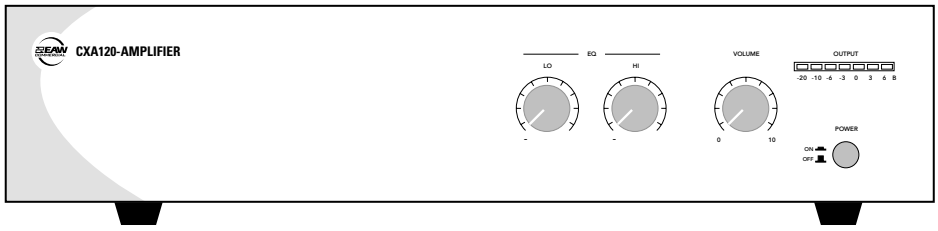
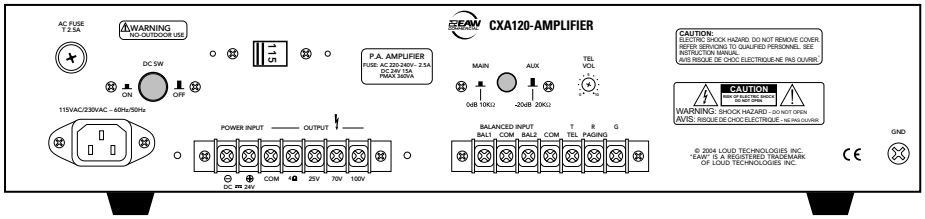
INSTRUCTION MANUAL

CXA120

Power Amplifier





CAUTION ***AVIS***

RISK OF ELECTRIC SHOCK • DO NOT OPEN

RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN ENTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE.
AVIS: POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE A LA PLUIE OU A L'HUMIDITE

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'éléctrocution.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

1. SAFETY INSTRUCTIONS

1. **Read Instructions** — Read all the safety and operation instructions before operating the Component.
2. **Retain Instructions** — The safety and operating instructions should be kept for future reference.
3. **HEED ALL WARNINGS** — Follow all warnings on the Component and in these operating instructions.
4. **FOLLOW ALL INSTRUCTIONS** — Follow all operating and other instructions.
5. **Water and Moisture** — Do not use the Component near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool, etc.
6. **Ventilation** — This Component should be situated so that its location or position does not interfere with its proper ventilation. For example, it should not be situated on a bed, sofa, rug, or similar surface that may block any ventilation openings, or placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through ventilation openings.
7. **Heat** — Locate the Component away from heat sources such as radiators, or other devices which produce heat.
8. **Power Sources** — Connect the Component to a power supply only of the type described in these operation instructions or as marked on the rear panel. If using an external DC power supply or battery pack, be sure the voltage corresponds to the range indicated on the rear panel, and that it is connected with the correct polarity.
9. **Power Cord Protection** — Route power supply cords so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit the Component.
10. **Object and Liquid Entry** — Do not drop objects into or spill liquids into the inside of the Component.
11. **Damage Requiring Service** — The Component should be serviced only by qualified service personnel when:

    A. The power-supply cord or the plug has been damaged; or

    B. Objects have fallen, or liquid has spilled into the Component; or

    C. The Component has been exposed to rain; or

    D. The Component does not appear to operate normally or exhibits a marked change in performance; or

    E. The Component has been dropped, or its chassis damaged.
12. **Servicing** — The user should not attempt to service the Component beyond those means described in this operating manual. All other servicing should be referred to the EAW Commercial Service Department.
13. **To prevent electric shock**, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Pour prévenir les chocs électriques ne pas utiliser cette fiche polariseé avec un prolongateur, un prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans laisser aucune pariie à découvert.

14. **Grounding or Polarization** — Precautions should be taken so that the grounding or polarization means of the Component is not defeated.
15. This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION —*Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.*

WARNING! *This equipment has been designed to be installed by qualified professionals only! There are many factors to be considered when installing professional sound reinforcement systems, including mechanical and electrical considerations, as well as acoustic coverage and performance. EAW Commercial strongly recommends that this equipment be installed only by a professional sound installer or contractor.*

TABLE OF CONTENTS

Part No. 0010171 Rev. B 04/04

Printed in China.

2. INTRODUCTION

The CXA120 is designed for continuous duty in speech, music, paging and sound reinforcement applications in churches, schools, offices, arenas, hotel meeting rooms, convention centers, recreation facilities and other venues demanding high performance, flexible features, and rugged dependability.

The CXA120 offers two discrete inputs with priority. The main program input is actively balanced and terminated to screw-terminal connections on the rear panel. The second input is a telephone/paging input, which is also actively balanced and terminated to a screw-terminal connection on the rear panel. The telephone/paging input has voice-activated priority over the main program input, and has an adjustable rear panel volume control.

