MPA 152 Plus
ENERGY STAR® Qualified Stereo Mini Power Amplifier

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

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**.

## Instructions de sécurité • Français

AVERTISSEMENT: Ce pictogramme, ⚠, lorsqu'il est utilisé sur le produit, signale à l'utilisateur la présence à l'intérieur du boîtier du produit d'une tension électrique dangereuse susceptible de provoquer un choc électrique.

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 le matériel.

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**.

Sicherheitsanweisungen • Deutsch

WARNUNG: Dieses Symbol ⚠ auf dem Produkt soll den Benutzer darauf aufmerksam machen, dass im Inneren des Gehäuses dieses Produktes gefährliche Spannungen herrschen, die nicht isoliert sind und die einen elektrischen Schlag verursachen können.

VORSICHT: Dieses Symbol ⚠ auf dem Produkt soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Weitere Informationen über die Sicherheitsrichtlinien, Produkthandhabung, EMI/EMF-Kompatibilität, Zugänglichkeit und verwandte Themen finden Sie in den Extron-Richtlinien für Sicherheit und Handhabung (Artikelnummer 68-290-01) auf der Extron-Website, **www.extron.com**.

Instrucciones de seguridad • Español

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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 recogidas en la documentación proporcionada con el equipo.

Para obtener información sobre directrices de seguridad, cumplimiento de normativas, compatibilidad electromagnética, accesibilidad y temas relacionados, consulte la Guía de cumplimiento de normativas y seguridad de Extron, referencia 68-290-01, en el sitio Web de Extron, **www.extron.com**.

Инструкция по технике безопасности • Русский

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**, номер по каталогу - 68-290-01.

Chinese Simplified（简体中文）

警告: ⚠产品上的这个标志意在警告用户该产品机壳内有暴露的危险电压, 有触电危险。

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**, 参见 Extron 安全规范指南, 产品编号 68-290-01。

Chinese Traditional（繁體中文）

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有關安全性指導方針、法規遵守、EMI/EMF 相容性、存取範圍和相關主題的詳細資訊, 請瀏覽 Extron 網站:**www.extron.com**,然後參閱《Extron 安全性與法規遵守手冊》,準則編號 68-290-01。

Japanese

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安全上のご注意、法令遵守、EMI/EMF適合性、その他の関連項目については、エクストロンのウェブサイト**www.extron.com**より『Extron Safety and Regulatory Compliance Guide』(P/N 68-290-01) をご覧ください。

Korean

경고: 이 기호 ⚠, 가 제품에 사용될 경우, 제품의 인클로저 내에 있는 접지되지 않은 위험한 전류로 인해 사용자가 감전될 위험이 있음을 경고합니다.

주의: 이 기호 ⚠, 가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(**www.extron.com**)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

FCC Class B Notice

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.

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.

Conventions Used in this Guide

Notifications

> **ATTENTION:** Attention indicates a situation that may damage or destroy the product or associated equipment.

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

Specifications Availability

Product specifications are available on the Extron website, **www.extron.com**.

Contents

Introduction

This manual contains information about the Extron MPA 152 Plus mini power amplifier with instructions for experienced installers on how to install, configure, and operate the equipment. Unless otherwise specified, in this manual "amplifier" or "MPA" refer to the MPA 152 Plus.

This section provides the following information:

- **Important Safety Instructions**
- **About the MPA 152 Plus**
- **MPA 152 Plus Features**

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the instructions of the manufacturer.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for safety. If the provided plug does not fit into the outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments or accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as if the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

About the MPA 152 Plus

The MPA 152 Plus is an ENERGY STAR qualified amplifier with an Extron exclusive, highly efficient, advanced Class D amplifier design. It also features 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. The high efficiency design generates very little heat and allows the amplifier to be fanless and operated in environments with little or no ventilation.

This stereo integrated mini power amplifier delivers up to 15 watts (rms) per channel stereo or dual mono into a 4 ohm sound system, or 8 watts (rms) per channel into an 8 ohm system. This model features a 90 dB signal-to-noise ratio with 0.1% THD+N, offering exceptional performance for speaker systems requiring compact, economical, audio amplification.

Front panel controls allow easy adjustment of bass and treble volume and input level.

