



RAM Audio ZETTA Series Professional Power Amplifiers User Manual

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SAFETY PRECAUTIONS



The exclamation point inside an equilateral triangle indicates the existence of internal components whose substitution may affect safety.



The lightning and arrowhead symbol warns about the presence of uninsulated dangerous voltage.

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

To avoid fire or electrocution risk do not expose the unit to rain or moisture.

To avoid electric shock, do not open the unit. No user serviceable parts inside. In the case of dis-function, have the unit checked by qualified agents.

Class I device.

General Information

Introduction

The ZETTA Series, is the result of an in depth study, in order to reach the best compromise between economy and performances, taking advantage of latest improvements in automated mixed surface mount and through hole electronic assembly.

ZETTA Series are a project based on an up-side-down mono-block approach offering an all-in-one power module that contains the entire amplifier assembly. Simplicity and effectiveness run hand by hand through the entire design to obtain an effectively skilled and workable product.

The last generation QuantaPulse™ switching power supply allows to reach a new level of refined sensing and control of the power flow.

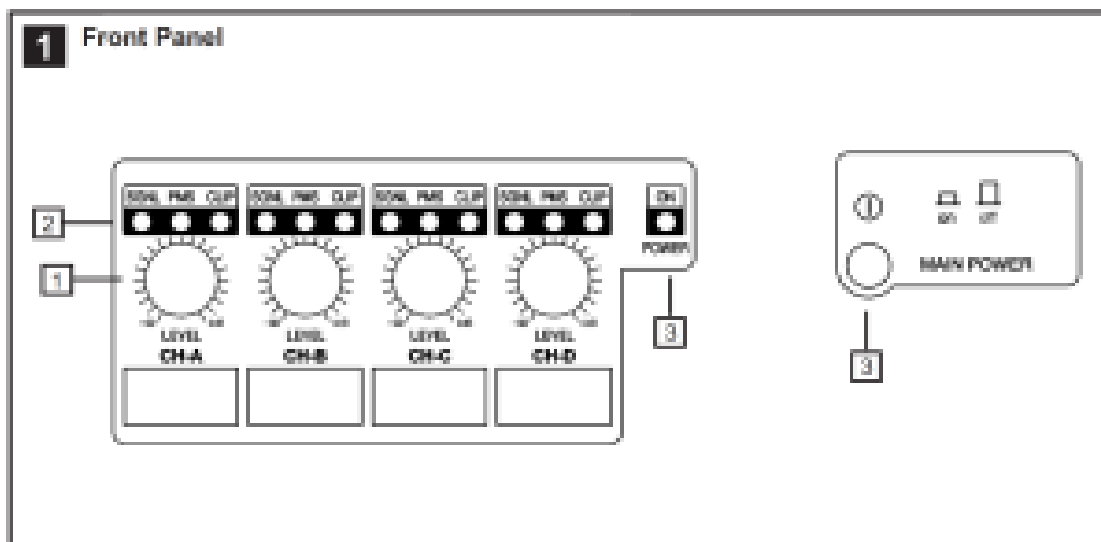
Main Characteristics

- Unmatched audio quality hi efficiency Class H design
- 2/4 Channels models from 1000W up to 4000W
- Ultra light weight 6kg, compact package 25cm deep
- Last generation QuantaPulse™ switch mode power supply
- Power Management System (PMS™) and Clip Limiter (ICL™)
- Up-side-down design to avoid fan dust accumulation
- Industry standard Neutrik® XLR and Speakon® connectors
- Comprehensive protection set (ICL, PMS, SSP, turn-on, Temp, DC....)
- Detented sealed potentiometers
- Dual or bridge mode operation
- Temperature controlled, back to front cooling fan

Controls: Where and What?