The main input features a 0/–20 dB sensitivity switch for low-level and high-level input signals.

Output modes include 4Ω constant impedance, and 25 V, 70 V, and 100 V constant voltage. The smart output stage is fully protected against permanent damage caused by overloading, shorts, and extreme temperatures. The CXA120 operates on either 115 or 230 VAC, 50/60Hz, determined by a voltage select switch, and supplied by a detachable IEC power cord. A rear panel terminal strip connection is provided for connecting an external 24 VDC backup battery, with a rear panel DC power switch.

The front panel provides a master volume control, and controls for Bass and Treble. The Bass and Treble controls provide shelving equalization, with up to 10 dB of boost or cut at 100 Hz and 10 kHz.

A front panel meter indicates output signal strength, ranging from –20 dB to +6 dB.

KEY FEATURES

- One balanced/unbalanced Main Input
- One balanced/unbalanced Telephone Paging Input with Volume Trim Control and Voice-Activated Priority
- 120 watt rms, convection cooled
- 4 Ω – 25 V – 70 V – 100 V Outputs
- Discrete component power amplifier
- Switchable 24 VDC Backup Power Input
- 2 RU Rack-Mounting Kit Included

APPLICATIONS

- Foreground/Background Music Systems
- Sound Reinforcement Systems
- Paging Systems
- Continuous-duty Applications

3. FRONT PANEL FEATURES

1. EQ-LO

Turn this clockwise to boost the level of the low-frequency range below 100 Hz. Turn it counter-clockwise to cut the level. In the center position, there is no change in level. The maximum boost and cut is 10 dB at 100 Hz.

2. EQ-HI

Turn this clockwise to boost the level of the high-frequency range above 10 kHz. Turn it counter-clockwise to cut the level. In the center position, there is no change in level. The maximum boost and cut is 10 dB at 10 kHz.

3. VOLUME

Use this volume control to adjust the sound output level to your speakers.

4. LED METER

This meter shows the signal output level.

The left five LEDs represent the area between –20 dB and 0 dB. Adjust the Volume to keep your output within these levels.

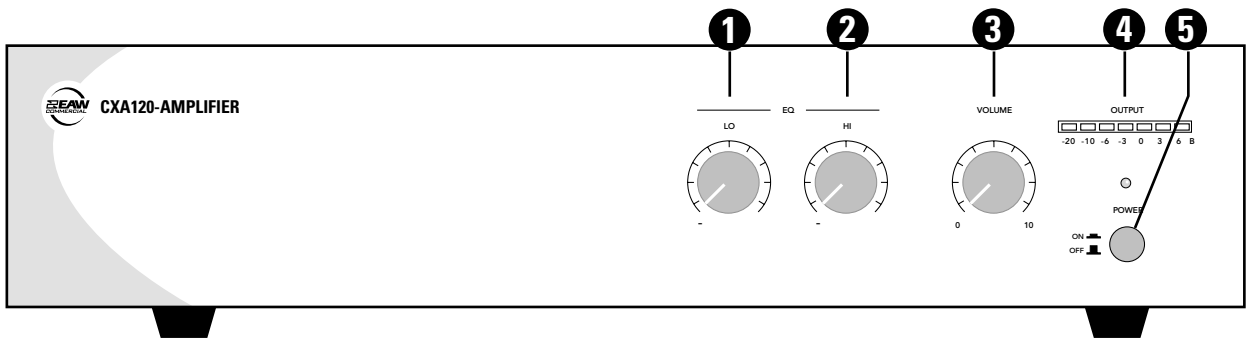
Turn down the Volume level so the two right LEDs do not light, otherwise the outgoing signal will clip and distort.

5. POWER and POWER LED

Use this switch to turn the unit on or off. This connects/ disconnects the AC power to the AC power transformer.

The unit is on when the switch is pressed in, and the LED above the power switch lights.

The unit is off when the switch is in the out position.



4. REAR PANEL FEATURES

6. AC FUSE

The main AC fuse provides protection if the current draw of the unit is excessive.

Make sure that the power cord is unplugged before removing or checking the AC fuse. When you are sure that all is safe, undo the fuse cover with a cross-head screwdriver, taking care not to damage the cover or fuse. Replace the fuse only with the same type and rating as marked on your unit.

7. IEC AC INPUT

The supplied power cord connects here. Check that the voltage setting of the VOLTAGE CONVERSION (9) switch is the same as your local AC Mains voltage before plugging in the power cord. Make sure that your local AC Mains is capable of supplying adequate current.

8. DC POWER SWITCH

If this switch is pressed in, the unit will automatically switch to external DC battery power whenever (or if-ever) your local AC power fails. You will need to connect an external 24-volt battery to the DC battery terminals (12).

