs          | <b>L</b> Bridged Mode Output  |

**A** **AC power connector** — (see **figure 10 starting on** page 11) Connect a standard IEC AC power cord here for power input (100 VAC to 240 VAC, 50/60 Hz) to the internal, autoswitching power supply.

The mains plug or appliance coupler shall remain readily operable.

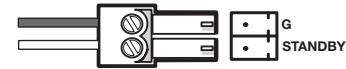
**B** **Power switch** — This rocker switch turns power to the amplifier on or off.

**C** **Power indicator LED** — This LED lights:

- Green when the amplifier is receiving full power.
- Amber when the amplifier is in standby mode. Standby mode turns off all outputs from the amplifier, although the amplifier is still receiving power.

**D** **Remote standby connector** — Connecting pin 2 to ground (pin 1) places the amplifier in standby mode. Use the included

2-pin, 3.5 mm captive screw connector To Contact Closure Port  
on Control Device  
to jumper the pins.



**NOTE:** Control signal ground pins may be labeled as  $\pm$  or G. Audio ground pins may be labeled as  $\pm$  or  $\downarrow$ . The wiring and function are the same, whichever way your product is labeled.

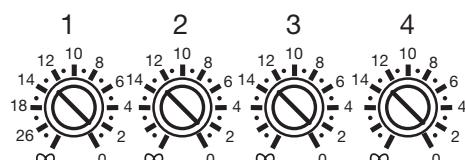
**E** **Limiter/Protect indicator LEDs (channels 1, 2, 3, and 4)** — These LEDs (representing output channels 1, 2, 3, and 4) light red in the following circumstances:

- When audio clipping occurs, the corresponding LED turns on while the amplifier is limiting.
- When the amplifier overheats, both over temp and limiter/protect indicator LEDs are lit. The LEDs are not lit after the amplifier recovers from the overheated condition.
- When the output leads are shorted, the LED of the corresponding channel is lit until the short is removed.

**F** **Signal indicator LEDs (channels 1, 2, 3 and 4)** — These LEDs (representing input channels 1, 2, 3 and 4) light green only when an input signal is detected on the corresponding channel.

**G** **Attenuation adjustment (channels 1, 2,**

**3 and 4)** — Use an Extron Tweaker or small screwdriver to adjust the audio input level for the corresponding channel. The analog potentiometers control the level from  $\infty$  (full attenuation) to 0 dB (no attenuation).



**H** **Balanced or unbalanced stereo/mono**

**audio input connector** — Wire the 3.5 mm 3-pin captive screw connectors for balanced or unbalanced input.



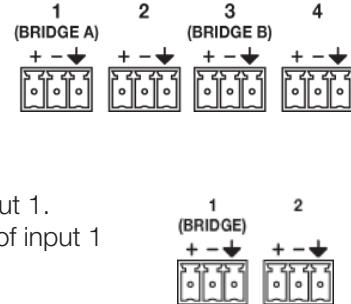
**Figure 11.** Wiring 3-pole Connectors

**ATTENTION:**

- Do not tin the wire leads before installing into the connector. Tinned wires are not as secure in the connector and could be pulled out. They may also break after being bent several times.
- Ne pas étamer les conducteurs avant de les insérer dans le connecteur. Les câbles étamés ne sont pas aussi bien fixés dans le connecteur et pourraient être tirés. Ils peuvent aussi se casser après avoir été pliés plusieurs fois.

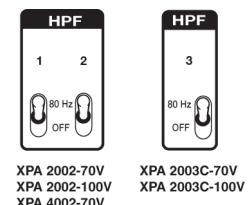
**NOTES:**

- The XPA 2004 allows for bridged output of inputs 1 (Bridge A) and 3 (Bridge B) only. Bridging effectively doubles the output power of those inputs. Inputs 1 and 3 are the active inputs when in bridged mode while inputs 2 and 4 are ignored.
- The XPA 4002 allows for bridged output of input 1. Bridging effectively doubles the output power of input 1 while input 2 is ignored.



