

CLEVER

..... a c o u s t i c s

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MA 360 100V 60W Mixer Amplifier

Order code: CRAM07

MA 3120 100V 120W Mixer Amplifier

Order code: CRAM08

MA 3240 100V 240W Mixer Amplifier

Order code: CRAM09

USER MANUAL
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WARNING



**FOR YOUR OWN SAFETY, PLEASE READ THIS USER MANUAL CAREFULLY
BEFORE YOUR INITIAL START-UP!**

	<p>CAUTION!</p> <p>Keep this equipment away from rain, moisture and liquids.</p>	
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SAFETY INSTRUCTIONS

Every person involved with the installation, operation & maintenance of this equipment should:

- Be competent
- Follow the instructions of this manual

	<p>CAUTION! TAKE CARE USING THIS EQUIPMENT! HIGH VOLTAGE-RISK OF ELECTRIC SHOCK!!</p>	
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Before your initial start-up, please make sure that there is no damage caused during transportation. Should there be any, consult your dealer and do not use the equipment.

To maintain the equipment in good working condition and to ensure safe operation, it is necessary for the user to follow the safety instructions and warning notes written in this manual.

Please note that damages caused by user modifications to this equipment are not subject to warranty.

IMPORTANT:

The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual or any unauthorised modification to the equipment.

- Never let the power-cable come into contact with other cables. Handle the power-cable and all mains voltage connections with particular caution!
- Never remove warning or informative labels from the equipment.
- Do not open the equipment and do not modify the equipment.
- Do not switch the equipment on and off in short intervals, as this will reduce the system's life.
- Only use the equipment indoors.
- Do not expose to flammable sources, liquids or gases.
- Do not carry the unit with only one handle. Always carry using both handles.
- Always disconnect the power from the mains when equipment is not in use or before cleaning! Only handle the power-cable by the plug. Never pull out the plug by pulling the power-cable.
- Make sure that the available voltage is between 220V-240V.
- Make sure that the power-cable is never crimped or damaged. Check the equipment and the power-cable periodically.
- If the equipment is dropped or damaged, disconnect the mains power supply immediately.
Have a qualified engineer inspect the equipment before operating again.
- If the equipment has been exposed to drastic temperature fluctuation (e.g. after transportation), do not switch it on immediately. The arising condensation might damage the equipment. Leave the equipment switched off until it has reached room temperature.
- If your product fails to function correctly, discontinue use immediately. Pack the unit securely (preferably in the original packing material), and return it to your Prolight dealer for service.
- Only use fuses of same type and rating.
- Repairs, servicing and power connection must only be carried out by a qualified technician. THIS UNIT CONTAINS NO USER SERVICEABLE PARTS.
- WARRANTY; One year from date of purchase.
- If this equipment is operated in any other way, than those described in this manual, the product may suffer damage and the warranty becomes void.
- Incorrect operation may lead to danger e.g.: short-circuit, burns, electric shocks.
- Do not endanger your own safety and the safety of others!
Incorrect installation or use can cause serious damage to people and property.

This 100V line mixer amplifier was designed specifically for use in permanent audio installations, where reliability and premium sound quality are a must. Highly rugged construction and high efficiency design make this amplifier perfect for continuous duty applications in situations where power will be left on for indefinite periods of time.

This 100V line amplifier is warranted from defects for one year from the date of purchase. Should your amplifier require service, either within or beyond that warranty period, please contact your Prolight Dealer.

This unit includes a host of features, along with an impressive list of specifications, which are detailed over the next pages. Please take the time to read this document completely prior to installation of this product.

