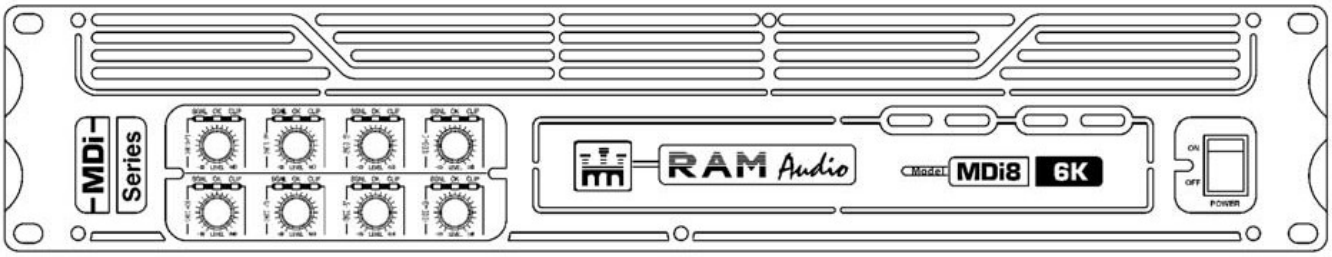
RAM Audio MDi Series Professional Power Amplifiers User Manual

Professional Power Amplifiers
MDi2 1K4-2K7-6K
MDi4 2K4-6K-12K
MDi8 2K7-6K
MDi Series
(XLR/SPK Version)
OPERATION MANUAL



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Contents

SAFETY PRECAUTIONS

WARNING:

 The exclamation point inside the 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 disfunction, have the unit checked by qualified agents?
Class I devise.

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General Information

Introduction

The MDI Series of amplifiers has been specifically developed for fixed installation and/or network applications. Thus they are equipped with specific connectors: XLR input and Speakon output, to offer clear, direct, and hassle-free connectivity. Furthermore, they offer up to 8 independent channels per unit to allow for as many zoning possibilities. Their unitary power output is dimensioned to suit specifically that type of installation.
The MDI Series incorporate unique absolute protections as the FCM™ or SSP™ systems.

Main Characteristics

- Eight, four, and two-channel models.
- Ultra-compact and lightweight 2-U high.
- Laser-cut aluminum front panel.
- FCM™ Faulty Channel Management system to avoid entire device shutdown.
- State-of-the-art layout for maximum performance and reliability.
- Detented sealed potentiometers for easy recall of volume settings.
- ICL, PROT, SIGNAL indicators per channel.
- Optional Add-on card to interface with third-party alarm systems with GPIO connections.
- ICL clip-limiters.
- Switchable (35Hz) sub-sonic highpass filter per channel.
- All channels are bridgeable by pairs.
- Temperature and signal dependant, intelligent cooling system for minimal noise.
- Highly oversized thermal dissipation design for maximum reliability.

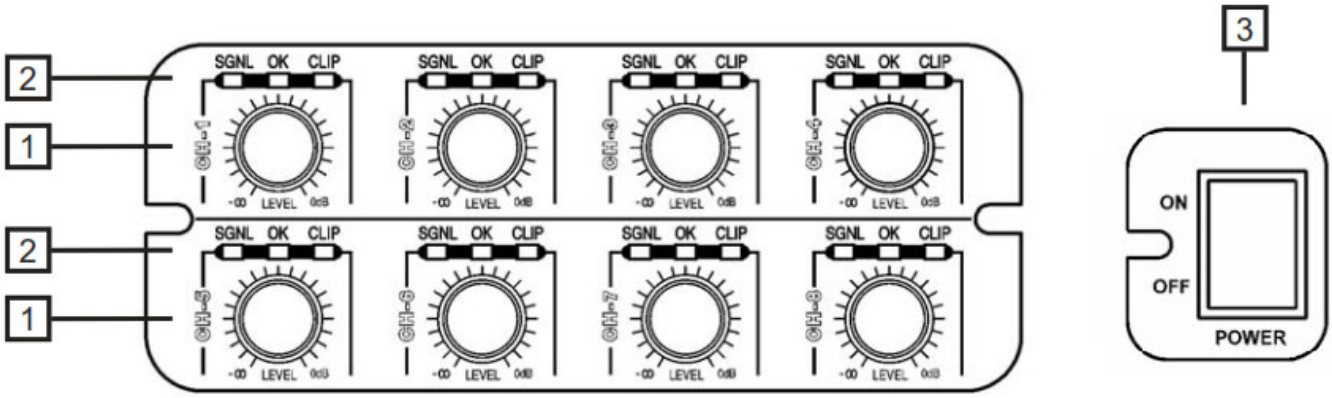
Controls: Where and What?