The quarter rack size allows a variety of mounting options. The unit complies with UL 2043 for smoke and heat release for in-the-ceiling installations. It can be installed in the plenum space of the ceiling. Alternatively, the units can be mounted on a tabletop, in a rack, under a desk, or in a projector mounting kit.
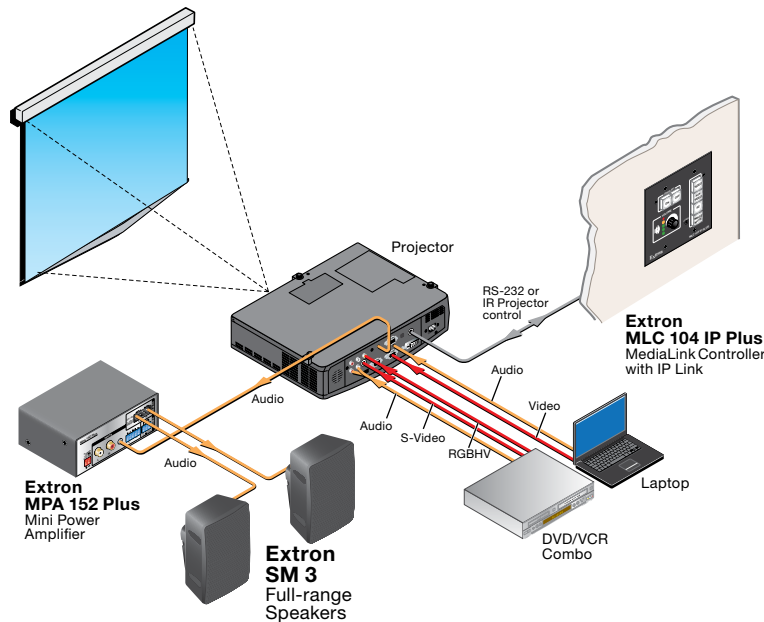
Figure 1. Typical Application for the MPA 152 Plus

MPA 152 Plus Features

30 watts (rms) output power — Delivers up to 15 watts (rms) per channel, stereo or dual mono, into a 4 ohm speaker system or up to 8 watts (rms) per channel into an 8 ohm system. Provides significant audio output for small integration projects with moderate sound system needs.

Improved signal-to-noise ratio — The 90 dB unweighted signal-to-noise ratio allows very low-noise operation, ensures quiet, hiss-free amplification, and maintains audio signal integrity.

ENERGY STAR qualified amplifier — The MPA 152 Plus conserves energy and reduces operating costs.

Defeatable auto power-down timer for 24/7 applications — Ensures that the amplifier is always active for 24/7 operation in critical applications, while still retaining the ENERGY STAR qualification.

Extron patented CDRS - Class D Ripple Suppression — 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 AV equipment such as wireless microphones.

Front panel bass, treble, and input level controls — These are flush mounted and detented. They allow quick attenuation of input signal and ±10 dB bass and treble shelving controls.

Stereo or Dual Mono toggle switch — Allows the user to choose between stereo output or to sum the left and right inputs and produce dual mono outputs (see **figure 7** on page 9). This eliminates the need for external summing products in monoaural installations.

UL 2043 plenum rated — The MPA 152 Plus complies with UL 2043 for smoke and heat release for installation within a plenum airspace above a drop ceiling (power supply excluded). Above-the-ceiling placement conceals the amplifier to prevent theft, and is convenient for installing equipment when space inside the room is limited.

Three audio inputs — Accept balanced or unbalanced stereo line-level signals on a captive screw connector and unbalanced stereo line-level signals on an RCA stereo pair, and a 3.5 mm stereo mini jack. This ensures the amplifier can be easily integrated with a wide variety of sources and projectors.

The three stereo inputs are individually buffered and can be connected to three separate sources at the same time without altering performance.

Auto power-down with fast power-up — The MPA 152 Plus meets ENERGY STAR qualification requirements with an auto power-down feature that automatically places the amplifier into standby after 25 minutes of inactivity, dramatically reducing power consumption. It quickly returns to full power status in less than one second upon signal detection. This feature can be defeated to allow for 24/7 operation.

Quick-plug speaker outputs — Speaker output is on a screw-lock captive screw connector for quick installation.

Volume and mute remote control — A rear panel, three-pin captive screw remote input connector allows remote adjustment of volume and muting.

Always-on clip limiting — Reduces gain automatically to prevent amplifier clipping.

Compact size — The amplifiers are housed in a 1U high, 3 inch deep, quarter rack wide metal enclosure, which offers flexible mounting options.

Panels and Cabling

This section discusses the MPA 152 Plus rear panel features and cabling.