If the switch is out, the battery will not power up the unit.

9. VOLTAGE CONVERSION

The unit can be configured to operate at 115 VAC or 230 VAC.

Be sure this switch is set to the correct position for the AC power supply being used, before plugging in the power cord. The switch can be moved with a small flat screwdriver, once the protective cover is removed. Replace the cover afterwards.

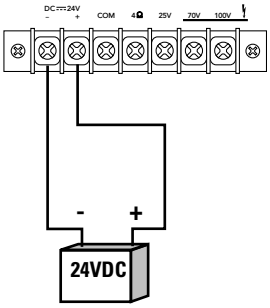
10. INPUT SENSITIVITY

This adjusts the gain of the input section.
If you have a weak input signal, leave this switch out.
If you have a strong signal, press this switch in.

11. TEL VOLUME

This controls the volume of any signals connected to the TELEPHONE PAGING (15) input terminals. Adjust it to suit your taste, so any pages are heard clearly. Turn this down if you are not using these input terminals.

12. DC BATTERY TERMINALS

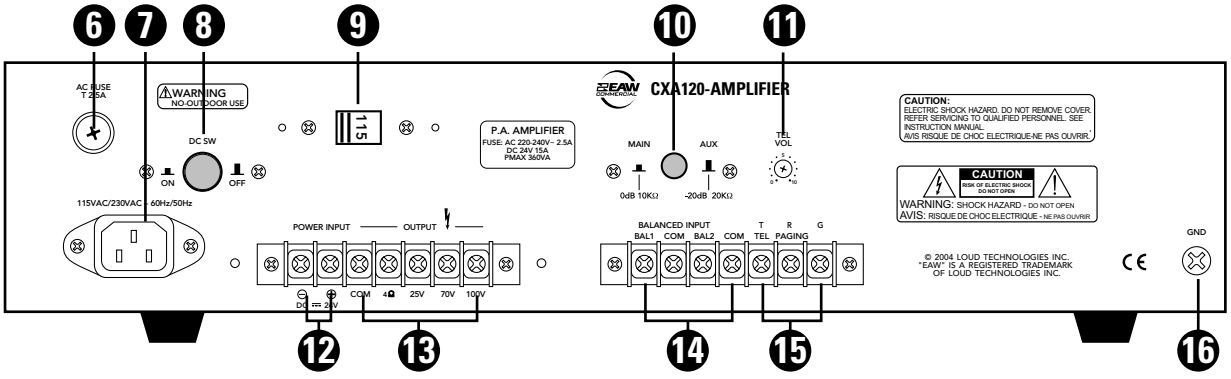


These two screw terminals are used to connect an optional external 24 VDC battery.

Make absolutely sure the positive post of your battery goes to the positive terminal, and the negative post conncts the the negative terminal.To minimize the voltage drop across the wires and prevent overheating, use at least 14 AWG wire.

The unit can be powered using a 24 VDC power supply (if the rear panel DC POWER SWITCH is pressed in). This serves as a backup supply in case of an AC power failure. The unit seamlessly switches to the backup supply if there's a power loss, allowing safety instructions and emergency communications to continue. When both AC power and 24 VDC power are connected, the AC power is used and no current is drawn from the DC supply.

Note: The unit will not charge the battery, so you should have a dedicated charging system. Note also, that when running on DC power, the output is lower than when running on AC power.



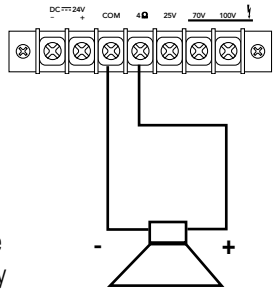
13. OUTPUT TERMINALS

This terminal is normally covered by a protective cover. Remove the two screws and the cover while making or undoing connections. Securely refit the cover when you have finished making the connections.

The five output terminals are labeled COM, 4 Ω, 25 V, 70 V and 100 V.

CONSTANT IMPEDANCE

To connect a speaker directly, connect the COM terminal to the negative post of your speaker, and connect the 4 Ω terminal to the positive post.



⚠ Make sure that your average speaker impedance is not less than 4 Ω, as this may overload the amplifier.

The speaker output connectors are screw terminals. Use 16 or 18 gauge wire for connecting the amplifier outputs to the speakers. Strip the wire back about 3/8" inch, loosen the screw enough to loop the wire around the shaft of the screw (clockwise), and tighten down the screw with a screwdriver.

