

OXMOR[®]

C O R P O R A T I O N

A Limited Liability Company

RMX-44[™] & RMX-62[™] MIXING MATRIX



Installation
&
Operation
Manual

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RMX-44 & RMX-62 INTRODUCTION

- Front-panel input trimmers with +/- 15 dB gain adjustment
- Logic control port for setting various output configurations, including a mix of the inputs
- Electronically balanced, XLR-type inputs and outputs
- +24 dBu input signal levels
- +24 dBm output signal levels
- Built-in RF suppression
- UL Listed

The RMX-44 and RMX-62 Mixing Matrixes may be used as buffer/mixer/distribution amplifiers. The RMX-44 offers a four-in by four-out configuration while the RMX-62 is a six-in by two-out system. Each compact unit is housed in a 1U, rackmount chassis and weighs just under 8.5 pounds.

The RMX-44 and RMX-62 are intended for use in sound reinforcement, permanent installations, playback, and other audio systems requiring high-quality operation with flexible audio routing from remote locations.

The RMX-44 unit allows, for example, stereo components and their sum to be assigned to separate output lines. High and low input and output levels can also be freely intermixed without additional hardware, facilitating such common conversion tasks as interfacing hi-fi equipment with professional audio systems.

The RMX-44 and RMX-62 input stages are electronically balanced and fitted with standard 3-pin, XLR-type connectors. Front-panel gain trimmers enable the installer to compensate for various input signal levels. RF suppression circuitry safeguards against radio-frequency interference in hostile environments.

For enhanced flexibility on both units, each output driver can be set for balanced or unbalanced operation using internal jumpers. The output stages will deliver a +24 dBm maximum output level, with overall 20Hz to 20 kHz frequency response, +0, -0.3 dB.

Both devices are also available with optional output transformers. Designate Model RMX-44T or Model RMX-62T. Transformer equipped version may be operated Balanced or Unbalanced without any change to the internal jumpers.

Designed to satisfy exacting professional standards, the RMX-44 and RMX-62 offer excellent performance in highly dependable packages. Their impressive audio specifications are ideally suited to recording and broadcast applications, yet their rugged chassis and exceptional immunity to environmental stress make them an ideal choice for demanding road work and commercial installations.

The RMX-44, RMX-44T, RMX-62, and RMX-62T Mixing Matrixes are Underwriters Laboratories (UL) Listed.

The logo for OXMOOR, featuring the brand name in a bold, stylized, metallic font with a registered trademark symbol.

RMX-44 CALLOUTS

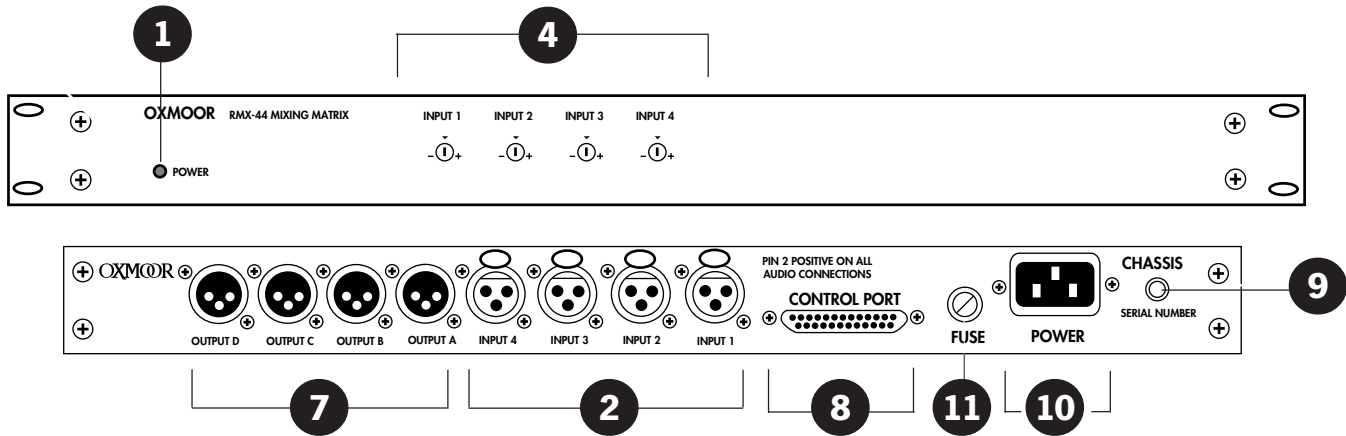


Figure 1.1: Front and Rear Panel Views of RMX-44

(Callouts refer to Figures 1.1, 1.2, and 1.3)

- 1. POWER LED** - The front panel LED is illuminated when the unit is on. The absence of an On/Off switch is a performance safety feature, eliminating accidental shutdown during operation.
- 2. INPUT CONNECTORS** - XLR inputs, Pin 2 positive, accept balanced or unbalanced signals from line-level devices.
- 3. INPUT STAGE** - The RF-suppressed input circuit is electronically balanced (differential), and capable of handling a maximum signal level of +24 dBu. Balanced input impedance is approximately 80k ohms, with a nominal input level range of -10 to +8 dBu.
- 4. INPUT GAIN TRIM POTS** - (labelled "INPUT 1," "INPUT 2," etc.) Accessed through the front panel with a small flat-blade screwdriver, these trim pots adjust the input stage gain +/-15 dB, to compensate for varying input signal levels.
- 5. OUTPUT STAGE** - The output stage is electronically balanced (push-pull) and AC coupled. Output impedance is approximately 150 ohms. Each output can provide a maximum level of +24 dBm into a 600 ohm load, or +26 dBu unterminated.
- 6. BALANCED/UNBALANCED JUMPER BLOCKS** - These permit each output to be unbalanced independently, if necessary (see *SET-UP*).
- 7. OUTPUT CONNECTORS** - XLR outputs, pin 2 positive, accommodate balanced or unbalanced lines.
- 8. CONTROL PORT CONNECTOR** - Female, 25-pin, standard D-sub connector. Provides contacts for jumpers or external switching to assign routing of inputs to outputs. Latching contact closures required (see *SET-UP*). Additional contacts provide system mute capability and +15 VDC, 50 mA, output for powering LEDs, etc.
- 9. CHASSIS GROUND POST** - Nuts on a threaded stud enable the installer to conveniently secure a ground wire to the chassis.
- 10. POWER CONNECTOR** - Standard IEC 3-pin connector for AC power cord. Use only with grounded (3-wire) outlets. Cord sets are available for all world connection standards.
- 11. FUSE HOLDER** - Replace only with approved type of fuse in a rating appropriate to the mains voltage, as indicated on back panel (see *SPECIFICATIONS*).