**1 High pass filter toggle switch** — (see **figure 10** on page 11)

Use a small screwdriver to toggle this recessed two-position toggle switch that alternates between Off (no filtering) and 80 Hz. The XPA 2002-70V, XPA 2002-100V, and XPA 4002-70V have two switches, one for each output channel. The XPA 2003C-70V and XPA 2003C-100V have one switch for the line distribution output channel (channel 3). Setting the switch to 80 Hz prevents the saturation of the speaker input transformers by low frequency signals. Saturation can result in severe distortion of the speaker output signal.



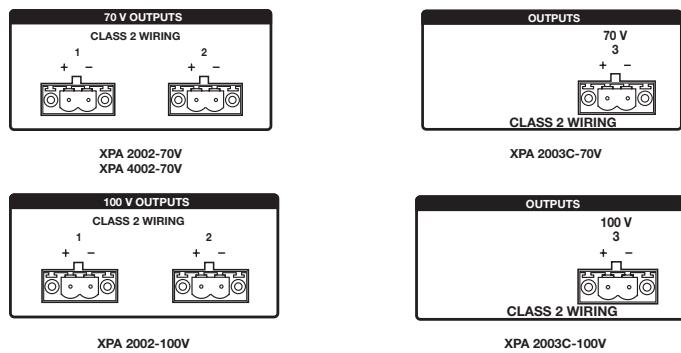
**NOTE:** It is recommended that the high pass filter be left in the On position unless filtering is applied to the signal upstream of the amplifier.

**2 Mono audio output connector** — Wire the included 2-pole, 5 mm screw lock captive screw connector, marked “+” and “-,” for mono audio (see steps **1** and **2** on the following page). Output is designed to power 70 V (XPA 2002-70V, XPA 4002-70V and XPA 2003C-70V) or 100 V (XPA 2002-100V and XPA 2003C-100V) line distribution systems and is rated at 200 watts (400 watts, XPA 4002-70V).

**ATTENTION:**

- You must use Class 2 wiring for this output to comply with UL requirements.
- Vous devez utiliser un câblage de classe 2 pour cette sortie afin de respecter les exigences de l’UL.

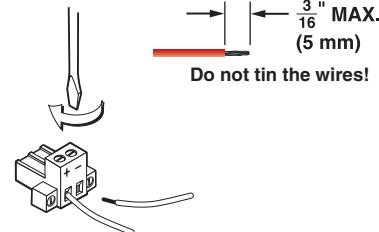
**NOTE:** You must use Class 2 wiring for this output to comply with UL requirements.



**Figure 12. Mono Audio Output Connectors**

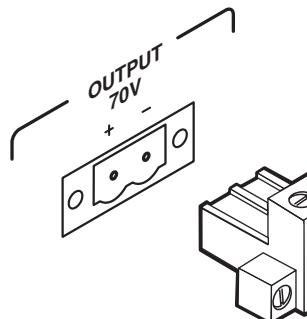
- Step 1:**

Strip and insert the speaker wires into the connector and tighten the captive screws. Be sure to observe correct polarity.



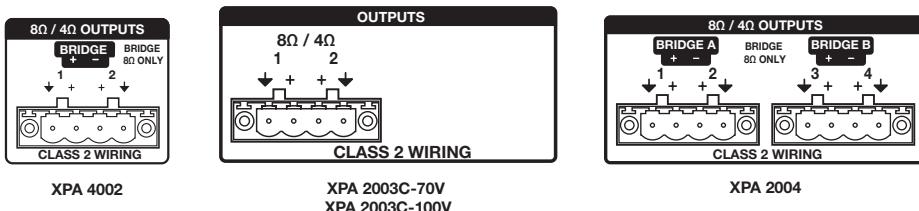
- Step 2:**

Insert the wired connector into the amplifier output **and secure the locking screws on either side.**



- K Stereo audio output connector** — (see [figure 10 starting on](#) page 11) Wire the included 4-pole, 5 mm screw lock captive screw connector to output 2-channel (XPA 4002, XPA 2003C-70V, and XPA 2003C-100V) or 4-channel (XPA 2004) audio. Observe the correct polarities for each channel. See steps **1** and **2** on the following page. Output is designed to power 4 or 8 ohm speakers and is rated at 200 watts (400 watts, XPA 4002) with a 4-ohm speaker load, or 100 watts (200 watts, XPA 4002) with an 8-ohm speaker load, per channel.