CONSTANT VOLTAGE

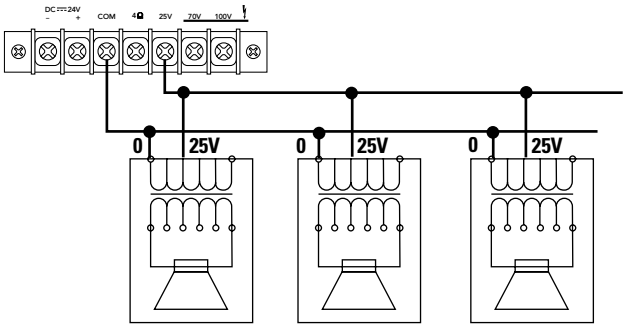
If you are using a constant-voltage distributed speaker system, connect either the 25 V, 70 V, or 100 V output terminal to the "+" side of the speaker system, and connect the "COM" output terminal to the "–" side of the speaker system.

⚠ The voltage of your speakers must equal the voltage of the amplifier's output terminal (25 V, 70 V, or 100 V).

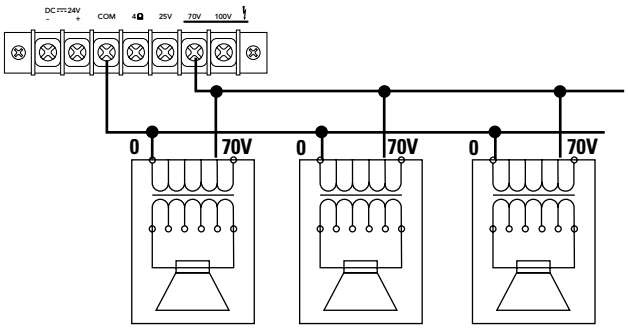
Make sure that the taps on the speakers add up to no more than 90% rated power (108 W for the CXA120).

⚠ **CAUTION:** To prevent the risk of electric shock, never touch the bare wires coming from the OUTPUT TERMINALS of the amplifier when it is switched on. When the connections have been made, insulate the 25 V, 70 V, and 100 V terminals of the amplifier using the protective cover supplied.

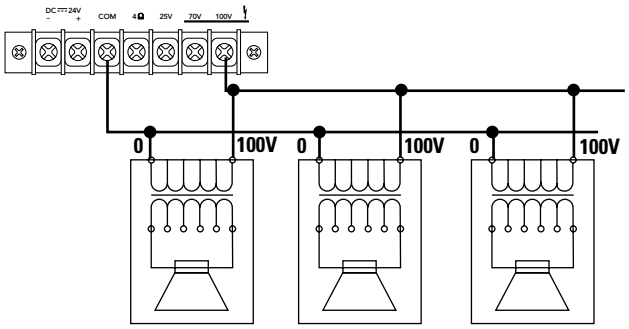
COM and 25V are used to connect a string of 25V speakers. Use Class II or Class I wiring:

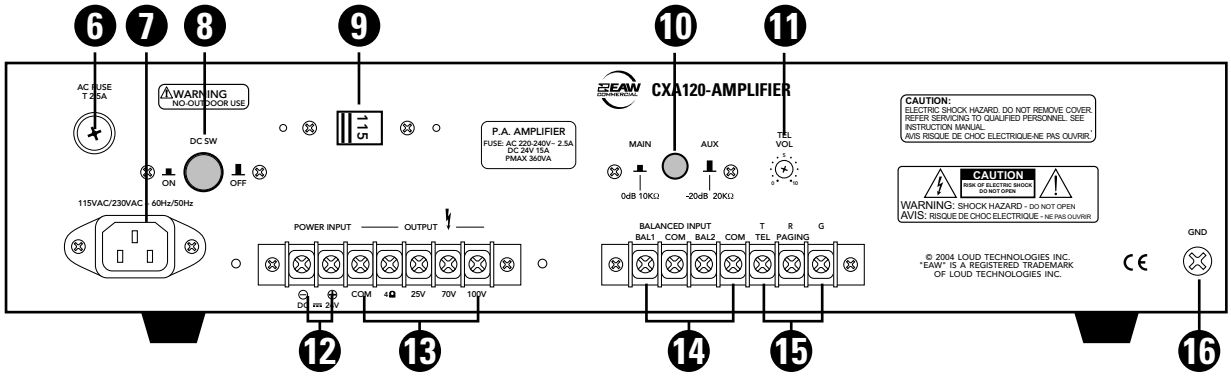


COM and 70V are used to connect 70V speakers. Use Class I wiring:



COM and 100V are used to connect 100V speakers Use Class I wiring:



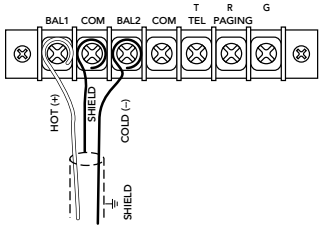


14. INPUT TERMINALS

The Input has a balanced screw terminal connector that accepts an audio line-level mono signal. The screw terminals should be connected as shown in the following figures:

Balanced connection:

HOT (+) connects to BAL1, Cold (-) connects to BAL 2, and the shield connects to COM.