Front Panel

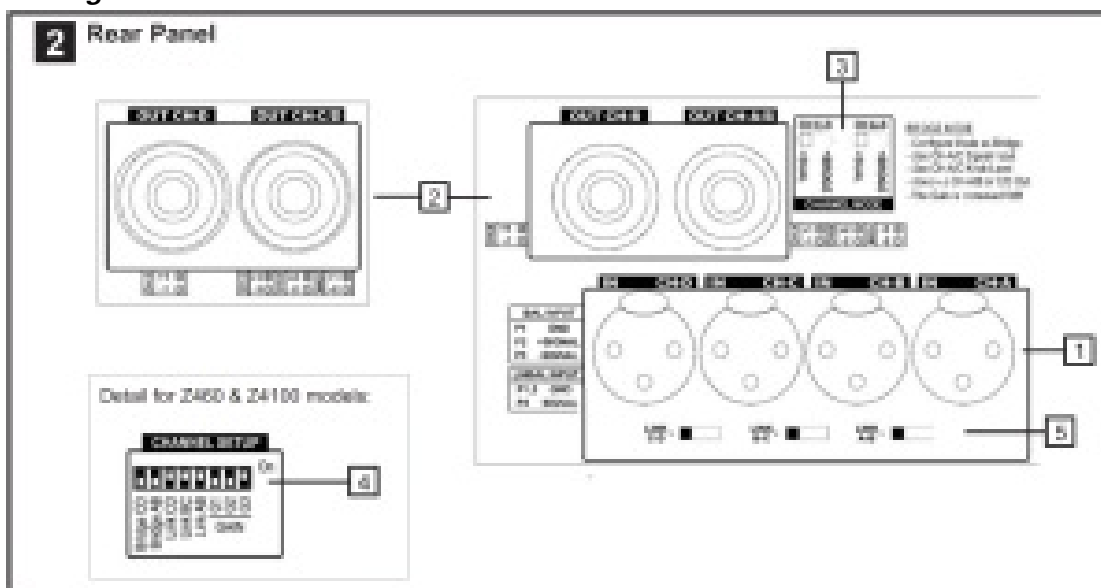
See Figure.1



1. **Signal attenuation level control knobs:** Permit independent control of each channel's attenuation (21 steps).
2. **SIGNAL:** This LED indicates presence of signal at the inputs. **PMS :** LED indicating PMS in operation. **CLIP:** LED indicating Intelligent Clip Limiter in operation.
3. **Main Power Switch:**
Position I: Connects the amplifier's current feed. (Blue LED on). **Position O** disconnects the Power.

Rear Panel

See Figure.2



1. **Signal Input:** Female Neutrik® XLR Connectors for the amplifier's signal input.
 Signal Link (in 2-ch models): two Male Neutrik® XLR Connectors for daisy chaining input signal to other amplifiers.
2. **Speaker connectors:** Neutrik® Speakon to connect the speakers.
3. **Dual / Bridge** Operation Selection Switch. To control the level in Bridge mode use the CH-A level knob.
 Minidips to select Bridge Mode for Z460 and Z4100.
Link: to link an input to another adjacent input and use the same input signal.
4. Minidips to Link Mode for Z460 and Z4100
5. Switches to Link in rest of 4-ch models.

6. **Mains Power Cord:** to connect the amplifier to the mains network. The colour code is:

Blue: Neutral

Brown: Live, single phase

Yellow-green: Protective Earth.

Installation and Operation

Connections

The Power switch must always be on the “Off” position before plugging the amp to a properly earthed mains socket (170-265V AC). **The colour code is:**

- **Blue:** Neutral
- **Brown:** Live, single phase
- **Yellow-green:** Protective Earth

The input signal fed to the amplifier can be either balanced or un-balanced. The drawing below describes both ways to wire an XLR connector for the purpose.

Balanced Signal: Connect pin 1 to Ground, pin 2 to Signal + (hot) and pin 3 to Signal – (cold).

Balanced Wiring

1. **Ground**
2. **Signal +**
3. **Signal –**



Unbalanced Signal: Connect Pin 1 to Ground, pin 2 to Signal and pin 3 to Ground.