**NOTE:** You must use Class 2 wiring for this output to comply with UL requirements.



**Figure 13. Stereo Audio Output Connectors**

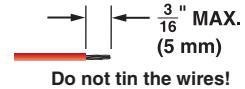
**ATTENTION:**

- Do not short the + and  $\downarrow$  outputs to each other. Doing so may damage the amplifier.
- Ne pas créer un court circuit entre les sorties + et  $\downarrow$  au risque d'endommager l'amplificateur.

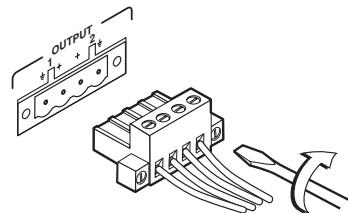
**• Step 1:**

Strip and insert the speaker wires into the connector and tighten the captive screws.

Be sure to observe correct polarity.

**• Step 2:**

Insert the wired connector into the amplifier output and secure the locking screws on either side.



- ① Bridged output mode (XPA 4002 and XPA 2004)** —(see **figure 10** starting on page 11) The output power of the XPA 4002 can be effectively doubled by using input channel 1 and bridging the outputs.

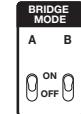
The output power of the XPA 2004 can be effectively doubled by using input channels 1 or 3 or both and bridging their respective outputs.

**• XPA 4002: Bridged output mode toggle switch (input channel 1)** —

Use a small screwdriver to toggle the recessed two-position toggle switch to either bridged (up) or unbridged (down) for input channel 1. Bridging takes the signal from Input 1 and outputs the signal from the + terminals of output channels 1 and 2.

**• XPA 2004: Bridged output mode toggle switch (input channels 1 and 3)** —

Use a small screwdriver to toggle the recessed two-position toggle switch to either bridged (up) or unbridged (down) for the appropriate input channels.



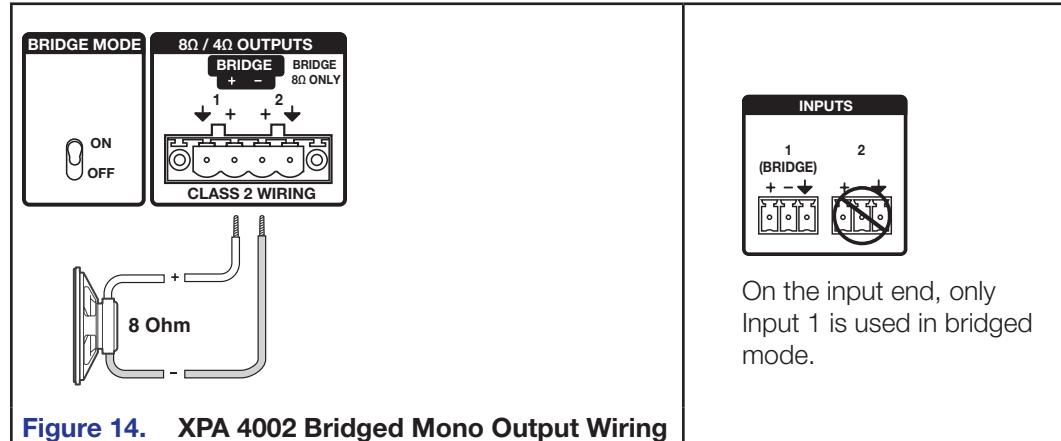
Bridging takes the signal from Input 1 (A) or Input 3 (B) or both and outputs the signal from the + terminals of output channels 1 and 2 (Bridge A) or channels 3 and 4 (Bridge B) or both.