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 the presence of a signal at the inputs.**
   OK: This LED shows temperature protection is active (Red).
   ICL: LED indicating Intelligent Clip Limiter in operation.
3. **Main Power Switch:** Position I: Connects the amplifier's current feed. (OK green LED on). position disconnects the Power.

1. Front Panel

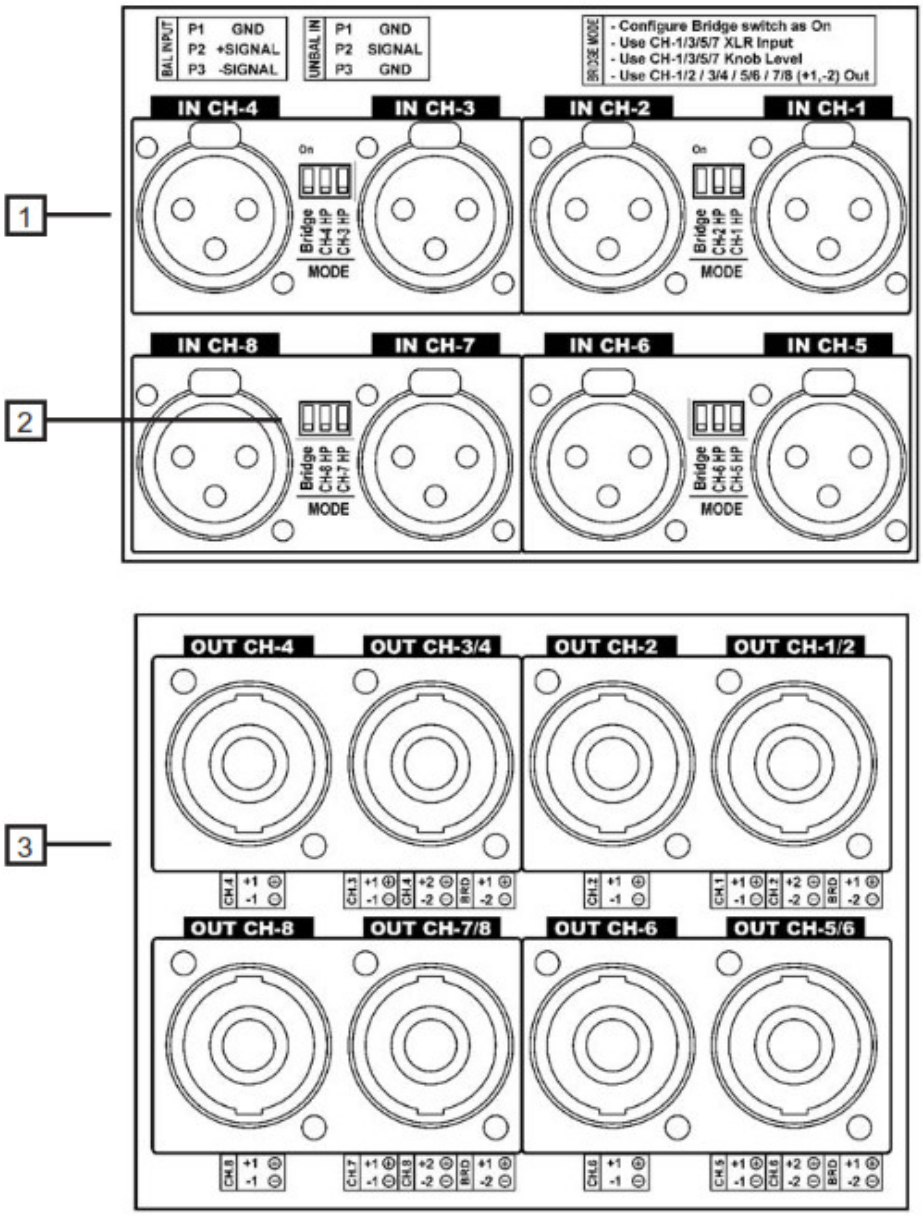


See Figure 2

1. **Signal Input:** Female Neutrik® XLR Connectors for the amplifier's signal input.
   Signal Link (MDi2/4): Male Neutrik XLR Connectors for the daisy-chaining input signal to other amplifiers.
2. **Configuration Switch:** Subsonic filter (35Hz), and Bridge (see page 9).
3. **Speaker connectors:** Neutrik® Speakon to connect the speakers.