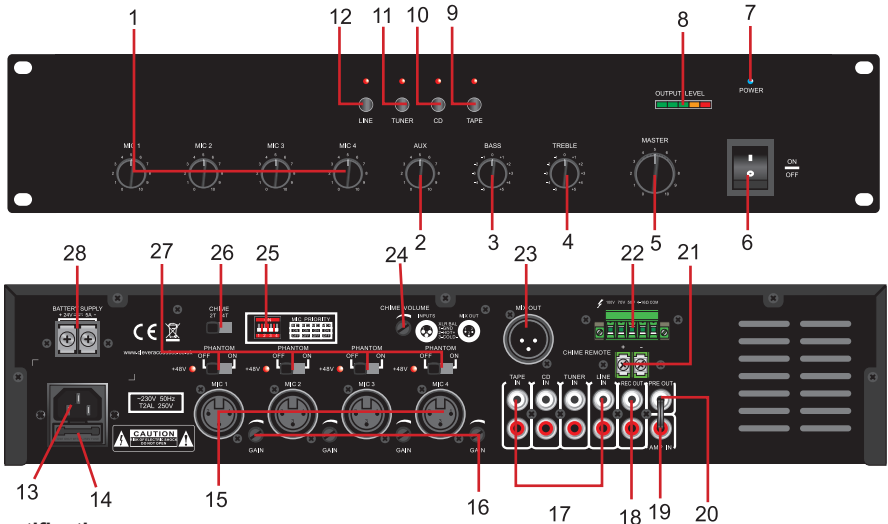
The Mixer Amplifier series is equipped with priority function. They are designed to suit PA system application in schools, offices and stores.

Features

- 50V, 70V, 100V and low impedance 4-16Ω loudspeaker output
- Four balanced XLR microphone inputs with phantom power, selectable priority, gain and volume control
- 4 stereo RCA line inputs with front panel selector switch
- Built-in chime function with 2/4 tone selector and external trigger contact
- Balanced XLR line output suitable for use with external power amplifiers
- REC output for tape recorder
- PRE-AMP output and PRE-AMP input for extra signal processor
- Master, MIC 1-4, AUX volume
- Bass and treble controls
- Optional DC input for use with battery backup power sources or for operation using high capacity batteries
- LED VU meter with peak indication
- Fan cooled

Specifications	MA 360	MA 3120	MA 3240
Power output:	60Wrms / 75W peak	120Wrms / 135Wpeak	240Wrms / 255Wpeak
Speaker outputs:	50V, 70V, 100V & 4-16Ω	50V, 70V, 100V & 4-16Ω	50V, 70V, 100V & 4-16Ω
Microphone inputs:	4 x XLR balanced with phantom power	4 x XLR balanced with phantom power	4 x XLR balanced with phantom power
Sensitivity:	-50 / -2dB, 2.5 / 500mV	-50 / -2dB, 2.5 / 500mV	-50 / -2dB, 2.5 / 500mV
S/N ratio:	>68dB	>68dB	>68dB
Frequency response:	40Hz-17kHz (±3dB)	40Hz-17kHz (±3dB)	40Hz-17kHz (±3dB)
Phantom power:	+48V	+48V	+48V
4 Auxiliary inputs:			
Tuner and tape inputs (sensitivity/impedance):	200mV / 47kΩ	200mV / 47kΩ	200mV / 47kΩ
CD and line input (sensitivity/impedance):	500mV / 47kΩ	500mV / 47kΩ	500mV / 47kΩ
S/N ratio:	90dB	90dB	90dB
Frequency response:	40Hz-18kHz	40Hz-18kHz	40Hz-18kHz
Control:			
Bass:	±12dB	±12dB	±12dB
Treble:	±12dB	±12dB	±12dB
Chime:	2 tone and 4 tone options	2 tone and 4 tone options	2 tone and 4 tone options
Outputs:			
Output level/impedance:	775mV / 47kΩ	775mV / 47kΩ	775mV / 47kΩ
Output REC/impedance:	200mV / 1kΩ	200mV / 1kΩ	200mV / 1kΩ
Distorsion:	<0.1%	<0.1%	<0.1%
Cooling:	Fan cooled	Fan cooled	Fan cooled
Power consumption:	100W	200W	400W
DC power supply:	24V	24V	24V
AC power supply:	240V-50Hz	240V-50Hz	240V-50Hz
Dimensions (H x W x D):	88 x 484 x 353mm	88 x 484 x 353mm	88 x 484 x 353mm
Weight:	10.1kg	10.9kg	17.9kg
Order code:	CRAM07	CRAM08	CRAM09

Overview:



Identification:

1. MIC 1/2/3/4 Volume Control:

Level (volume) control of each individual microphone input.

2. Aux Volume Control:

Level (volume) control of the Line, Tuner, CD and Tape inputs.

3. Bass Tone Control:

Adjust clockwise to increase or anti-clockwise to decrease the low frequency (bass) contour for the overall system.

4. Treble Tone Control:

Adjust clockwise to increase or anti-clockwise to decrease the high frequency (treble) contour for the overall system.

5. Master Volume Control:

Level (volume) control for the overall system. Turn clockwise to increase the volume, turn anti-clockwise to decrease the volume.