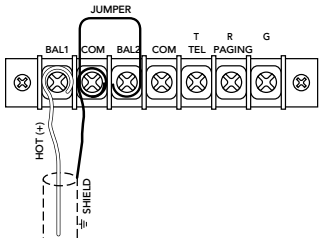
Strip the wire back about 1/2" inch, loosen the screw enough to loop the wire around the shaft of the screw (clockwise), and tighten down the screw with either a slot-head or phillips-head screwdriver.

Use high-quality, three-conductor shielded cable for balanced connections. The better the shield, the better the audio signal is protected from induced EMI and RFI.

Unbalanced connection:

If connecting an unbalanced line-level signal to the Input, wire the connections as shown in the following figure:

HOT (+) connects to BAL1, the shield connects to COM, and an insulated jumper connects COM to BAL2.



15. TELEPHONE PAGING TERMINALS

These 300 ohm input terminals allow you to connect an auxiliary input. The volume level of this input is adjusted using the rear panel TEL VOL (11) level control.

Any signals present at these terminals take voice priority over the main input. An internal adjustment pot is provided for adjusting the threshold of the voice priority circuit (see page 10).

16. GROUND (EARTH) SCREW

The chassis connects to ground via the AC ground, and normally does not need any extra ground connection. Connections, if required, should be made by experienced, qualified electricians.

5. THERMAL CONSIDERATIONS

The power amplifier within the unit is convection cooled rather than fan cooled. Heat is drawn away from the amplifier by the heatsink and radiated through the cooling vents in the top cover.

When installing, be sure to allow sufficient air space around the top and rear of the amplifier to allow adequate cooling for the heatsink. Leave at least one rack space above and below, and at least 6 inches behind the chassis to allow proper ventilation.

If the amplifier should overheat, a thermal switch turns off the power amplifier, allowing the heatsinks to cool down. Once the amplifier has cooled to a safe operating temperature, the thermal switch resets and reactivates the amplifier. If this should occur, identify the cause of the problem and take corrective action. For example:

- Provide better ventilation
- Install a fan in the rack to move more air
- Make sure the amplifier is not overloaded with too low of a load impedance or by a short circuit on the speaker line

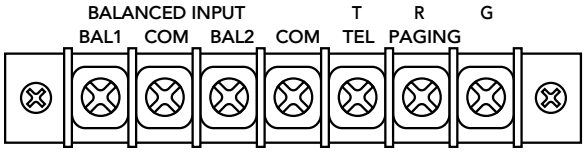
RACK MOUNTING

Two rack ears are provided to allow the unit to be fitted within a standard 19" rack.

Remove two front screws from each side, and securely fit each rack ear in place. The unit still needs to be supported underneath, due to the weight of the power and output transformers.

6. CONNECTIONS

Here are some common audio connectors and their internal wiring. This may help you wire up to the screw terminal inputs of your unit. You can see which pins of the connectors are usually hot, cold, or ground.

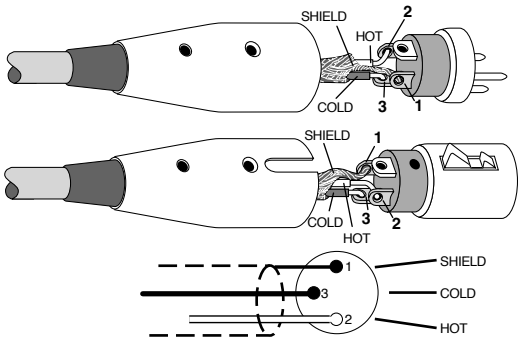


On your unit:

BAL1 = Hot (+)
COM = Shield
BAL2 = Cold (–)

XLR Connectors

XLR connectors are commonly wired as follows (according to standards specified by the Audio Engineering Society):

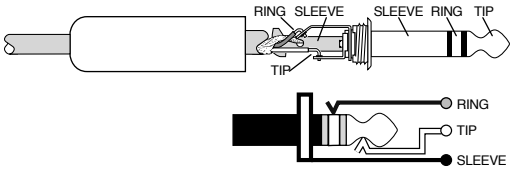


XLR Balanced Wiring

Pin 1 = Shield
Pin 2 = Hot (+)
Pin 3 = Cold (–)

1/4" TRS Phone Plugs and Jacks

"TRS" stands for Tip-Ring-Sleeve, the three connections available on a stereo 1/4" or balanced phone jack or plug. TRS jacks and plugs are used for balanced signals and stereo headphones.