Rear Panel

2. Rear Panel

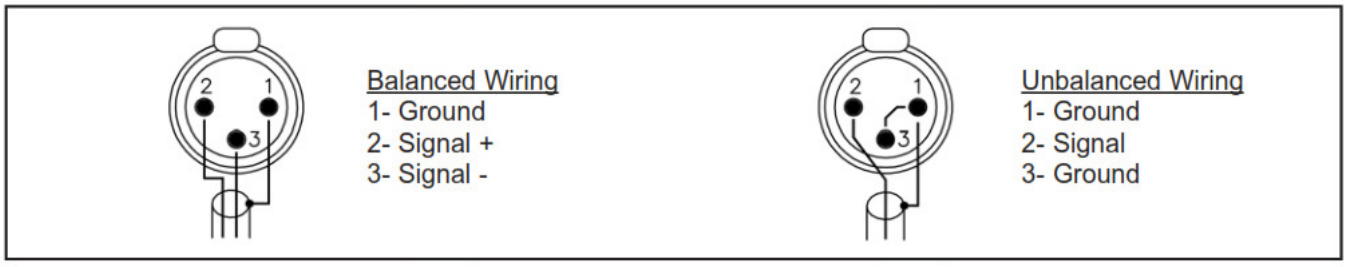


Installation and Operation

Connections

The Power switch must always be on the “Off” position before plugging the amp to a properly earthed mains socket (220-240V AC / 110V-120V AC).
The input signal fed to the amplifier can be either balanced or unbalanced. 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).
Unbalanced Signal: Connect Pin 1 to Ground, pin 2 to Signal and pin 3 to Ground.



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

The amplifiers (MDi2/4) provide, 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 two different configurations: DUAL or BRIDGE. The connections for the two modes are different.

DUAL Channel Mode

See Figure 3

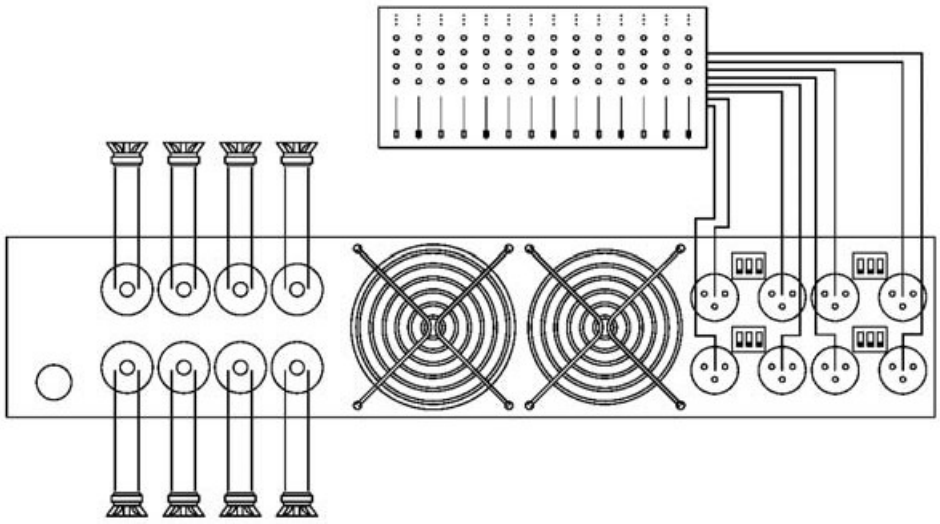
– Switch “Off” the amp.
– Set the Configuration Minidips on the rear panel to NO Bridge (see page 9).
– Connect the signal lines to the XLR connectors on all channels.
– Connect the speakers’ lines to the corresponding Speakon on the amp respecting the polarity.
– Switch “On” the amp.
– Use the level control knob on the front panel to adjust each channel independently.
– Each signaling LED group will show its corresponding channel status.