RMX-44 BLOCK DIAGRAM

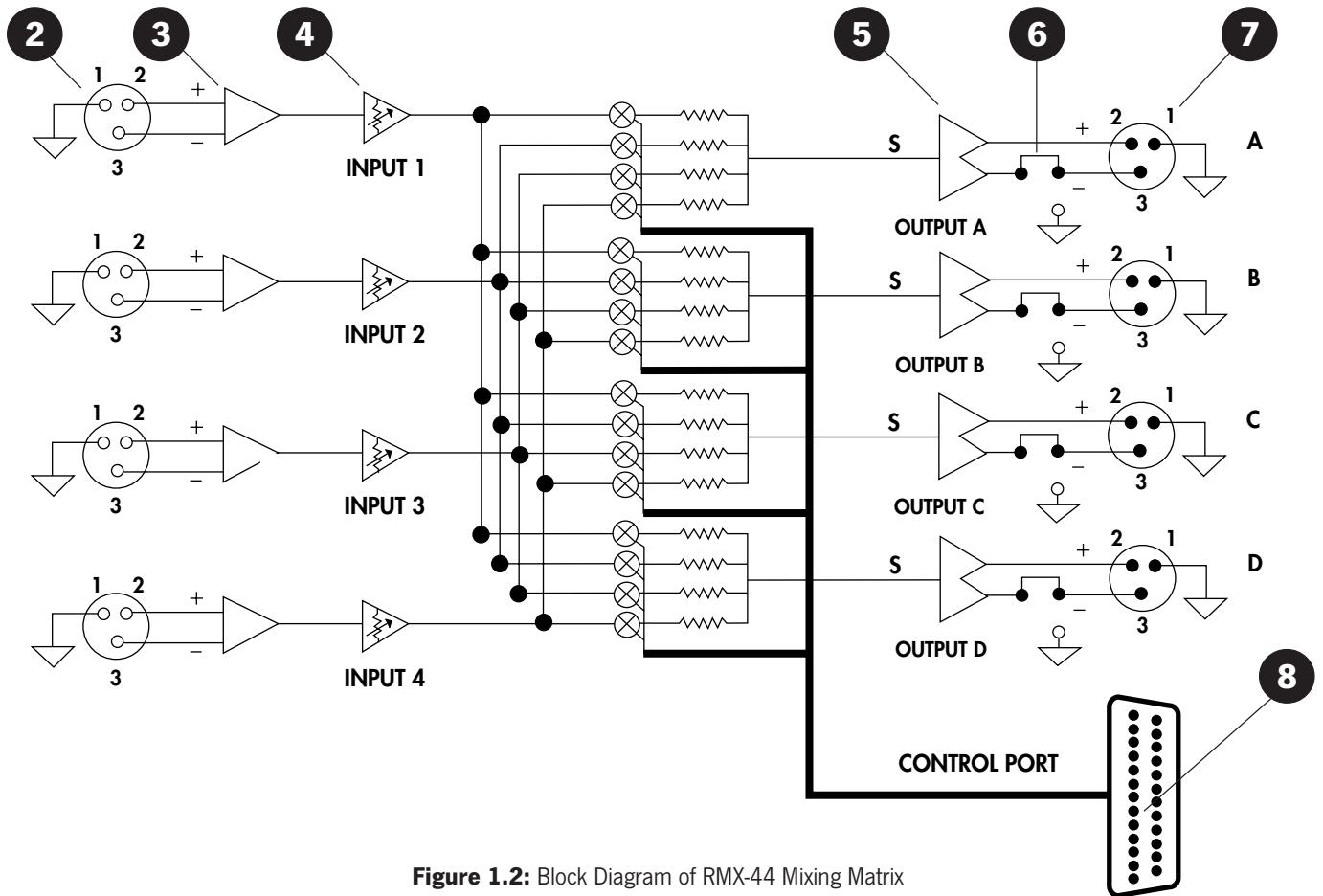


Figure 1.2: Block Diagram of RMX-44 Mixing Matrix

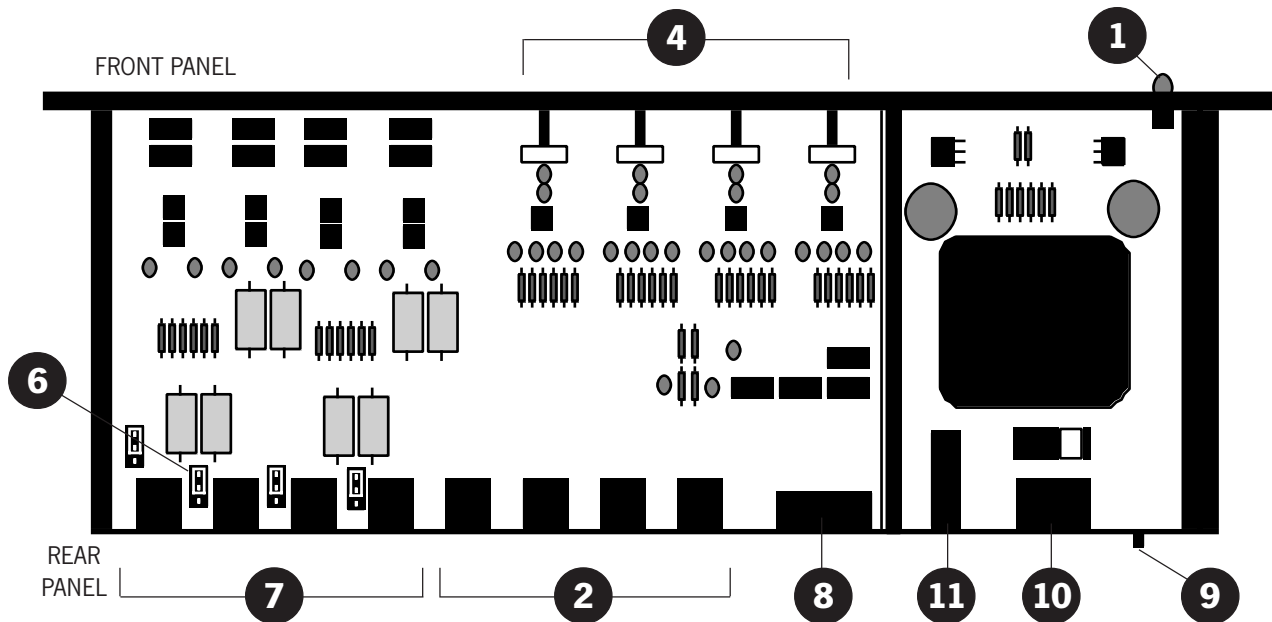


Figure 1.3: Interior View of RMX-44 Mixing Matrix

RMX-62 CALLOUTS

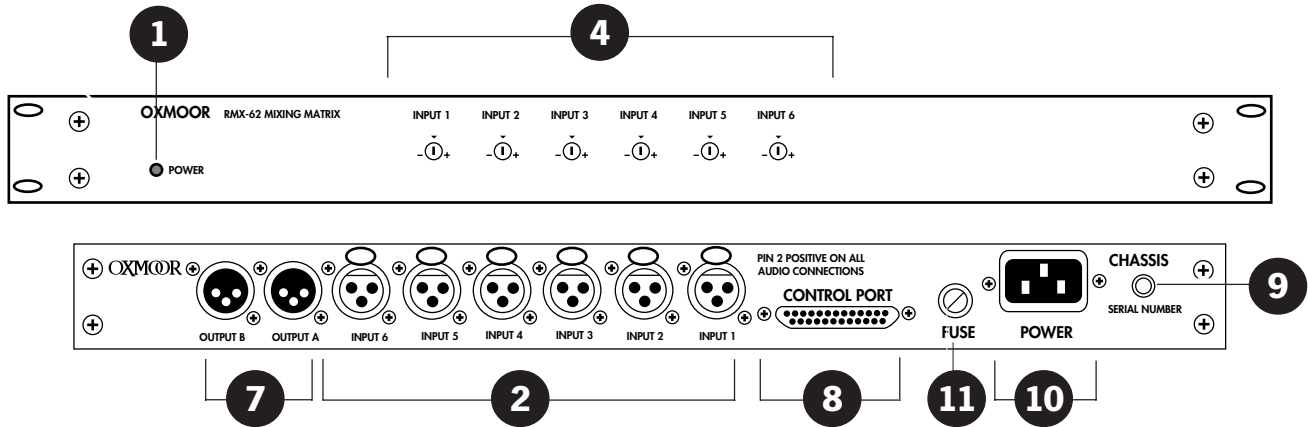


Figure 2.1: Front and Rear Panel Views of RMX-62

(Callouts refer to Figures 2.1, 2.2 and 2.3)

- 1. POWER LED** - The front panel LED is illuminated when the unit is on. The absence of an On/Off switch is a performance safety feature, eliminating accidental shutdown during operation.
- 2. INPUT CONNECTORS** - XLR inputs, Pin 2 positive, accept balanced or unbalanced signals from line-level devices.
- 3. INPUT STAGE** - The RF-suppressed input circuit is electronically balanced (differential), and capable of handling a maximum signal level of +24 dBu. Balanced input impedance is approximately 80k ohms, with a nominal input level range of -10 to +8 dBu.
- 4. INPUT GAIN TRIM POTS** - (labelled "INPUT 1," "INPUT 2," etc.) Accessed through the front panel with a small flat-blade screwdriver, these trim pots adjust the input stage gain +/-15 dB, to compensate for varying input signal levels.