MPA 152 Plus Rear Panel Features

The rear panel of the MPA 152 Plus (shown in figure 2 below) allows the user to connect **power** (see below), **audio input** (see page 6), **remote control** (see page 7), and **audio output** (see page 9).
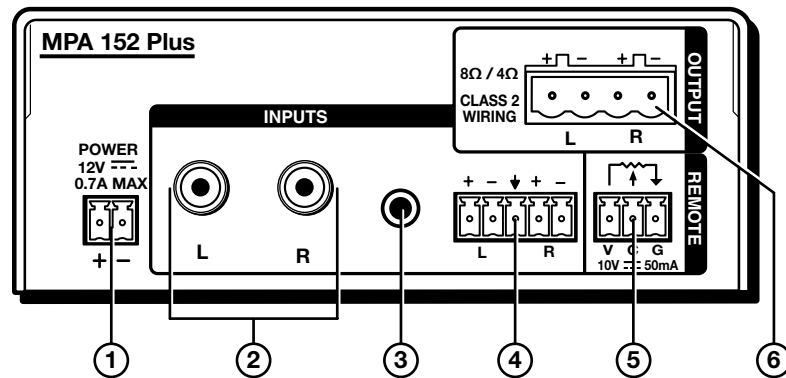
Figure 2. **MPA 152 Plus Rear Panel Features**

Power Connector

① **Power connector** — The MPA 152 Plus ships with the Extron 24 watt PS 1220 desktop power supply.

> **ATTENTION:** When the PS 1220 power supply is connected to the MPA 152 Plus, it must not be shared with any other devices.

Connect one end of the DC power cord to one of the two pole, 3.5 mm captive screw outlets on the power supply. Connect the other end into the power receptacle on the rear panel of the amplifier, as shown in figure 3 on the following page. The power cord connectors are correctly wired when shipped.
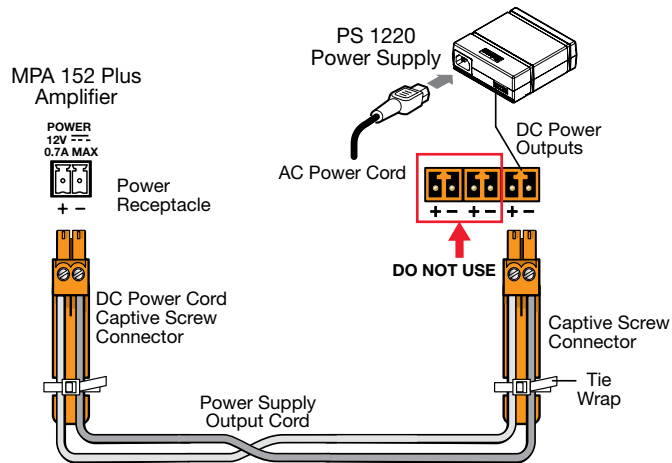
Figure 3. Power Connector

ATTENTION:

- Always use a power supply supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.

- The amplifier is suitable for use in environmental air space in accordance with Section 300.22.C of the National Electrical Code, and Sections 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, C22.1.

- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The power supply is to be located within the same vicinity as the Extron AV processing equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium, or desk.

- Although the amplifier is plenum rated, the power supply provided with it is not. The power supply must not be placed in the plenum space. Cables to and from the amplifier must also be plenum rated. The DC power cord provided with the unit is not plenum rated.

- The installation shall be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 725 and the Canadian Electrical Code part 1, section 16.

- The power supply shall not be permanently fixed to building structure or similar structure.

- The length of the exposed wires in the stripping process is critical. The ideal length is 3/16 inches (5 mm). Any longer and the exposed wires may touch, causing a short circuit between them. Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws.

NOTE: Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.

MPA 152 Plus • Panels and Cabling   5

Audio Inputs

Use the rear panel receptacles (see figure 4) to connect audio sources to the amplifier. Wire the connectors as shown below.
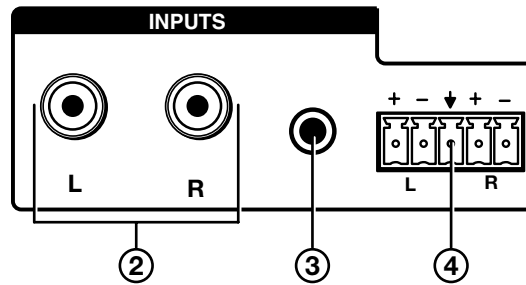
Figure 4. Audio Inputs

② **RCA unbalanced stereo input connectors** — These receptacles accept unbalanced, line level audio signals. The input can be stereo, using two RCA connectors, or mono, using a single RCA connector plugged into the left receptacle.

If unused, the receptacles automatically terminate to lower the noise floor.
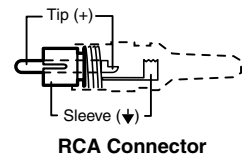
RCA Connector

③ **3.5 mm unbalanced stereo input jack** — This input also accepts unbalanced, line level audio signals through a 3.5 mm tip-ring-sleeve (TRS) stereo connector. If unused, the receptacle automatically terminates to lower the noise floor.