BRIDGE Channel Mode 4

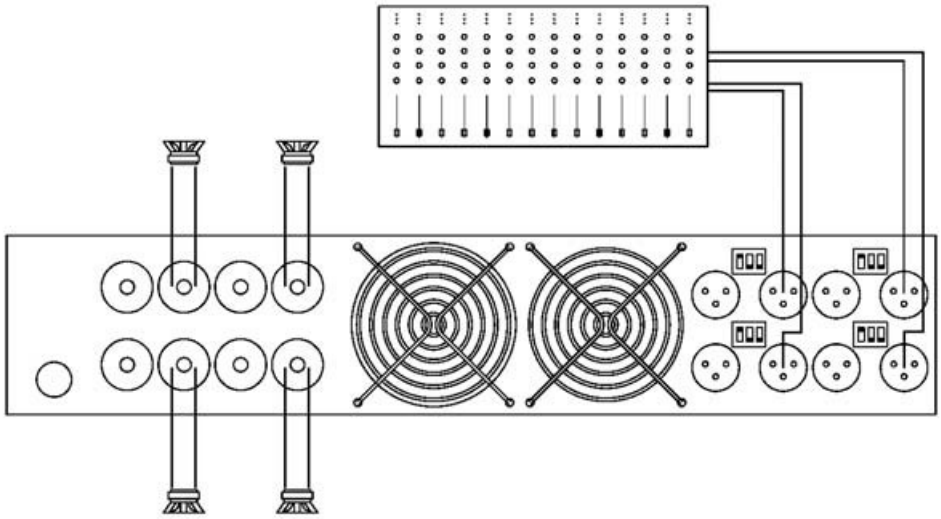
See Figure 4

– Switch “Off” the amp.
– Set the Configuration Minidips on the rear panel to “BRIDGE” (see page 9).
– Connect a signal line to the XLR connectors Channel “1”, “3”, “5” or “7”.
– Connect the speaker line to the Channel 1 Speakon (“3”, “5”,or “7”) wired to +1 and -2. In this way pin +1 is positive.
– Switch “On” the amp.
– Use Channel “1” (“3”, “5” or “7”) control knob to adjust the amp’s output.
– The signaling LED groups will show the single-channel status.

3. Dual Mode



4. Bridge Mode

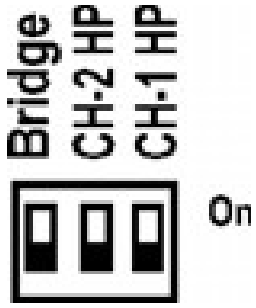


Installation and Operation

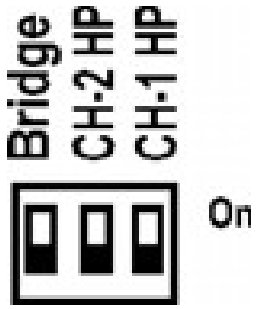
Configuration

The amplifier has an ensemble of mini dips on the back panel, which allow for the following configurations: the highpass subsonic filter, the Gain selection, and the bridge mode. All these configurations can be cross-set in any way, independently from the others. The basic configuration possibilities are as follows:

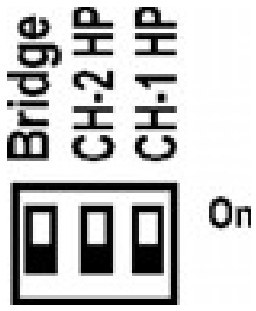
Standard Configuration: the amplifier works without high pass subsonic filter and no Bridge mode.



Sub-sonic Filter Enabled: the amplifier works with Channel 1 high pass subsonic filter (35Hz), and no Bridge mode.

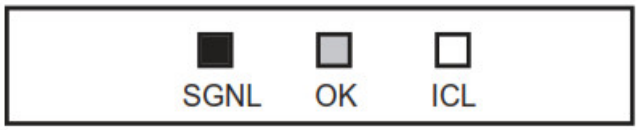


Bridge Mode: the amplifier works without high pass subsonic filter, and Channel 1/Channel 2 Bridge mode.