6. Power On/Off Switch:

Switch to the “I” position to switch the amplifier on, switch to the “O” position to switch the amplifier off. The amplifier should be powered off while before any connections are made.

7. Power LED:

Indicates the mixer amplifier is powered on and ready for use. If the Power LED is not lit please check the fault finding table in this manual.

8. Output Level Indicator:

Five segment LED indicator array to indicate the output state of the amplifier. During normal operation the Green LED’s should illuminate with only occasional illumination of the Orange segment. Should the Red (Peak) LED illuminate the output level of the amplifier needs to be reduced using the Master Volume Control (5).

9. Tape Selector Switch:

Press to select Tape input as music (AUX) source. Pressing this selector switch will release the other AUX inputs.

10. CD Selector Switch:

Press to select CD input as music source. Pressing this selector switch will release the other AUX inputs.

5.

11. Tuner Selector Switch:

Press to select Tuner input as music source. Pressing this selector switch will release the other AUX inputs.

12. Line Selector Switch:

Press to select Tuner input as music source. Pressing this selector switch will release the other AUX inputs.

13. Mains Power Inlet:

Connect the amplifier only after having made sure that the right voltage (240V) is supplied and that the ground lead is earthed. This product falls under Class 1. Do not detach the ground lead.

14. Mains Fuse

Should the mains fuse require replacement use a direct replacement of the same value (F2A-250V)

15. XLR MIC Inputs:

Balanced XLR inputs suitable for dynamic or condenser microphones. Each microphone input features gain control (16) and Phantom Power (28). When adjusting the input gain, make certain that the levels are not set too high, or distortion will result.

16. Microphone Gain Controls:

Adjustable gain controls allowing input levels to be matched. If the microphone signal sounds distorted decrease the input signal level by turning the gain adjustment anti-clockwise.

17. Tape, CD, Tuner and Line Inputs:

Line level audio inputs suitable for use with a variety of music sources. Input connectors are unbalanced phono sockets. When adjusting the input gain, make certain that the levels are not set too high, or distortion will result.

18. Record Output Sockets:

Fixed level line out sockets suitable for use with audio recorders or for input into Induction Loop systems.

19. Amp Input Socket:

This input connects an external mixer or preamp with the unit's power amp. Removing the solid link between Amp In and Pre-Out will disconnect all input signal from the unit's internal mixer. Only signal from the external source will be heard. A typical application for this would be to use a large, multi-input mixer externally and then utilising the MA Series internal amplifier as a power amplifier only.

20. Pre-Out Output Socket:

This output connects the unit with an external power amplifier. Removing the solid link between Amp In and Pre-Out jack will disconnect signal to the unit's power amp, sending the output of the internal mixer to the external amplifier. A typical application for this would be to use the internal mixer function of the MA Series amplifier and then feed the signal to a larger external power amplifier.

21. Chime Trigger:

Pressing this switch activates the one shot chime.

22. Speaker Output Terminals:

The MA Series is fitted with a Phoenix type speaker terminal to facilitate easier connections within tight spaces. Only one pair of terminals can be used at any one time (ie COM+4-16 ohm OR COM+50V OR COM+70V OR COM+100V). Do not use both low impedance (4-16 ohm) and 50/70/100V outputs simultaneously.

23. Mix Output Socket:

Balanced XLR line level output suitable signal output to slave amplifiers.

24. Chime Volume Control:

Volume (level) control for the built-in chime function.

25. Microphone Priority Dipswitches:

Each of the microphone inputs can be allocated a priority function to override the Line level inputs (17). Move the dipswitch to the ON position for the corresponding microphone input. Mic1 will always have the highest priority and will override other Mic inputs.

26. Chime Tone Selector:

The MA series mixer amplifier features two selectable Chime tones.

27. Phantom Power:

Selectable phantom power for each of the four microphone inputs, the phantom power is generally used to power condenser type microphones. All cabling and connections must be fully balanced and wired with 2-core screened cable while using phantom power. Connections must be made and phantom power switched on before powering the amplifier on.

28. DC Power Input:

The MA Series features a DC power input for use with battery backup systems or for use from high capacity batteries in remote locations.

Rack Installation

The MA Series are rack mountable. The rack you use should be a double door rack where you can open the front and rear panel. When mounting the amplifier into the rack, please make sure that there is enough space around the amplifier.