3.5 mm TRS Connector
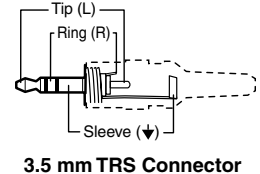
④ **Captive screw balanced or unbalanced audio input connector** — This 5-pole 3.5 mm captive screw receptacle accepts line level, balanced or unbalanced, mono or stereo audio signals.

Unbalanced Stereo Input

Balanced Stereo Input

See the **attention** (on page 5) and **note** (on page 5) for important information about connecting wires to captive screw connectors.

Unbalanced Mono Input

Balanced Mono Input

Depending on the position of the front panel toggle switch (see **figure 8** on page 10), the right and left channels may be output as a stereo signal or as a dual mono signal. See **Audio Output** on page 9 for more information.
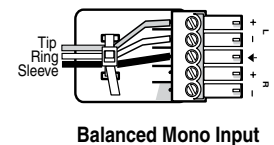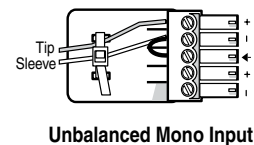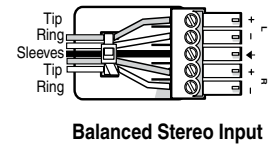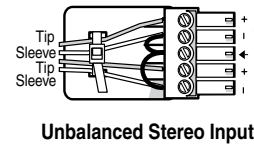
Remote Control

⑤ **Remote input connector** — This 3-pin, captive screw port allows an audio controller to control volume and mute levels remotely. See **Remote Control Options** on page 11 if using a MediaLink controller.
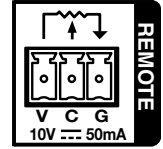
Wiring for remote control

Options for remote control include the Extron VC 50, VCM 100 AAP, VCM 100 MAAP, VCM 200 series, and MLA VC10 Plus. Third party 10k potentiometer volume controllers can also be connected to this port.

Figure 5 and the instructions below show the wiring for the VCM 100 MAAP. Wiring other remote control connectors is similar.
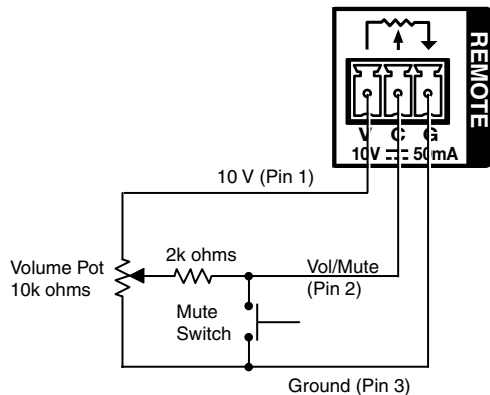
Figure 5.   Remote Control Wiring

- Pin 1 is for 10 VDC reference voltage output.
- Pin 2 (C) has two functions:
  - **Volume control:** it can be used as a variable voltage input between 0 and 10 VDC, with 0 V giving full attenuation and 10 V giving maximum volume.
  - **Mute:** it can be used for remote control muting. Sound is muted while this pin is shorted to ground.
- Pin 3 is for the ground connection.

> **NOTE:**   All nominal levels are at ±10%.

Controlling multiple amplifiers with one volume controller

Several MPA 152 Plus units can be daisy-chained so that one volume controller can simultaneously regulate the volume of all the amplifiers.

> **NOTES:**
> - As additional amplifiers are added to the daisy chain, the sensitivity of the volume potentiometer changes. The maximum volume level (fully clockwise) is not affected. However the effectiveness of the minimum volume level (fully counterclockwise) in reducing the volume to inaudible levels decreases as more amplifiers are added to the daisy chain.
> - When more than two amplifiers are attached to the chain, sound may begin to be heard even if the levels have been set to their lowest. The muting of the output however can be remedied with a contact closure button attached between the C (volume or mute) and G (ground) pins of the first amplifier in the chain.

To regulate multiple amplifiers with a single volume controller, follow these instructions:

1. Attach all three pins of the volume controller to the corresponding pins on the **first** MPA 152 Plus unit only:

   • Ground (⏚) to ground (G)

   • Vol/Mute to C

   • 10 V to V.