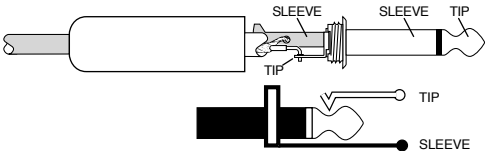


1/4" TRS Balanced wiring

Sleeve = Shield
Tip = Hot (+)
Ring = Cold (–)

1/4" TS Phone Plugs and Jacks

"TS" stands for Tip-Sleeve (famous Olympic hurdler), the two connections available on a mono 1/4" phone jack or plug. They are used for unbalanced signals.



1/4" TS Unbalanced Wiring

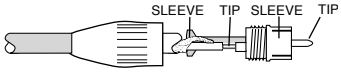
Sleeve = Shield
Tip = Hot (+)

RCA Plugs and Jacks

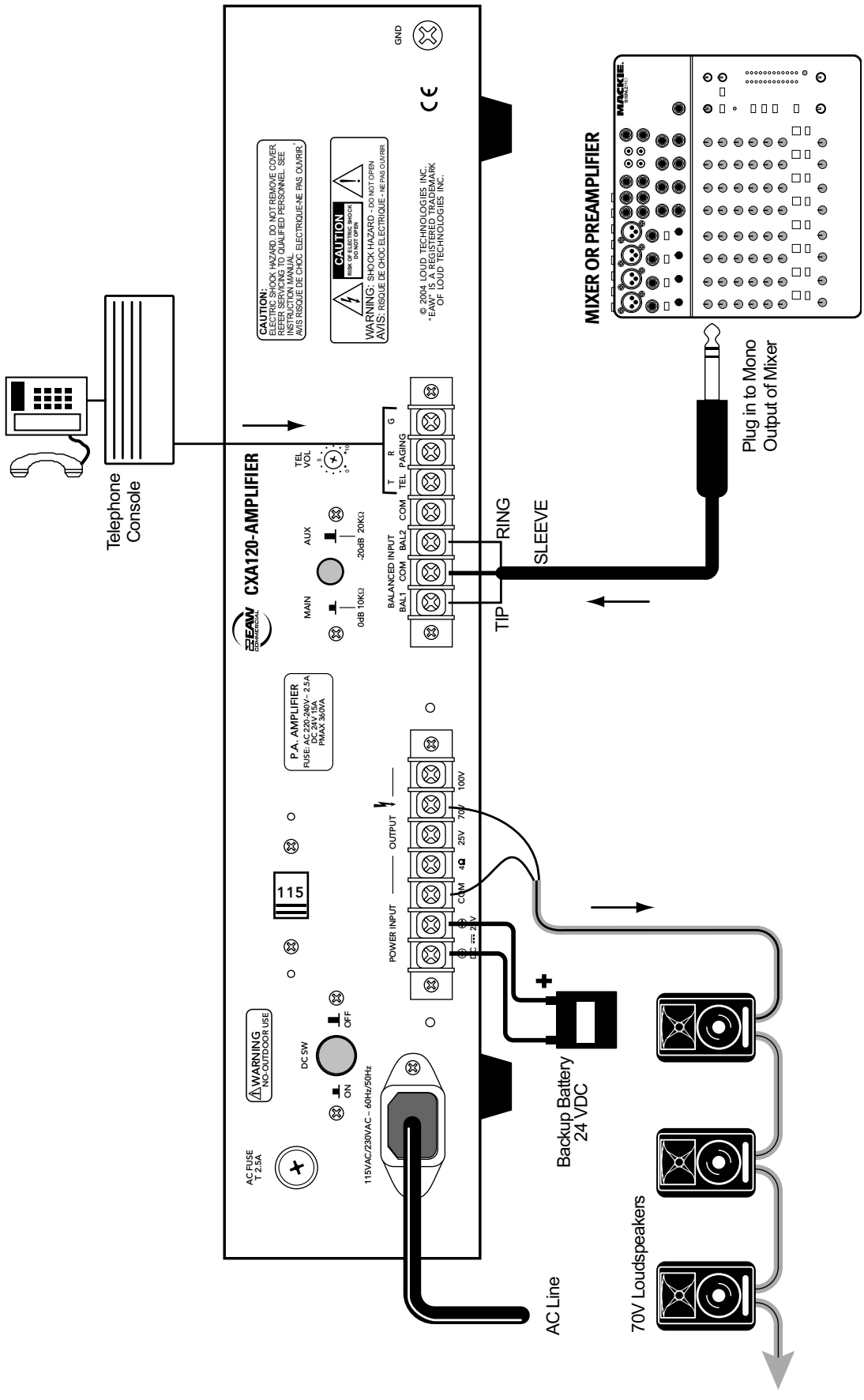
RCA-type plugs (also known as phono plugs) and jacks are often used in home stereo and video equipment and in many other applications. They are unbalanced and electrically equivalent to a 1/4" TS phone plug.