Be careful when mounting the amplifier into the rack. Put the heaviest products into the lower part of the rack. Be aware that fastening the amplifier with four screws on the front panel is not enough.

Inputs

Short cables runs improve the sound quality remarkably. Input cables should be short and direct, since high frequencies will mostly be absorbed if the cables are unnecessarily long. Besides that a longer cable may lead to humming and noise problems. If the cable runs are unavoidable, you should use balanced cables.

Outputs

The high damping factor of your amplifier supplies a clear sound reproduction. Unnecessarily long and thin cables used for low impedance (4-16Ω) speakers will influence the damping factor and thus the low frequencies in a negative way. In order to safeguard good sound quality, the damping factor should lie around 50. The longer a cable has to be the thicker it should be. For longer cable runs please ensure the 100V outputs are used for 100V speakers.

Connect your speaker systems via the speaker terminals (COM = -VE)

- Examples:** 1) COM + 4-16Ω
2) COM + 50V
3) COM + 70V
4) COM + 100V

Note: Please do not use more than one pair of output terminals

Connections To The Mains

Before connecting the amplifier to the local mains voltage outlet should be checked to ensure the available supply is 240V~AC 50Hz. This product is CLASS1 and requires a protective mains earth to be connected at all times. DO NOT remove or disconnect the earth.

Power On/Off Procedure

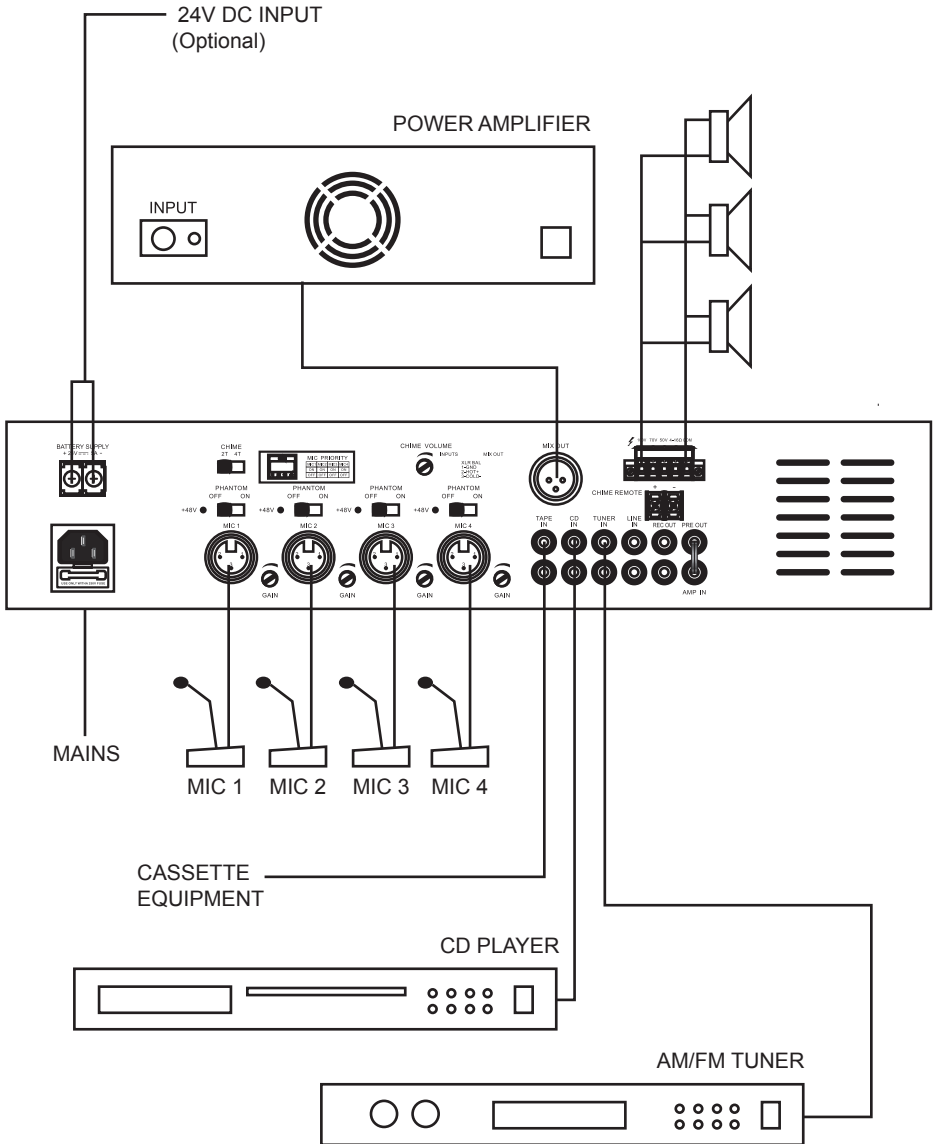
After connecting your amplifier to the mains, turn all controls counter clockwise to the “min” position. Turn on audio sources (MP3 players, CD players, Microphones etc) before powering the amplifier ON. The last product to be switched on is the amplifier.