## Bridged Mode Output

### XPA 4002 bridged mono output speaker wiring

In bridged mode, the output mode toggle switch for Input 1 must be set to the bridged (up) position (see figure 8 below).

**For Input 1:** The channel 1 + output terminal becomes the bridged + output terminal and the channel 2 + output terminal becomes the bridged - output terminal (see figure 14).

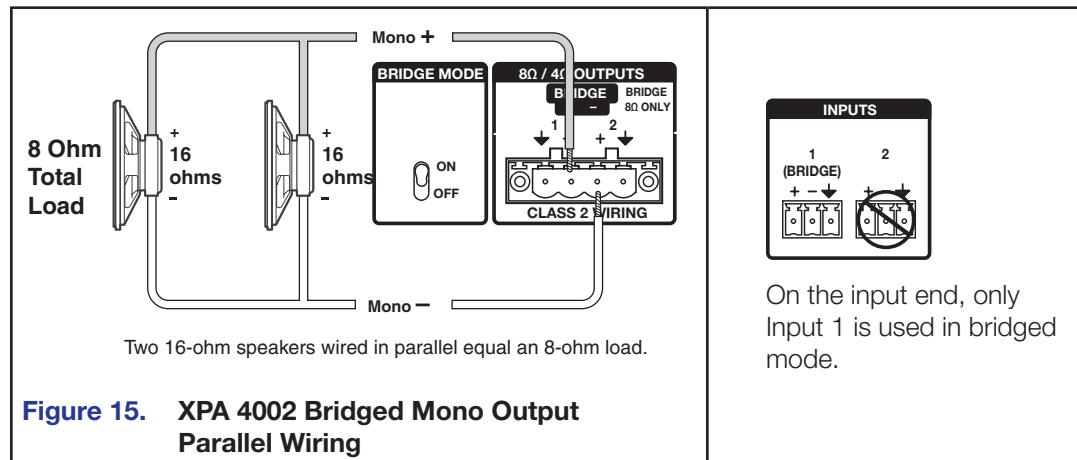


**Figure 14. XPA 4002 Bridged Mono Output Wiring**

### XPA 4002 bridged mono output using parallel speaker wiring

In bridged mode, the output mode toggle switch for input 1 must be set to the bridged (up) position (see figure 7 below).

The channel 1 + output terminal becomes the bridged + output terminal and the channel 2 + output terminal becomes the bridged - output terminal (see figure 15 below).

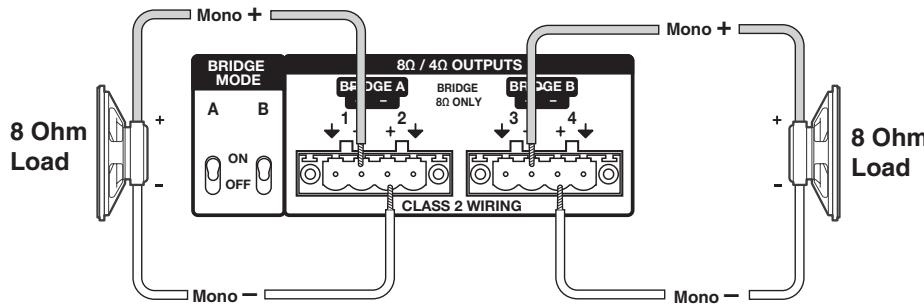


### XPA 2004 bridged mono output speaker wiring

In bridged mode, the output mode toggle switches for Input 1 (A) or Input 3 (B) or both must be set to the bridged (up) position (see figure 8 below).

**For Input 1:** The channel 1 + output terminal becomes the bridged + output terminal and the channel 2 + output terminal becomes the bridged - output terminal (see figure 16).

**For Input 3:** The channel 3 + output terminal becomes the bridged + output terminal and the channel 4 + output terminal becomes the bridged - output terminal.