2. Use jumper wires to connect the C (Volume and Mute) pins of the first amplifier and each successive amplifier.

3. Use jumper wires to connect the ground pins of the first amplifier and each successive amplifier.
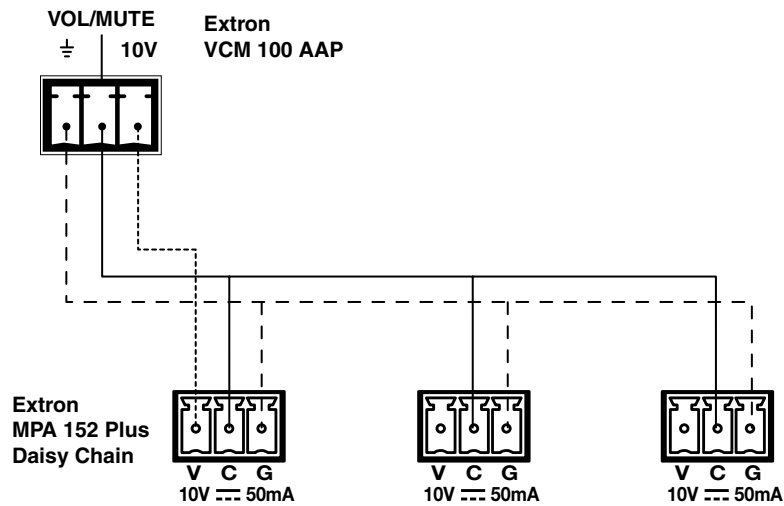
Figure 6. **Regulating Multiple Amplifiers with a Single Volume Controller**

> **NOTE:** The 10V pin of the volume controller connects to the first MPA 152 Plus only. There are no jumper wires linking it to subsequent amplifiers.

Audio Output

⑥ **Speaker receptacle** — This 4-pole, 5 mm screw lock captive screw receptacle is used to connect the amplifier to the speakers.

With an 8 ohm load, the amplifier produces up to 8 watts per channel. With a 4 ohm load, the amplifier produces up to 15 watts per channel.

See the **attention** (page 5) and **note** (page 5) for important information about connecting wires to captive screw connectors.
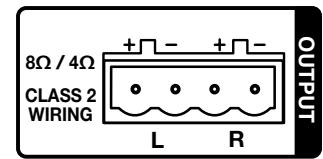
> **ATTENTION:** Do not short the + and – outputs to each other, as this will damage the amplifier.
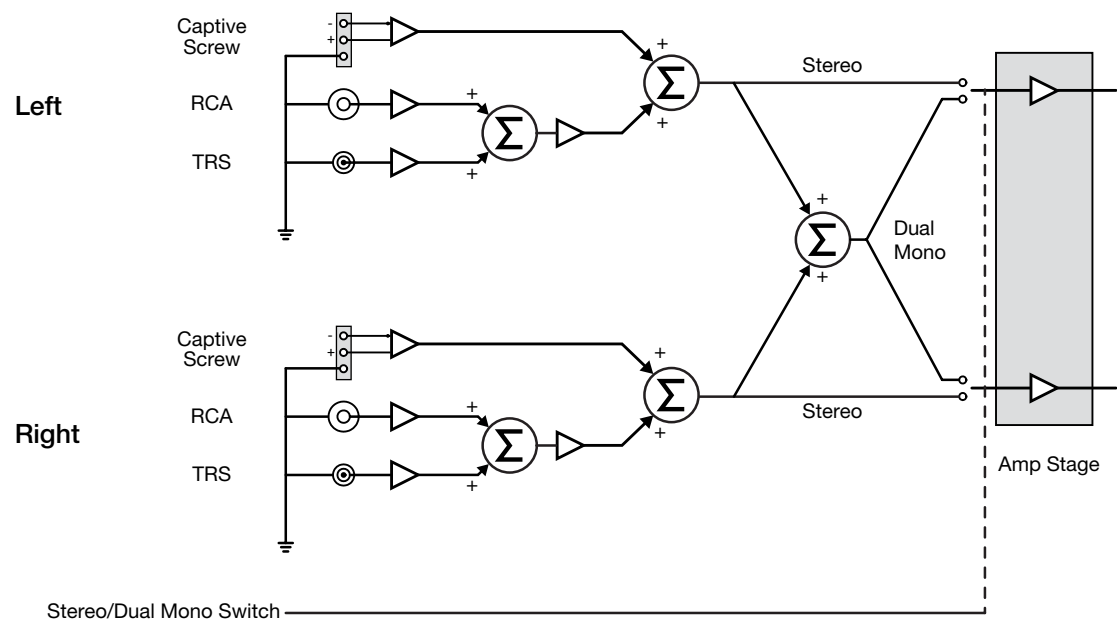
Figure 7.   **MPA 152 Plus Summing Diagram**

Signal flow is as follows:

1. The MPA 152 Plus sums and weights the left unbalanced signals from the TRS and RCA receptacles. This summed, unbalanced signal is then summed with the left balanced signal from the captive screw receptacle.