- 5. OUTPUT STAGE** - The output stage is electronically balanced (push-pull) and AC coupled. Output impedance is approximately 150 ohms. Each output can provide a maximum level of +24 dBm into a 600 ohm load, or +26 dBu unterminated.
- 6. BALANCED/UNBALANCED JUMPER BLOCKS** - These permit each output to be unbalanced independently, if necessary (see *SET-UP*).
- 7. OUTPUT CONNECTORS** - XLR outputs, pin 2 positive, accommodate balanced or unbalanced lines.
- 8. CONTROL PORT CONNECTOR** - Female, 25 pin, standard D-sub connector. Provides contacts for jumpers or external switching needed to assign routing of inputs to outputs. Latching contact closures required (see *SET-UP*). Additional contacts provide system mute capability and +15 VDC, 50 mA, output for powering LED's, etc.
- 9. CHASSIS GROUND POST** - Nuts on a threaded stud conveniently enable the installer to secure a ground wire to the chassis.
- 10. POWER CONNECTOR** - Standard IEC 3-pin connector for AC power cord. Use only with grounded (3-wire) outlets. Cord sets are available for all world connection standards.
- 11. FUSE HOLDER** - Replace only with approved type of fuse in a rating appropriate to the mains voltage, as indicated on back panel (see *SPECIFICATIONS*).