**Figure 16. XPA 2004 Bridged Mono Output Wiring**

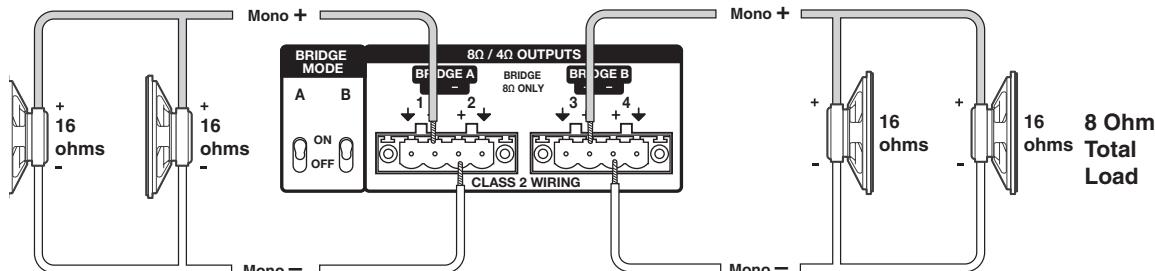
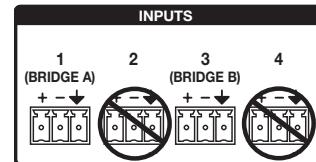
On the input end, only Input 1 or Input 3 or both Input 1 and Input 3 are used in bridged mode.

#### XPA 2004 bridged mono output using parallel speaker wiring

In bridged mode, the output mode toggle switches for Input 1 (A) or Input 3 (B) or both must be set to the bridged (Up) position (see figure 17 below).

**For Input 1:** The channel 1 + output terminal becomes the bridged + output terminal and the channel 2 + output terminal becomes the bridged - output terminal (see figure 17).

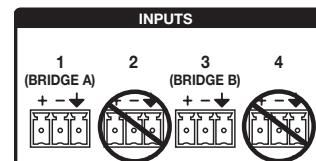
**For Input 3:** The channel 3 + output terminal becomes the bridged + output terminal and the channel 4 + output terminal becomes the bridged - output terminal.



Two 16 ohm speakers wired in parallel equal an 8 ohm load.

**Figure 17. XPA 2004 Bridged Mono Output Parallel Wiring**

On the input end, only Input 1 or Input 3 or both Input 1 and Input 3 are used in bridged mode.



## Troubleshooting

The front and rear panels have LED warning indicators, as described in the following diagnostic information.

### Amplifier Fails to Exit Standby Mode Promptly

The input channel (channels 1, 2, 3, and 4) Signal LED lights green per indicated input channel when an input signal is detected.

| Power LED Color | Signal LED State   | Problem Description   | Problem Solution  |
|-----------------|--------------------|---|---|
| Amber           | Not lit            | No output signal  | No input was detected. Verify the input signal.<br>If input is present, raise the input level until the signal LED lights.  |
| Green or Amber  | Lit intermittently | Slow to promptly exit standby mode with signal present.             | The output signal level of the source may be too low to cross the signal detection threshold of the amplifier (see amplifier specifications for details). Increase the signal level of the source until the signal LED lights consistently. |
| Amber           | Lit                | No output signal  | The amplifier has been placed in standby mode and output has been turned off. Check the remoteport. A DC fault may have been detected (see below).  |
| Amber           | Lit                | DC fault is detected on either channel. Unit does not exit standby. | Disconnect power, then disconnect the remote port (if connected). Next, reconnect power to the unit to determine if the unit continues to go into immediate standby upon power up. In such a case, the unit should be serviced.             |

### Amplifier Enters Standby Mode Too Early

The input channel (channels 1, 2, 3, and 4) Signal LED lights green per indicated input channel when an input signal is detected.

| Power LED Color | Signal LED State   | Problem Description        | Problem Solution  |
|-----------------|--------------------|----------------------------|---|
| Green or Amber  | Lit intermittently | Enters standby mode early. | The output signal level of the source may be too low to cross the signal detection threshold of the amplifier (see the amplifier specifications for details). Increase the signal level of the source until the signal LED lights consistently. |