2. The right channel is handled in the same way.

3. The left and right channels are then sent to the output amplifiers in one of two ways, depending on how the front panel switch is set.

    •   **Stereo:** The left and right channels are sent to the left and right output amplifers respectively.

    •   **Dual Mono:** The left and right channels are summed and then the resulting mono is fed to both of the output amplifiers.

The captive screw, RCA, and TRS inputs are buffered.

Setup and Operation

This section discusses:

- **Front Panel Features and Operation**
- **Remote Control Options**
- **Defeating the Auto Power-down Timer**
- **Troubleshooting**

Front Panel Features and Operation

This section describes how configure the MPA 152 Plus, using the front panel controls and how to set up the remote control options.
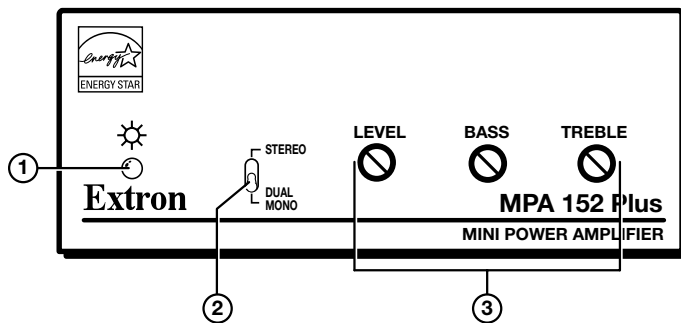
Figure 8. **MPA 152 Plus Front Panel**

① **Power LED** — The LED lights green when the MPA 152 Plus unit is receiving power and active. It lights amber when the unit is powered down (after 25 minutes of inactivity).

② **Stereo or Dual Mono toggle switch** — Allows the user to choose between stereo output for stereo applications (default) or dual mono output for mono applications.

③ **Level, Bass, and Treble potentiometers** — Three front panel potentiometers are used to optimize input level, bass, and treble settings.

Setting Input Level

Adjust the MPA 152 Plus input level as follows:

1. Unplug the Remote plug from the unit.

2. Set the volume of the audio source to its minimum level.

3. Turn the Level potentiometer fully counterclockwise to its minimum setting.

4. Set the volume of the audio source to its maximum level. No sound should come out.

5. Slowly increase the MPA 152 Plus level by rotating the Level potentiometer clockwise until sound distortion starts. Lower the level slightly until the distortion disappears. At this setting, whatever the volume setting of the audio source, no clipping will occur.

Setting Bass and Treble

Adjust the MPA 152 Plus bass and treble as follows:

1. Use the Bass potentiometer to increase or decrease the bass shelving ±10 dB at 80 Hz and below.

2. Use the Treble potentiometer to increase or decrease the treble shelving ±10 dB at 10 kHz and above.

> **NOTE:** Turning the Bass or Treble potentiometers counterclockwise will decrease the output at the specified frequencies. Turning the potentiometers clockwise will increase the output. When the potentiometer is in the center, flat response is achieved.

Remote Control Options
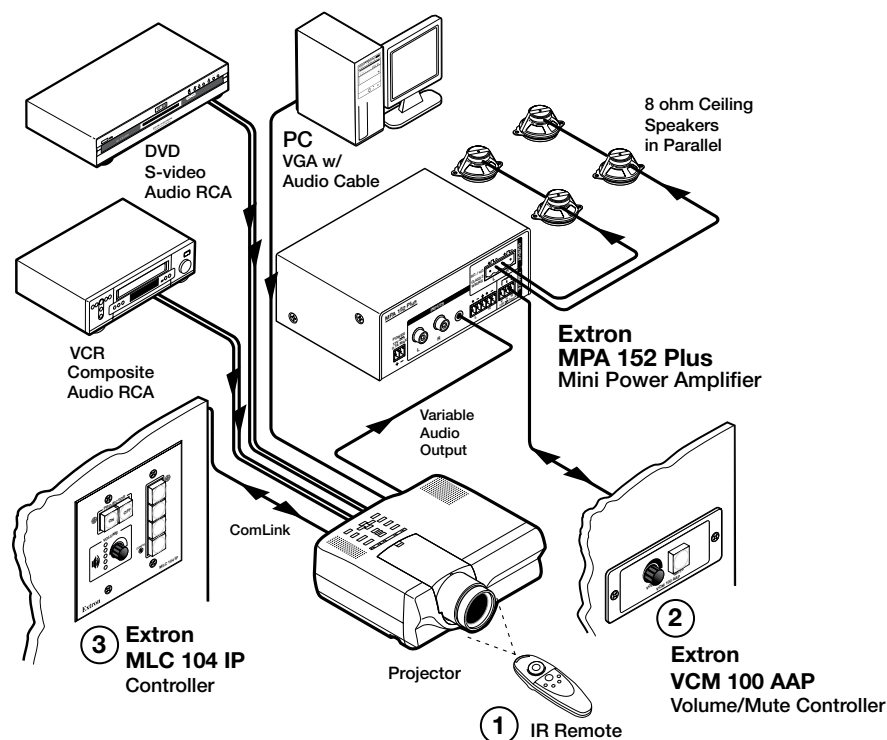
Figure 9. Typical Application for the MPA 152 Plus, Using Remote Control