If you wish to power off the system, turn the amplifier’s master volume control counter clockwise to the “min” position before switching the amplifier OFF before any audio sources are switched off. By following this procedure it will prevent acoustic shocks to the speakers or potential damage to system components.

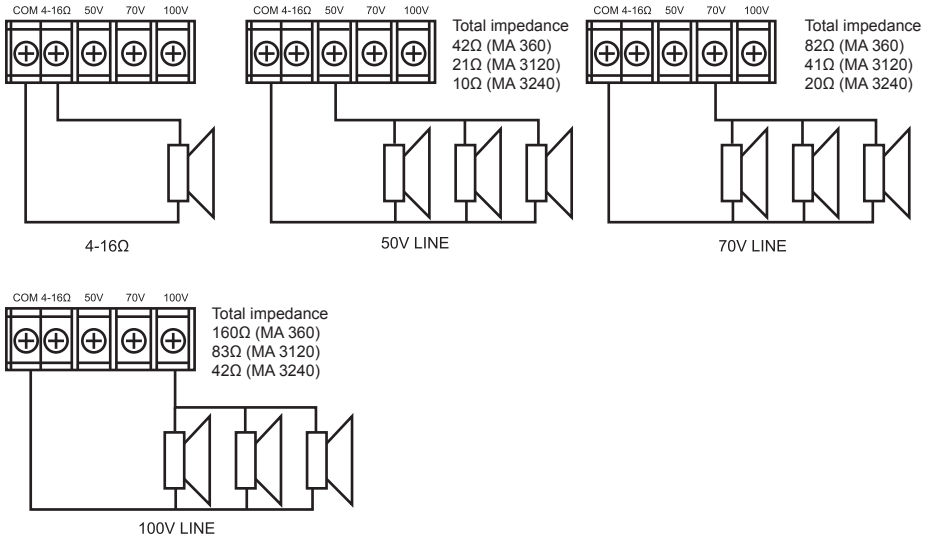
MACHINE OPERATION

1. After connecting all audio sources and powering on the mixer amplifier, adjust the level of each audio input to achieve the desired “mix”. Care should be taken to when adjusting microphone input volumes and the master volume, adjust both of these in small increments to avoid feedback (howl around). The goal is to achieve a clear balance between music and voice ensuring announcements can be clearly heard.
2. The Microphone inputs feature selectable & adjustable voice operated override (VOX), this will mute all other inputs. After 3 seconds of no input to the MIC inputs the other inputs will return to their original state. The VOX mute level can be adjusted on the rear panel. The TEL input has highest priority, followed by the MIC1.
3. The Clever Acoustics amplifiers feature output VU meter’s with PEAK indication. Should the PEAK indicator illuminate (flashing) the output of the amplifier is too high, turn the master volume anti-clockwise to reduce the output.
4. Speaker & Amplifier systems can produce high sound pressure levels, please operate all controls with caution to ensure people are not exposed to excessive or dangerous sound pressure levels.

Panel Connections:




Speaker connections:



Notes:


- Both the 4 - 16Ω and 100V terminals cannot be used at the same time.
- Impedances indicated in the figures represent the total speaker system (load) impedances. Loads presented to the amplifier must be equal to or greater than listed above. Speaker impedances must be measured using a true impedance meter, do not standard multimeters.



WARNING!

Be sure to attach the supplied terminal cover attached after connection. Because high voltage is applied to the speaker terminals, car should be taken never touch these terminals to avoid electric shock.

All speaker connections should be made using bare wire or suitable insulated crimp terminals. Please ensure no loose strands are present as these may short across terminals causing damage to the amplifier



Connection With The Mains

Connect the unit to the mains via the IEC mains inlet using the 13A UK - IEC cord supplied.