## Limiter/Protect LED Warning Indicators

The output channel ( channels 1, 2, 3, and 4) Limiter/Protect LED lights red per indicated output channel as shown in the following diagnostic information.

| LED State     | Problem Description  | Problem Solution  |
|---------------|--|---|
| Blinks        | Audio clipping is occurring and the Limiter/Protect LED is blinking. | Reduce the power output to avoid overdriving the amplifier and causing clipping.  |
| Lights steady | The amplifier may be overheating.                                    | Determine the reason for the overheated state and allow the amplifier to cool. The LED is not lit after the amplifier recovers from the overheated state. |
|               | Output channel leads are shorted.                                    | Check the speakers and speaker wiring for shorts.   |

## Over Temp Indicator LED

This indicator does not represent a hard failure of the unit. It is meant as a warning that the amplifier has exceeded the recommended operating temperature for optional lifetime.

| LED State     | Problem Description  | Problem Solution  |
|---------------|--|---|
| Lights steady | Amplifier has exceeded the recommended operating temperature. The LED turns off after the amplifier cools down sufficiently. | <ul style="list-style-type: none"><li>Verify that the placement of the amplifier allows for adequate ventilation and airflow.</li><li>Avoid placing equipment on top of the amplifier.</li><li>Verify that the operating temperature is within the specified range.</li></ul> |

# Reference Information

This section discusses the mounting instructions for the XPA series of power amplifiers.

## Mounting the XTRA Series Power Amplifiers

The XPA power amplifiers can be set on a table or mounted on a rack shelf.

### Tabletop Use

Four self-adhesive rubber feet are included with the audio amplifier.

For tabletop use, attach one foot at each corner of the bottom side of the unit and place the unit in the desired location.

### UL Rack Mounting Guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the equipment in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature ( $T_{ma} = +122^{\circ}\text{F}/+50^{\circ}\text{C}$ ) specified by Extron.
2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

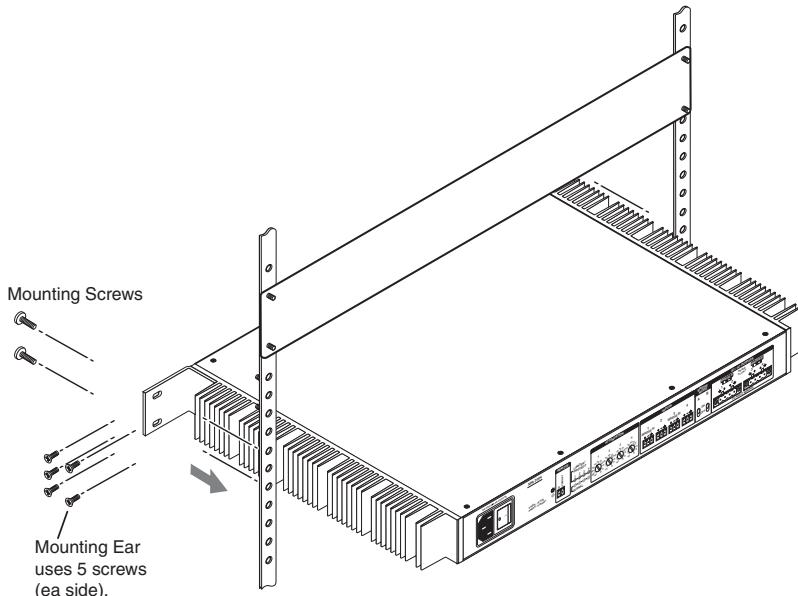
## Rack Mounting

The XTRA series of audio amplifiers are housed in rack-mountable metal enclosures with pre-attached mounting ears for standard 19-inch racks. Mount the amplifier as follows:

1. Disconnect all cables and power sources from the amplifier.
2. Position the amplifier in the mounting rack so that the four slots in the mounting ears are aligned with the rack mounting holes. Use the included mounting screws to fasten the amplifier to the rack (see figure 18 below).

### ATTENTION:

- Never place a load exceeding 40 pounds in weight on top of the rack-mounted amplifier.
- Ne placez jamais une charge de plus de 18 kg sur le dessus de l'amplificateur monté en rack.