RMX-62 BLOCK DIAGRAM

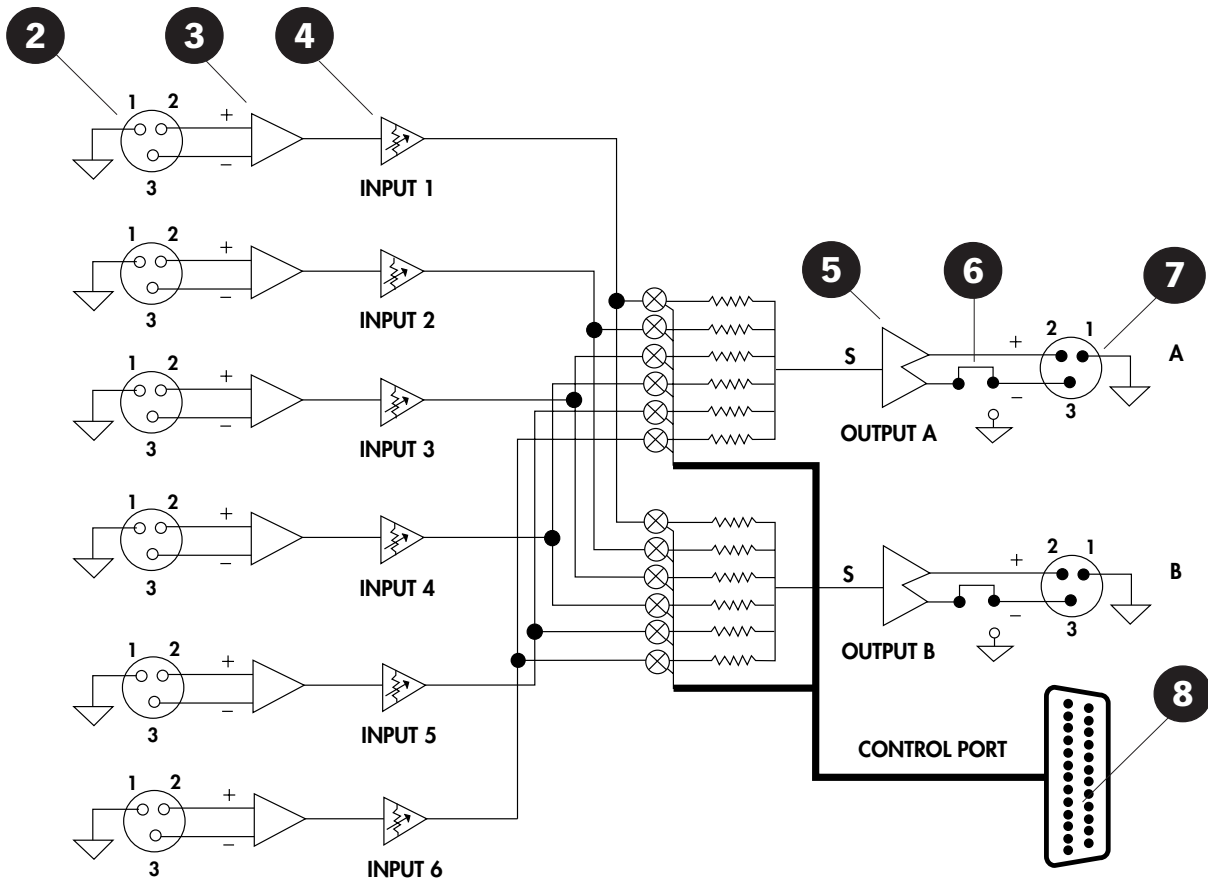


Figure 2.2: Block Diagram of RMX-62 Mixing Matrix

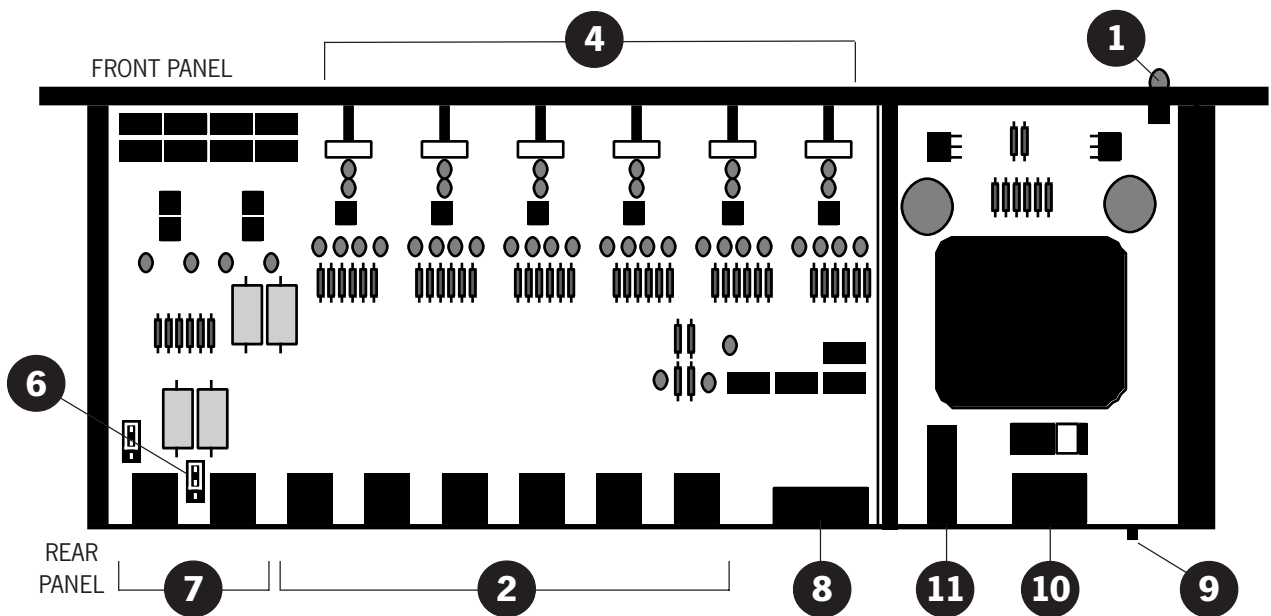


Figure 2.3: Interior View of RMX-62 Mixing Matrix

RMX-44 & RMX-62 SET-UP

The RMX-44 and RMX-62 may easily be configured to meet your specific requirements. You may make changes to the factory configuration of the unit in two areas: outputs and inputs.

Each output has been configured at the factory to be balanced. You may change each output independently to be unbalanced. This is the only set-up procedure that requires access to the chassis interior.

NOTE: If your unit has transformer coupled outputs (i.e., models RMX-44T or RMX-62T) no modification is required for unbalanced operation.

Each input may be assigned to any output or combination of outputs. Multiple inputs may also be routed to each output.

CONVERTING OUTPUTS FROM BALANCED TO UNBALANCED (ELECTRONICALLY BALANCED OUTPUTS)

Each output is provided with an internal jumper; the position of each jumper determines whether its associated output is balanced (push-pull) or unbalanced. All outputs are balanced as delivered from the factory. In the unbalanced configuration, pin 3 of the output connector is grounded, and the maximum output level drops by 6 dB.

If you wish to operate one or more of the outputs unbalanced, you must follow this procedure. Setting the internal jumper correctly provides two benefits.

First, the possibility of shorting the corresponding output driver to ground is eliminated. While an output short will not harm the circuit, it may result in increased distortion and crosstalk.

CAUTION:
Hazardous voltages are present inside the chassis. Before opening the case to gain access to the Balanced/Unbalanced Jumpers, always remove the power from the unit by disconnecting the AC cord.

Also, output connections are simplified by allowing the use of standard cables in all cases.

THE PROCEDURE:

1. Gain access to the inside of the chassis.
 - a. Disconnect the power cord.
 - b. Remove the four screws that secure the top cover and set the cover aside with the screws.
2. Locate the Balanced/Unbalanced Jumper Block next to the connector for the output you wish to reconfigure. These are called out on Figures 1.3

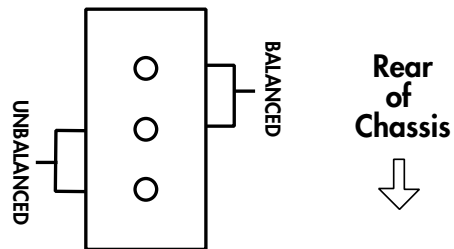


Figure 3.1: Typical Balanced/Unbalanced Jumper Block

and 2.3.) The jumper is factory installed in the balanced position.