Unbalanced Wiring

1. Ground
2. Signal
3. Ground



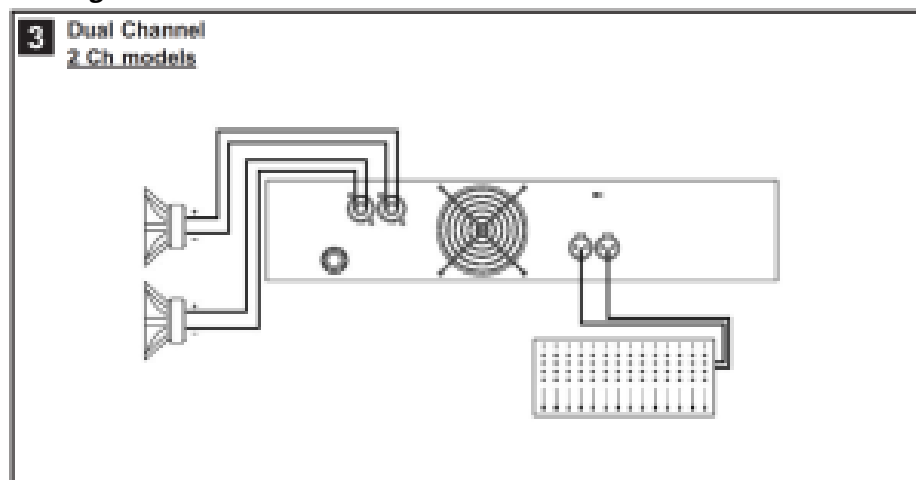
Important!: If a connection is done with a un-balanced line and pin 3 on the XLR is not connected to ground, a 6 dB loss occurs in the line and only a quarter of the amplifier power is produced.

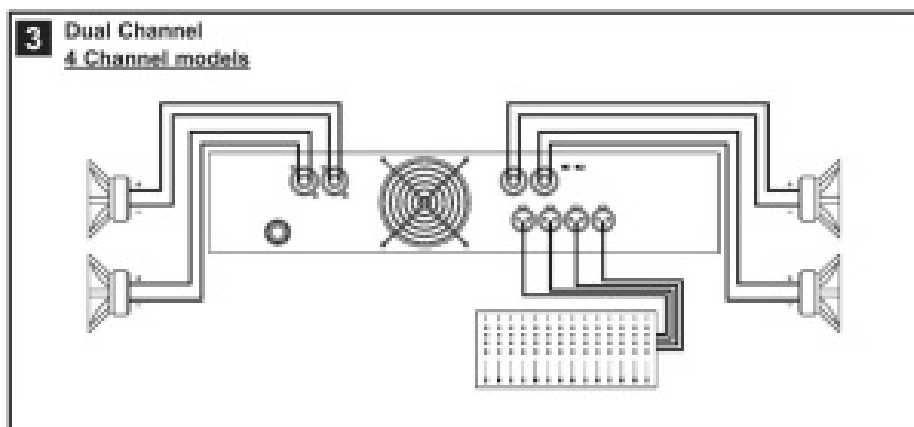
The amplifiers provides, for each channel, a female XLR Connector (Signal Input) paralleled to a male XLR to daisy chain several amplifiers with the same signal line (LINK).

The amplifier can operate on three different configurations: DUAL, or BRIDGE. The connections for the two modes are different.