RCA Unbalanced Wiring

Sleeve = Shield
Tip = Hot



7. TYPICAL HOOKUP DIAGRAM



8. SPECIFICATIONS

Performance

Amplifier Power:	120 W, nominal, 180 W peak (10 mS)
Frequency Response:	50 Hz–15 kHz ±3 dB
Distortion:	< 0.5% THD at 1 kHz nominal power
Noise:	>75 dB

Equalization

Output:	
EQ-HI:	±10 dB at 10 kHz
EQ-LO:	±10 dB at 100 Hz

Audio Inputs

Main Input Type:	One balanced/unbalanced screw-terminal connectors with switchable input level
Main Input Sensitivity:	1 V balanced/0.5 V unbalanced
Aux Input Sensitivity:	100 mV balanced/50 mV unbalanced
Main Input Impedance:	10 kΩ
Aux Input Impedance:	20 kΩ
Tel/Paging Input Type:	One balanced/unbalanced screw-terminal connector with adjustable input level
Tel/Paging Input Impedance:	300 Ω

Audio Outputs

Number of Channels:	One
Low Impedance:	4 Ω
Constant Voltage:	25 V, 70 V, 100 V Screw-terminal connectors (15 Ω, 42 Ω, 83 Ω)

Controls

Front Panel:	Power switch and LED, Master Volume, EQ-LO, EQ-HI
Rear Panel:	Telephone Paging output volume level, Input sensitivity switch, 24 VDC on/off switch,

AC Power

Power supply:	115/230 VAC (±5%), 50/60 Hz, 2.5 A fuse 24 VDC (battery), 15 A fuse
Power Consumption:	285 W

Environment

Maximum Ambient:	131° F (55° C) Non-precipitating humidity

Physical

Dimensions (HxWxD):	3.9 in/100 mm x 17.1 in/435 mm x 13.2 in/335 mm
Weight:	19.4 lb/8.8 kg

Warranty

5 years, parts and labor

Accessories

Rack-mount kit

DISCLAIMER

EAW Commercial continually engages in research related to product improvement, new materials, and production methods. Design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current EAW Commercial product may differ in some respect from its published description, but will always equal or exceed the original design specifications unless otherwise stated.

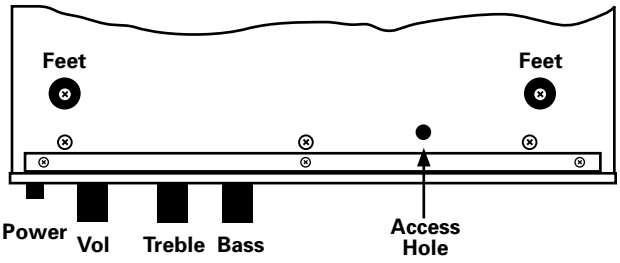
VOICE PRIORITY ADJUSTMENT

The amplifier has an internal adjustment potentiometer (on the front circuit board) that allows you to set the level at which the voice priority circuit activates.

For example, suppose that only **loud** talking into a telephone paging microphone will mute the main input's music program. This potentiometer can adjust the voice priority sensitivity until it takes only moderate or low volumes to mute the music.

⚠ Please note that the following adjustment is for qualified and experienced electronics technicians only, carefully trained in all aspects of ESD (electro-static discharge) precautions and electronics safety.

1. Make sure the unit is switched off, and that the power supply cord and all other cords are removed.
2. Turn the unit upside down and place it on a soft flat surface.
3. Look along the bottom edge of the front panel and you will see a small access hole in the bottom panel. Inside the hole you will see a small potentiometer, R45 on the front panel circuit board.



4. Using an insulated small phillips screwdriver, gently rotate this pot to change the sensitivity (clockwise for more sensitivity, i.e., less intense signals will mute the input).
5. When finished, verify that the Telephone paging will suitably mute the main input, without having to shout.

9. SERVICE INFORMATION

In the event that your CXA120 should require servicing, please follow these instructions:

1. Call EAW Commercial Tech Support at 1-888-337-7404, 7 am to 5 pm PST (Monday-Friday), to verify the problem and obtain a Return Authorization (RA) Number. Be sure to have the serial number of the unit when you call. You must have a Return Authorization Number in order to obtain warranty service at the factory or at an authorized service center. You can also email EAW Commercial Tech Support at: support@eawcommercial.com
2. Pack the unit in its original packaging. THIS IS VERY IMPORTANT. EAW Commercial is not responsible for any damage that occurs during shipping due to non-conventional packaging. Original packaging helps to minimize the possibility of shipping damage.
3. Include a legible note stating your name, (no P.O. boxes), daytime phone number, Return Authorization Number, and a detailed description of the problem, including how we can duplicate it.
4. Write the Return Authorization Number in BIG BOLD PRINT on the top of the box.
5. Tech Support will tell you where to ship the unit when you call for an RA Number. We suggest insurance for all forms of cartage.