① **Using the IR remote for the projector** — When using a projector with variable audio outputs, connect the projector audio output to the MPA 152 Plus audio input. Use the IR remote for the projector to control the volume of the projector, which effectively controls the volume of the MPA 152 Plus.

② **Extron volume controllers** — Extron provides a range of volume and mute controllers for use with a projector that lacks variable audio outputs. These options control the MPA 152 Plus volume directly (see **Wiring for remote control** on page 7).

③ **Using a MediaLink Controller** — For a projector with variable audio output, connect the projector audio output to the MPA 152 Plus audio input. Use a MediaLink controller to adjust the volume of the projector via RS-232. MediaLink controllers can also use the IR remote to adjust the volume of the projector and, thus, the input to the amplifier.

Defeating the Auto Power-down Timer

The auto power-down timer determines whether or not the amplifier enters standby mode. The amplifier powers down if the input signal remains below the input signal detection threshold for about 25 minutes.

The timer resets whenever the input signal exceeds the input signal detection threshold. Resetting the timer starts a new 25 minute countdown until the amplifier powers down. Resetting the timer also causes an amplifier that is already powered down to "wake up."

There may be times when it is desirable to bypass the auto power-down timer. However, this should be done as a last resort. Examples of when defeating the auto power-down circuit might be required include:

- If the amplifier is used in a paging system. When the amplifier has already powered down, the first syllable might be cut off as the amplifier wakes up from standby mode.

- If the input signal is so quiet that the level remains below the input signal detection threshold for 25 minutes, the timer would cut the audio in the middle of playback by placing the amplifier into standby mode.

> **ATTENTION:** The following procedure cannot be reversed and should be carried out as a last resort. Be certain that you need to defeat the auto power-down timer before continuing.

To defeat the auto power-down timer, follow these instructions:

1. Disconnect power from the amplifier.

2. Remove the four screws that secure the top enclosure to the bottom enclosure (there are two screws on each side panel).

   > **ATTENTION:** Exercise caution when removing the screws to avoid stripping the head.

Four screws (two on each side) secure the top enclosure to the bottom.

3. Slide the top enclosure forward to clear the switch and potentiometers on the front panel, then lift it straight up to separate it from the bottom enclosure.

   The circuit boards are now exposed at the front.

> **ATTENTION:** Do not touch the electronic components or circuit board connectors without being electrically grounded. Handle circuit boards by their edges only. ESD can damage circuits, even if you cannot feel, see, or hear it.

Stereo to Dual Mono
Toggle Switch

Resistor R42

Level Potentiometer

Figure 10. **Front View, Showing the Location of Resistor R42**

4. Identify resistor R42 at the front of the bottom circuit board between the Stereo to Dual Mono toggle switch (to the left) and the Level potentiometer (to the right). The resistor is shown in the white box in figure 10.