3. Observing the positions shown in Figure 3.1 (and marked on the circuit board), remove the jumper and reinstall it in the unbalanced position.
4. Replace top cover and screws.

CONNECTOR WIRING FOR UNBALANCED OUTPUT:

UNBALANCED

Pin 2 = "HOT"

Pin 3 = "COMMON"

Pin 1 = "SHIELD"

RMX-44 & RMX-62 SET-UP (CONTINUED)

(Please refer to Figures 3.2, 3.3, 3.4 and 3.5)

SOURCE TO OUTPUT ROUTING SELECTIONS

The signal source for each RMX-44 and RMX-62 output may be independently selected. You may select one input per output (buffer), multiple inputs per output (mixer), or multiple outputs per input (DA).

FIXED INPUT/OUTPUT ROUTING CONFIGURATION

Inputs may be routed to outputs in a simple fixed configuration using jumpers in a DB-25 male connector (supplied). The RMX-44 and RMX-62 come supplied with a DB-25 male connector with jumpers soldered in place to provide a working, out-of-the-box routing configuration. Merely inserting this connector into the Control Port will assign the audio sources to outputs as specified in Figures 3.2 and 3.4.

Alternative jumper positions between "common" pins (numbers 1 through 3 and 14 through 16) and others will provide alternate routing possibilities as designated by their Assignment descriptions in Figures 3.3 and 3.5.

SELECTABLE INPUT/OUTPUT ROUTING CONFIGURATION

Maximum flexibility of the RMX-44 and RMX-62 is realized, though, when the routing selection is locally or remotely selectable. This is accomplished through closure of external latching contacts (end user provided). Each switch is used to close a circuit between two pins (one of them "common") of the 25 pins available at the "control port" on the rear of the chassis.

The internal routing matrix is connected by individual control lines to the control port. This allows any internal switch to be activated by directly accessing its control line without having to resort to any binary/BCD type encoding.

The logic inputs have an active low (CLOSURE TO COMMON) type action and are provided with input protection. (See SPECIFICATIONS for details on logic requirements.)

Any logic action must provide and maintain circuit closure between common and appropriate control lines to hold the internal switches for the routing configuration desired.

Integral input isolation allows the logic inputs of multiple units to be paralleled without any interaction between units or bus loading problems. No external pull-ups are required. A maximum of 64 control lines may be paralleled without affecting operation.