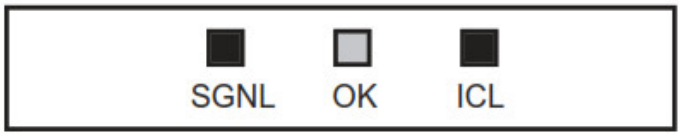


Troubleshooting

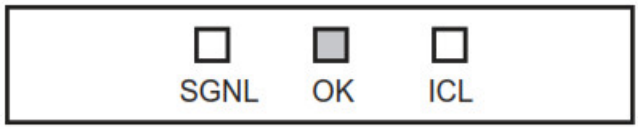
In the event of an incorrect connection or misfunctioning, the amp will activate one or more of its LEDs to warn about the problem.



Correct function: SGNL lights to indicate signal presence. (OK Green)



ICL: The Intelligent Clip Limiter is operating.



No Signal: No Input Signal is reaching the amp.

Protections: (OK Red) Several causes can trigger this LED, the most common are:
– Overheating: The amplifier has reached the maximum operational temperature. A most common cause is: the normal airflow is blocked, accumulated dirt, dust or objects leaning against the grill. Check and clean periodically.
– Short-circuit in the speakers' line or in the speakers themselves.
– Low Impedance: check speakers' connections or possible speaker disfunction.
– DC in the output: the protections are activated to avoid damage to the speakers, the unit must be sent in for repair to a qualified technician.
– Delayed Start: As you switch on the amp the output to the speakers is disconnected. After a few seconds, the amp will connect the speakers and proceed with normal functioning.

Technical Specifications

Data

	MDi2-1K4	MDi2-2K7	MDi2-6K	MDi4-2K4	MDi4-6K	MDi4-12K	MDi8-2K7	MDi8-6K
Max. Output Power*								
@ 4ohm	2×700 W	2×1350 W	2×3000 W	4×610 W	4×1500 W	4×3000 W	8×340 W	8×750 W
@ 8ohm	2×375 W	2×900 W	2×1500 W	4×350 W	4×800 W	4×1500 W	8×225 W	8×400 W
Bridge @ 8ohm	1×1400 W	MDi2-2K7	–	2×1220 W	–	–	4×680 W	4×1500 W
High Z								
70Vrms/100Vpeak	–	2×1350 W	–	–	4×1500 W	–	4×680 W	–
100Vrms/140Vpeak	1×1400 W	–	2×3000 W	2×1200 W	–	4x3000W	–	4×1500 W
Frequency Response Power Bandwidth ±0.25dB	20Hz-20kHz							
Total Harmonic Distortion 20Hz-20kHz	<0.05%							
Intermodulation Distortion SMPTE	<0.05%							

Damping Factor (20Hz-500Hz @8ohm)	>400							
Crosstalk 20Hz-1kHz (typical)	>70 dB							
Voltage Gain	32dB							
Sensitivity Rated Power @ 8 W	1.4 V	2.1 V	2.8 V	1.3 V	2 V	2.8 V	1.1 V	1.4 V
Signal-to-Noise Ratio 20Hz-20kHz	101 dBA	103 dBA	104 dBA	105 dBA	101 dBA	103 dBA	104 dBA	104 dBA
Required AC Mains VAC (50Hz/60Hz) Power On Idling @ 230V) @4ohm (1/8 rated ower)	170-265** 0.5 A 1.8 A	170-265** 0.5 A 4 A	90-265 0.5 A 4.5 A	170-265** 0.5 A 3.2 A	90-265 0.5 A 4.5 A	90-265 0.5 A 9 A	170-265** 0.5 A 4 A	90-265 0.5 A 4.5 A
Dimensions W x H x D (mm) W x H x D inches)	–	483×88.9×254 19×3.5×10	–	–	–	–	483×88.9×396 19×3.5×15.6	–
Weight Net (Kg-lb)	5-11	5-11	6-13.2	5-11	7.5-16.5	9.5-20.9	7.5-16.5	5-11

Protections

Soft-start, Turn-on Turn-off transients, Over-heating, DC, RF, Short-circuit, Open or mismatched loads, ICL™ and FCM™.

*All channels driven, full bandwidth P.N. 12dB C.F. ** Also version for 90V-140V AC

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Documents / Resources

	RAM Audio MDi Series Professional Power Amplifiers [pdf] User Manual MDi2 1K4-2K7-6K, MDi4 2K4-6K-12K, MDi8 2K7-6K, MDi Series Professional Power Amplifiers , Professional Power Amplifiers, Amplifiers