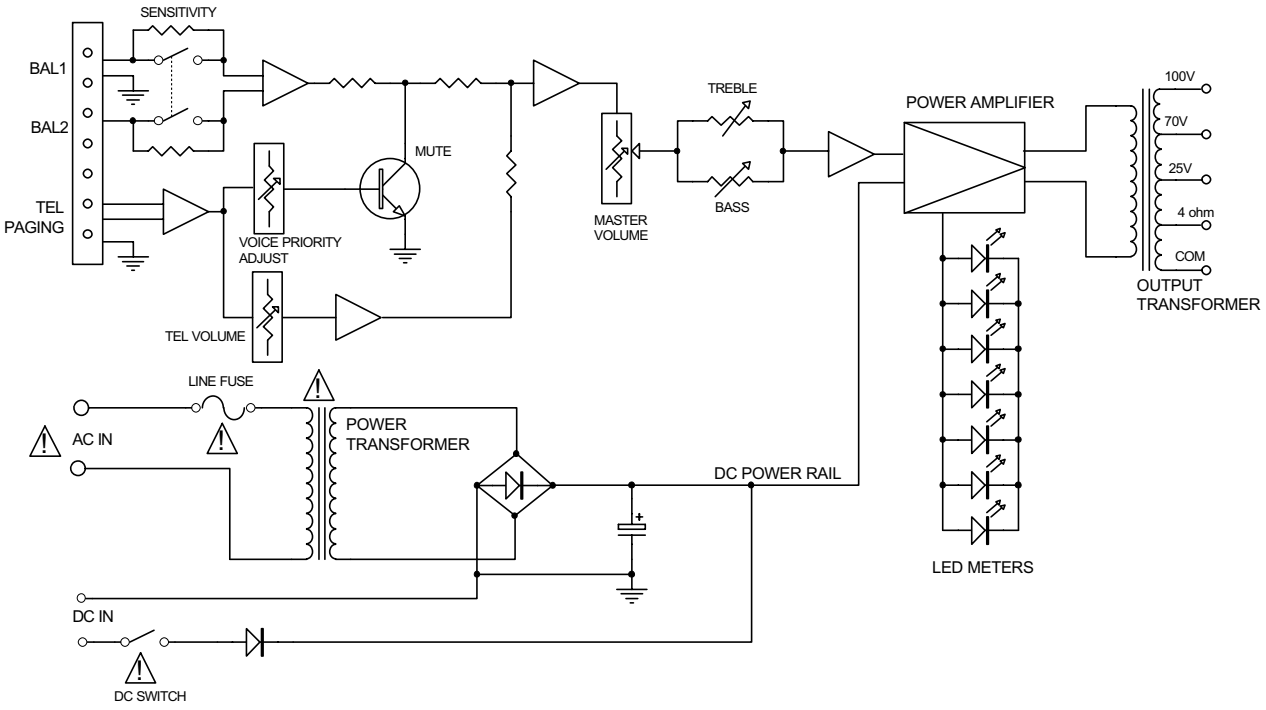
10. EAW COMMERCIAL WARRANTY

Warranty: LOUD Technologies Inc. requires its authorized EAW Commercial distributors to abide by the following warranty terms for all EAW Commercial brand products (all dates are from the date of delivery from an Authorized EAW Commercial Distributor to the end user/installation site): Loudspeakers – 5 years; Active Electronics – 5 years; Accessories – 2 years.

What Is Covered: Defects in workmanship and materials and against malfunctions. EAW Commercial distributors must remedy all such defects and malfunctions without charge for parts or labor if the warranty applies. Final determination of warranty coverage lies solely with each authorized EAW Commercial distributor.

What Is Not Covered: This warranty does not extend to damage or malfunctions resulting from, but not limited to, shipment, improper installation, misuse, neglect, abuse, normal wear, accident, or to any product on which the serial number has been modified or removed. Exterior defects in or damage to the exterior appearance are specifically excluded from this warranty. EAW Commercial distributors shall not be liable for incidental or consequential damages resulting from the use of EAW Commercial products. Repairs and/or modifications by other than an Authorized EAW Commercial Distributor automatically voids this warranty.

CXA120 BLOCK DIAGRAM



EAW Commercial A LOUD Technologies Inc. Company

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