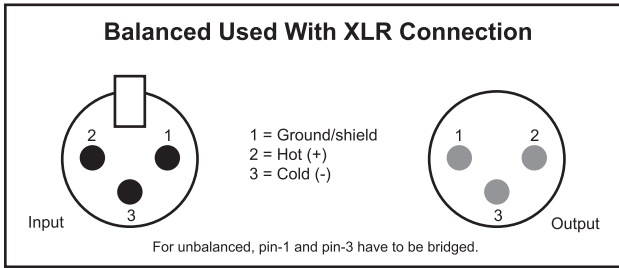
The earth has to be connected.

Switch the unit on. After switching on the speaker system, wait 8 - 10 seconds before you turn the volume control up in order to avoid speaker damage.

CAUTION! Increase the level of each channel up to the point where the clip LEDs illuminate.

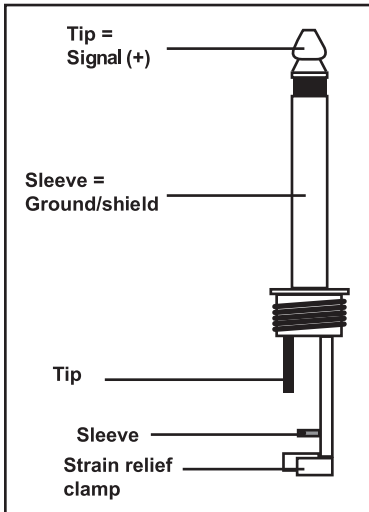
Always check the sound pressure level with a meter in order to keep to the legal threshold.

Balanced XLR Jack Connection

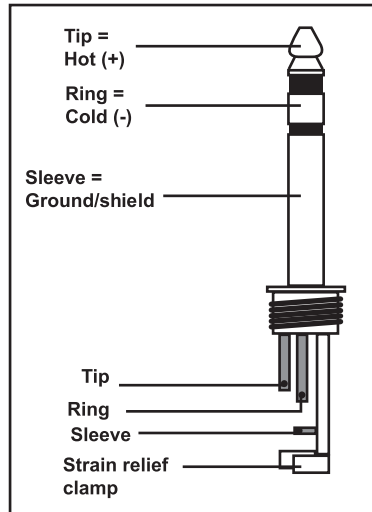


Jack Plug

Unbalanced mono 1/4" jack plugs



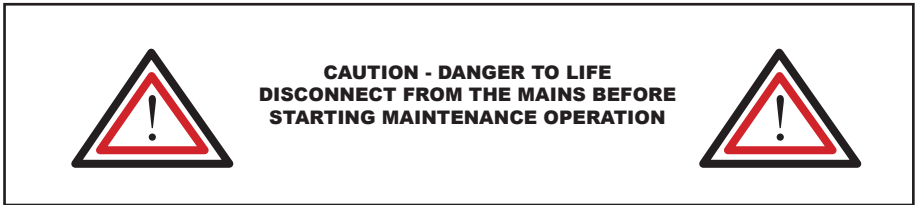
Balanced/stereo 1/4" jack plugs



For connection of balanced and unbalanced plugs, the ring and sleeve have to be bridged in the stereo plug.

Problem Chart

PROBLEM	CAUSE	REMEDY
No Power	The power cord is not connected	Check the power cord and any extension cables
No Sound	The power cord of the respective product is not connected properly or not at all. The connection socket or the plug is dirty.	Check the power cord and if the plugs are properly connected with the sockets. Clean the socket and/or the plug.
Noise	The input signal is too strong	Reduce the input signal via the gain control.
Distorted Sound	Load impedance is to low	Check load impedance vs amplifier specification, reduce as required.



Cleaning and Maintenance

We recommend a frequent cleaning of the product. Please use a soft lint free and moistened cloth. Never use alcohol or solvents.

There are no serviceable parts inside the product except for the fuse. Maintenance and service operations are only to be carried out by authorised dealers.

Replacing the fuse

Only replace the fuse by a fuse of the same type and rating.

Before replacing the fuse, unplug the mains lead.

Should you need any spare parts, please use genuine parts.

Should you have any further questions, please contact your dealer.

English



***Correct Disposal of This Product
(Waste Electrical & Electronic Equipment)***

(Applicable in the European Union and other European countries with separate collection systems)

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.



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