DUAL Channel Mode

See Figure.3





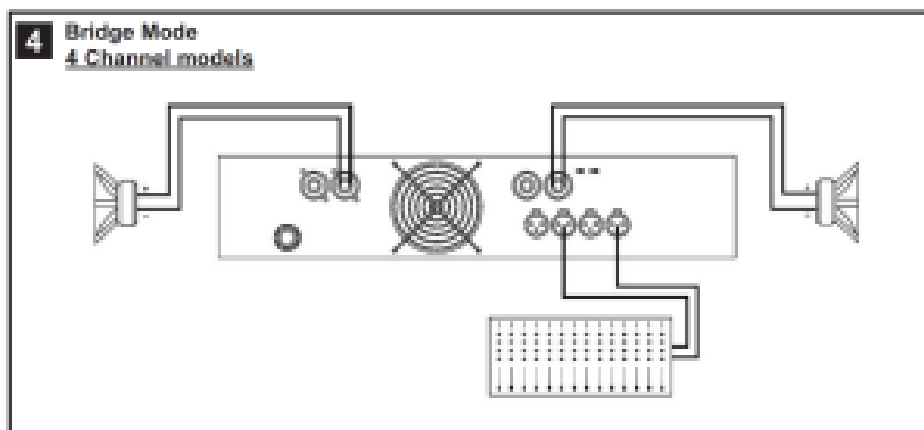
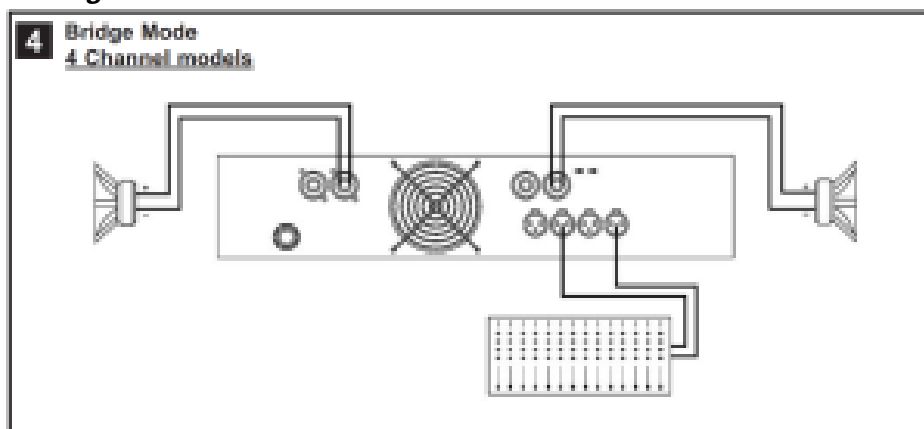
- Set the Amplifier Mode to “DUAL”.
- Connect the signal lines to the female XLR connectors on all channels.
- Connect the speakers’ lines to the corresponding Speakon on the amp respecting the polarity.
- Use the level control knob on the front panel to adjust each channel independently.
- Each signalling LED group will show its corresponding channel status.

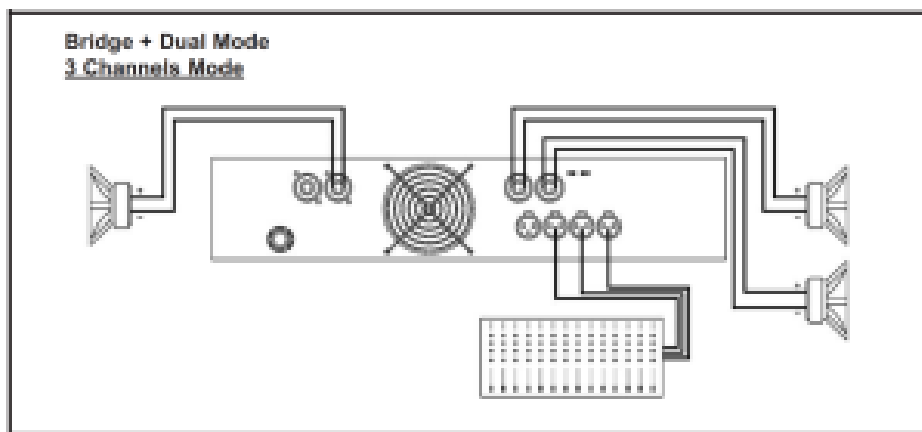
LINK Channel Mode

- Operate as Dual Channel Mode with the signal input linked to another adjacent channel.

BRIDGE Channel Mode

See Figure.4





- Set the configuration mode to “BRIDGE”
- Connect a signal line to input female XLR Channel “A” (or Ch-C in 4 channel models).
- Connect the speaker line to the Channel A Speakon (or Ch-C in 4 channel models) wired to +1 and -2. In this way pin +1 is positive.
- Use Channel-A (or Ch-C in 4 channel modes) control knob to adjust the amp’s output.
- The signalling LED groups will show the single channel status.

WARNING! The “-“ pins, do not have to be Ground!

Troubleshooting

In the event of incorrect connection or malfunctioning, the amp will activate one or more of its LED to warn about the problem.

Correct function: SGNL lights to indicate signal presence.



ICL: The Intelligent Clip Limiter is operating.



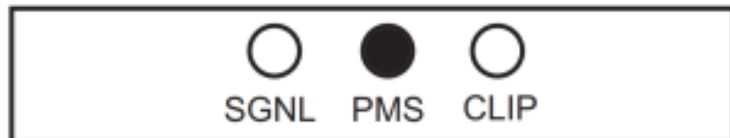
No Signal: No Input Signal is reaching the amp.