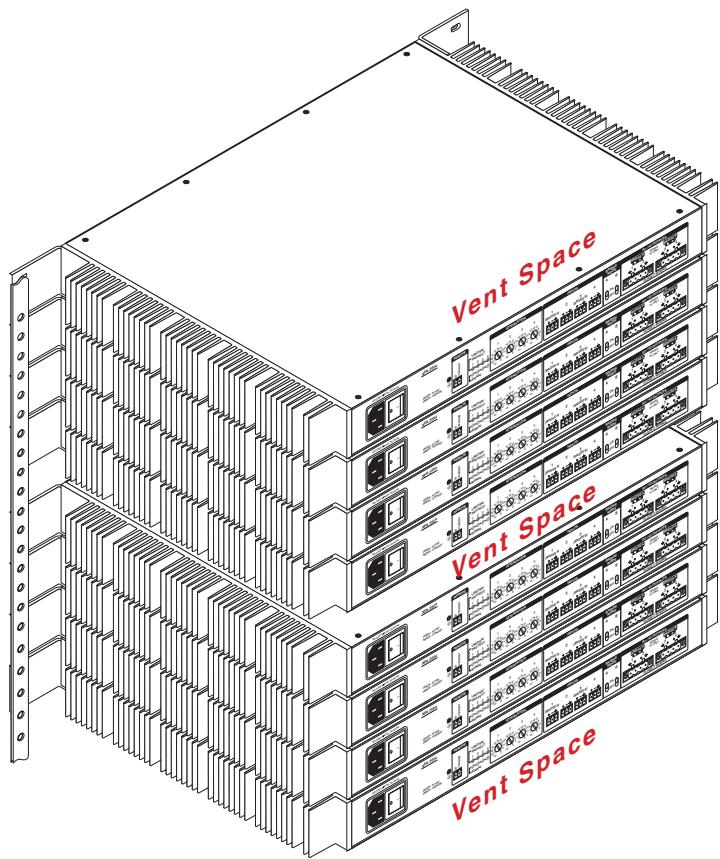


**Figure 18. Rack Mounting the Amplifier**

## Rack Mounting Ventilation

Excessive heat can decrease the optimal lifetime of the power amplifier. An **over temp** indicator LED on the front panel of the amplifier lights red whenever the recommended operating temperature has been exceeded (see **Front Panel Features and Operation** on page 9).

To reduce the chances for an **over temp** condition, the XPA should be arranged in a rack environment with up to a maximum of four XPAs stacked together with a minimum of one vent space provided both above and below a stack (see figure 19 below).



**Figure 19. Allow Sufficient Spacing for Adequate Ventilation**

## Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,  
and Central America:**

Extron Electronics  
1230 South Lewis Street  
Anaheim, CA 92805  
U.S.A.

**Asia:**

Extron Asia Pte Ltd  
135 Joo Seng Road, #04-01  
PM Industrial Bldg.  
Singapore 368363  
Singapore

**Japan:**

Extron Electronics, Japan  
Kyodo Building, 16 Ichibancho  
Chiyoda-ku, Tokyo 102-0082  
Japan

**Europe:**

Extron Europe  
Hanzeboulevard 10  
3825 PH Amersfoort  
The Netherlands

**China:**

Extron China  
686 Ronghua Road  
Songjiang District  
Shanghai 201611  
China

**Middle East:**

Extron Middle East  
Dubai Airport Free Zone  
F13, PO Box 293666  
United Arab Emirates, Dubai

**Africa:**

Extron South Africa  
South Tower  
160 Jan Smuts Avenue  
Rosebank 2196, South Africa

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

**NOTE:** If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

**USA:** 714.491.1500 or 800.633.9876

**Asia:** 65.6383.4400

**Europe:** 31.33.453.4040 or 800.3987.6673

**Japan:** 81.3.3511.7655

**Africa:** 27.11.447.6162

**Middle East:** 971.4.299.1800

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.