5. Remove the resistor using a pair of diagonal cutters to clip the wires attaching it to the circuit board.

6. Re-attach the top enclosure with the four screws removed in step 1.

Troubleshooting

Under different circumstances, the front panel LED lights green or amber to provide diagnostic information.
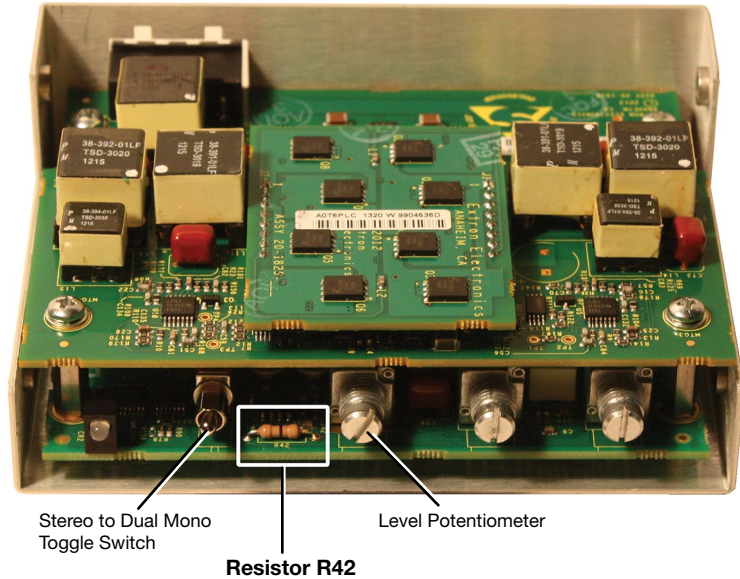
Amplifier Fails to Exit Standby Mode Promptly

Power LED Color	Problem Description	Problem Solution
Amber	No output signal.	No input detected: verify that there is an input signal. If a signal is present, raise the level of the source signal.
Green	No output signal.	The amplifier may be in mute mode. Check the Remote port.
Green or Amber	Slow to exit standby mode when a signal is present.	The input signal may be too weak. Raise the level of the source signal.

Amplifier Enters Standby Mode Too Early

Power LED Color	Problem Description	Problem Solution
Green or Amber	Enters standby mode early.	The input signal may be too weak. Raise the level of the source signal.

Mounting

This section provides information about the mounting options for the MPA 152 Plus.

Rack Mounting

UL Guidelines for Rack Mounting

The following Underwriters Laboratories (UL) guidelines are relevant to the safe installation of this product in a rack:

1. **Elevated operating ambient temperature** — If the unit is 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 (TMA: +122 °F, +50 °C) specified by Extron.

2. **Reduced air flow** — Install the equipment in the rack so that the equipment gets adequate air flow for safe operation.

3. **Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.

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 the 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 (such as the use of power strips).

Rack Mounting Procedure

The unit can be mounted on a compatible rack system (optional). Follow the instructions provided with the shelf accessories.

> **ATTENTION:** Use only the two holes indicated in the diagram below for mounting the MPA 152 Plus. The other four holes anchor stand-offs for the internal circuit boards; using them may damage the amplifier and will not provide secure mounting for the unit.
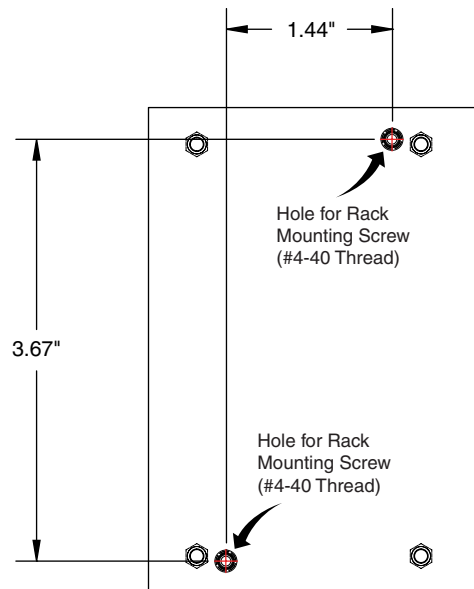

Figure 11. **Base of MPA 152 Plus to Show Mounting Holes**

Back of the Rack Mounting

Mount the unit at the back of a rack rail, following the instructions provided with the kit.

Other Mounting Options

- **Tabletop placement** — Place the unit in any convenient location.
- **Plenum placement** — The MPA 152 Plus amplifier complies with Section 300.22 (c) of the National Electrical Code and is suitable for use in an Environmental Air Space. It can be installed in the ceiling, out of sight, with reduced risk of theft.

> **ATTENTION:** Although the amplifier is plenum rated, the power supply provided with it is not. The power supply must not be placed in the plenum space. Cables to and from the amplifier must also be plenum rated. The DC power cord provided with the unit is not plenum rated.

- **Under-desk mounting** — Mount the unit under a desk or podium, following the instructions provided with the kit.
- **Pole mounting** — Mount the unit above a projector using a Pole Mounting Kit. Follow the instructions provided with the kit.
- **ZipClip 200 mounting** — Mount the unit under furniture or to a rack rail using the ZipClip 200. Follow the instructions provided with the mounting kit.

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:

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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	**Europe**:	31.33.453.4040
Asia:	65.6383.4400	**Japan**:	81.3.3511.7655

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.

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