NOTE: If the CONTROL PORT is not configured, all outputs on the RMX-44 and RMX-62 will be muted.

ADDITIONAL CONTROL PORT PROVISIONS

SYSTEM MUTING

Closing a circuit between Pin 4 and common will mute all channels. Muting will remain in effect as long as the contact is close.

Muting may be desired during some paging operations or activated as an override function of a fire alarm to kill background music, etc.

An external delay circuit may also be employed to activate the MUTE function in order to lengthen the two-second RMX-44/62 factory-set power-up delay.

LOW VOLTAGE DC SUPPLY

Pins 13 and 25 are identical, paralleled DC outputs providing +14 VDC at 50 mA. This supply may be utilized to power LED indicators, etc.

RMX-44 AUDIO & CONTROL PORT PIN ASSIGNMENTS

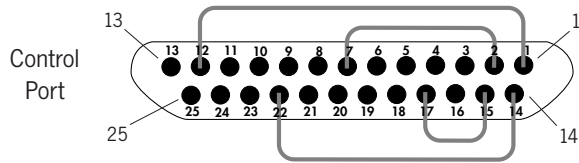
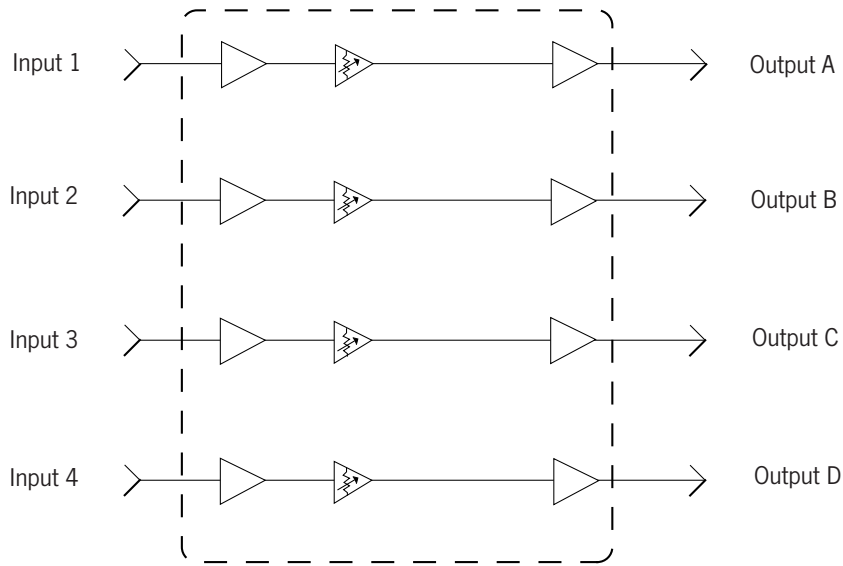
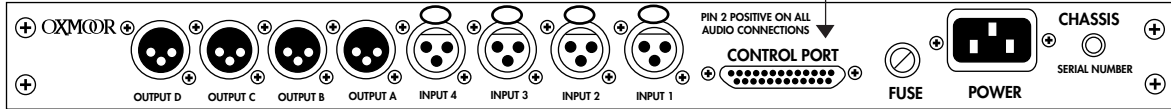


Figure 3.2: RMX-44 Factory Setup



PIN NUMBER	ASSIGNMENT
* 1	Common
* 2	Common
3	Common
4	Mute
5	Input 4 to Output B
6	Input 3 to Output B
* 7	Input 2 to Output B
8	Input 1 to Output B
9	Input 4 to Output A
10	Input 3 to Output A
11	Input 2 to Output A
* 12	Input 1 to Output A
13	+15 VDC

PIN NUMBER	ASSIGNMENT
* 14	Common
* 15	Common
16	Common
* 17	Input 4 to Output D
18	Input 3 to Output D
19	Input 2 to Output D
20	Input 1 to Output D
21	Input 4 to Output C
* 22	Input 3 to Output C
23	Input 2 to Output C
24	Input 1 to Output C
25	+15 VDC

Figure 3.3: RMX-44 Audio and Control Port Pin Assignments

* *FACTORY SETUP:* The RMX-44 is shipped from the factory with input 1 assigned to output A, input 2 to output B, input 3 to output C, and input 4 to output D.

RMX-62 AUDIO & CONTROL PORT PIN ASSIGNMENTS

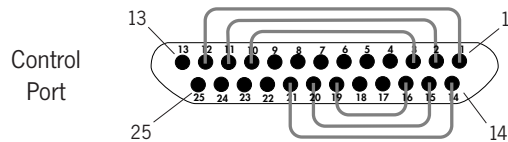
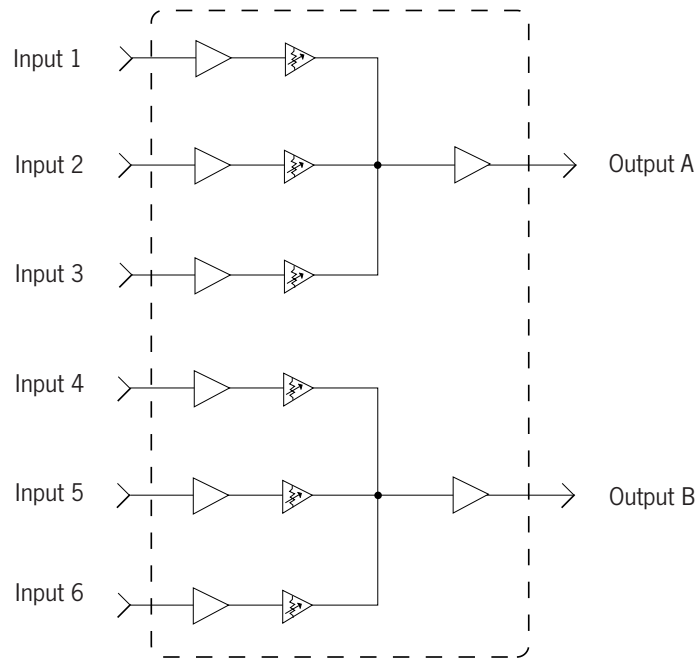
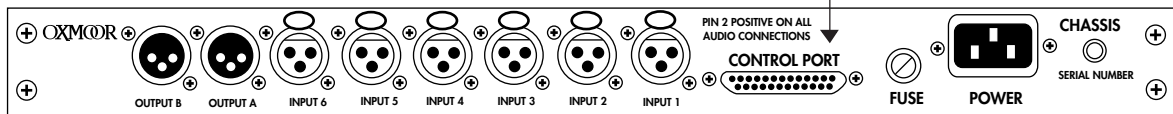