Overheating: The amplifier has reached the maximum operational temperature. Most common cause is: the normal air flow is blocked, accumulated dirt, dust or object leaning against the grill. Check and clean periodically.



PMS: Several causes can trigger this LED, most common are:



- The amplifier is in power-on sequence, where output is inhibited until the amp circuits are ready to operate.
- The internal temperatures rise to near thermal shutdown point due to unfavourable operating conditions.
- Excessive current consumption.

Protection Systems

PMS™ – Power Management System

This is a complete set of protections that monitors the main amp parameters (load status, signal input, temperature, current, etc.) in order to draw from the power supply only the precise amount of current required to maintain safe operation during hazardous or extreme working conditions.

This system controls the amount of power that the amp delivers under three basic circumstances:

1. The power-on sequence, where output is inhibited until the amp circuits are ready to operate. This routine is repeated at every restart, not just when the power switch is activated.
2. When internal temperatures rise to near thermal shutdown point due to unfavourable operating conditions. Here the system takes control, restricting current so as to maintain operational continuity at the precise power level which the amp is capable of withstanding at that particular moment.
3. Excessive current consumption. This event only occurs either under laboratory conditions (long term sinusoidal signal testing with dummy loads) or, for example, in field applications in conditions of prolonged acoustic howl-round. Here PMS takes control to avoid any damage to the speakers and to prevent the mains breaker from tripping or the fuses blowing.

ICL2™ – Intelligent Clip Limiter

The RAM Audio ICL2 is an anticlip system to avoid speaker failure and provide more acceptable sound quality even when clipping occurs. With the ICL2 system you don't lose the music "punch" but the speakers are kept under control.

SSP™ – SOA Sentry Protection

SOA Sentry protection effectively limiting the power that the amp could deliver into an incorrect load or to a direct short-circuit. This avoids power transistor failure.

Technical Specifications

	Z-210	Z-215	Z-220	Z-236	Z-420	Z-430	Z-440	Z-460	Z-4100
Output Power									
@ 2Ω	2x 500 W	2x 750 W	2x 100 0W	2x 180 0W	4x 500 W	4x 750 W	4x 100 0W	4x 1450W	4x 2500W

[illegible]

1/8 Rated Power (@4 ohm)	3.5 A	4 A	5 A	10 A	7 A	8 A	10 A	15 A	16 A*
Dimensions									
W x H x D (mm)	483×88.9×254							483×89×320	483×88.9×274
W x H x D (inches)	19×3.5×10							19×3.5×12.6	19×3.5×10.8
Weight									
Net (Kg-Lbs)	5-11	5-11	6.5-14.3	6.5-14.3	6.5-14.3	6.5-14.3	6.5-14.3	8.5-18.7	7-15.4
Protections									
Soft-start, Turn-on/off transients, Over-heating, DC, RF, Short-circuit, Open or mismatched loads, ICL™, PMS™ and SSP™									

**Limited by PMS system with all channels driven*

CUSTOMER SUPPORT

Manufactured in the EEC by C.E. Studio-2 s.l.



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P-5435-634 QXPDXDoc 7/14

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Documents / Resources

 <p>Professional Power Amplifiers ZETTA Series 210-215-220-236 420-430-440-460-4100</p> <p>OPERATION MANUAL BEDIENUNGSANLEITUNG MANUAL DE EMPLEO</p> <p>CE</p>	<p>RAM Audio ZETTA Series Professional Power Amplifiers [pdf] User Manual ZETTA Series, Professional Power Amplifiers, ZETTA Series Professional Power Amplifiers, Amplifiers, 210, 215, 220, 236, 420, 430, 440, 460, 4100</p>
 <p>Professional Power Amplifiers ZETTA Series 210-215-220-236 420-430-440-460-4100</p> <p>OPERATION MANUAL BEDIENUNGSANLEITUNG MANUAL DE EMPLEO</p> <p>CE</p>	<p>RAM Audio ZETTA Series Professional Power Amplifiers [pdf] User Manual ZETTA Series, Professional Power Amplifiers</p>

References

-  [RAM Audio - Professional Power Amplifiers](#)