Figure 3.4: RMX-62 Factory Setup



PIN NUMBER	ASSIGNMENT
* 1	Common
* 2	Common
* 3	Common
4	Mute
5	Not Used
6	Not Used
7	Input 6 to Output A
8	Input 5 to Output A
9	Input 4 to Output A
* 10	Input 3 to Output A
* 11	Input 2 to Output A
* 12	Input 1 to Output A
13	+15 VDC

PIN NUMBER	ASSIGNMENT
* 14	Common
* 15	Common
* 16	Common
17	Not Used
18	Not Used
* 19	Input 6 to Output B
* 20	Input 5 to Output B
* 21	Input 4 to Output B
22	Input 3 to Output B
23	Input 2 to Output B
24	Input 1 to Output B
25	+15 VDC

Figure 3.5: RMX-62 Audio and Control Port Pin Assignments

* *FACTORY SETUP:* The RMX-62 is shipped from the factory with inputs 1, 2 and 3 assigned to output A, and inputs 4, 5 and 6 to output B.

RMX-44 & RMX-62 APPLICATIONS

Figure 4.1 shows a typical application for the RMX-44. Each of four adjacent hotel banquet/conference rooms is equipped with an independent sound reinforcement system.

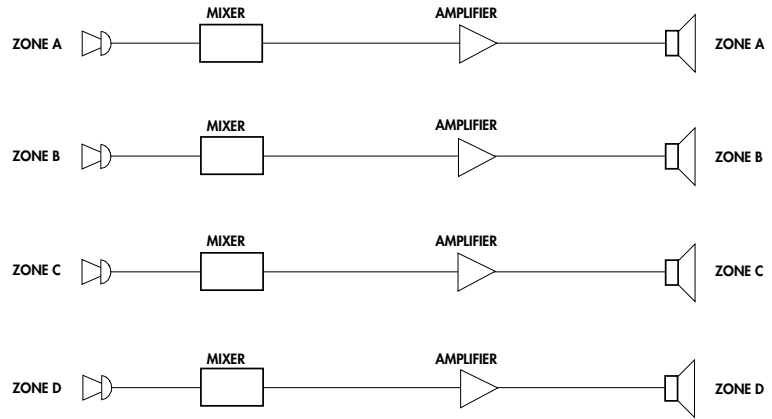


Figure 4.1

A single RMX-44 is inserted in the path between all four mixers and their respective power amplifiers. As shown in Figure 4.2, each system operates totally independent of the other three.

The selectable input/output routing feature of the RMX-44 makes it easy to open the dividers between zones A and B and use either or both of their mixers to feed the amplifiers and speakers in both areas as a single system.

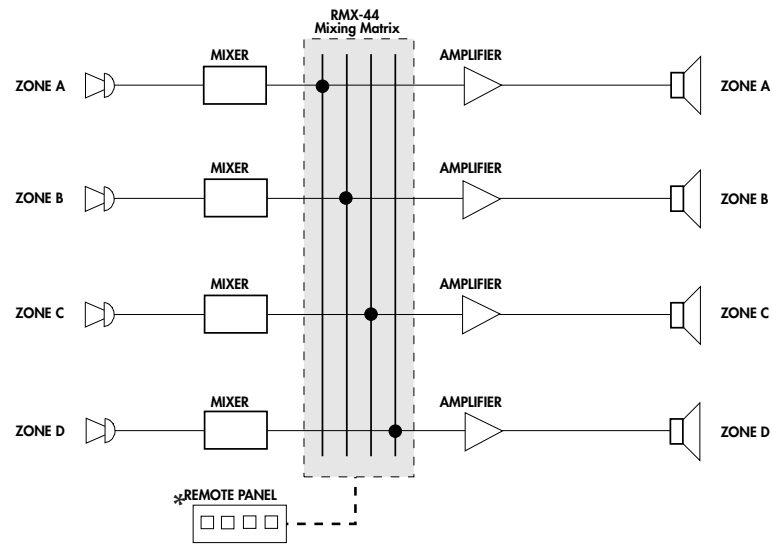


Figure 4.2

Zones C and D will continue to operate as discrete systems (see Figure 4.3). Combine any pair, any three or all four rooms. Switches on the control panel* close contacts between appropriate pairs of pins on the logic port, thus determining the input/output routing.

* control panel supplied by user

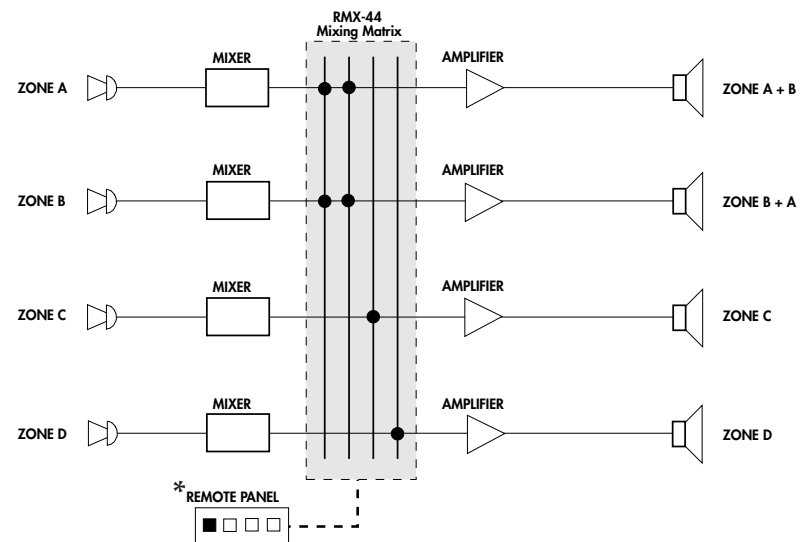


Figure 4.3

RMX-44 & RMX-62 SPECIFICATIONS

FREQUENCY RESPONSE	20 Hz to 20 kHz +0, -0.3 dB -3 dB Points, Ref. 1 kHz 4 Hz to 70 kHz (+4 dBm Output)
HUM AND NOISE	Ref. +4 dBm Output @ Unity Gain -85 dB (20 Hz to 20 kHz, Unweighted)
DISTORTION	Total Harmonic (THD + NOISE) Ref. +4 dBm Output @ Unity Gain -80 dB/0.01% (20 Hz to 20 kHz) Intermodulation (IMD)* Ref. +4 dBm Output @ Unity Gain -80 dB/0.01%
CROSSTALK & OFF ISOLATION	Channel to Channel** -80 dB (20 Hz to 20 kHz) Driven Input to Off Output -80 dB (20 Hz to 20 kHz)
INPUTS	Type Electronically Balanced (RF Suppressed) Connectors Female XLR Input Impedance 80 k Ohms Maximum Input Level +24 dBu
OUTPUTS	Type Electronically Balanced Connectors Male XLR Source Impedance 150 Ohms (75 Ohms Each Side) Recommended Load Impedance 600 Ohms or Greater Maximum Output Level (Ref. 1 kHz @ rated THD) Terminated w/600 Ohms +24 dBm Unterminated +26 dBu
TRIM POT GAIN RANGE	Ref. 0 dBu Output ±15 dB
CONTROL PORT	Input Type Active Low, Internally Pulled Up to +15VDC Input Protection 1/2 Max. Line Voltage, 12 kV Static Logic Action Requires Maintained Closure To Common Connector Female 25 Pin Std. D-Sub Logic Levels (At Control Port) Low < 3 Volts, High > 7 Volts Maximum Paralleled Inputs 64 Maximum Sink Current 50 mA Maximum Cable Length 600m (2000 ft), #22 AWG Switching Time 100 ms Power Output +15 VDC ±0.1 V, 50 mA
TURN ON DELAY	Power Up Delay 2 sec ± 0.25 sec
MAINS POWER	Power Requirements 100 to 125 VAC or 200 to 230 VAC 50/60 Hz; 13 Watts Maximum Fuse Type 125 mA (1/8 amp) SB @ 115 VAC 63 mA (1/16 amp) SB @ 230 VAC
MECHANICAL	Overall Dimensions 44mm H x 482mm W x 183mm D (1.72 in. H x 19 in. W x 7.18 in. D) Finish Textured Black Paint Weight Shipping: 3.8 Kg (8.5 lb.) Net: 3.1 Kg (6.9 lb.)
ACCESSORIES	Supplied with unit One DB-25 Male Connector
UL LISTING	RMX-44 Mixing Matrix RMX-44T Mixing Matrix RMX-62 Mixing Matrix RMX-62T Mixing Matrix

*SMPTE Method; 60 Hz + 7 kHz mixed 4:1.

** Input terminated w/600 ohms, unity gain, adjacent channel driven to +4 dBm output.

Specifications subject to change without notice.

OXMOOR FACTORY SERVICE

For service information contact:

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Toll Free: 1 (800) 262-6898
Fax: (205) 982-8250
Internet: www.oxmoor.com

Additional Installation & Operation Manuals are available from Oxmoor. Contact the Oxmoor Sales Department for pricing and other ordering information. Consult warranty statement for cautions concerning unauthorized service.

OXMOOR TWO YEAR LIMITED WARRANTY

Oxmoor warrants that each Oxmoor electronic product shall be free from defects in workmanship and materials and will, at its option, repair or replace any part of the product without charge provided the product is delivered to Oxmoor within two years of date of original purchase from or delivery by an authorized Oxmoor dealer. Excluded from this warranty are finish and appearance items and malfunction resulting from abuse, from use that is not in accordance with instructions, or operation under other than specified conditions. Also excluded are incidental or consequential damages except where precluded by applicable law. This warranty provides the customer with specific legal rights; there may also be other rights which vary from state to state.

Repair by other than Oxmoor Factory Service Department or its authorized service agency, unauthorized modification, or the removal or defacing of the serial number will void this warranty.

Products returned for factory warranty service must be prepaid and packaged in such a way as to insure safe transit and must be accompanied by a sales slip or other valid proof of purchase date.

PRIOR AUTHORIZATION FROM OXMOOR IS REQUIRED FOR RETURN. Contact Oxmoor for a Return Authorization (R.A.) Number and shipping information before returning product for service.



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Toll Free 1 (800) 262-6898 Telephone (205) 982-8200 Fax (205) 982-8250 E-mail info@oxmoor.com

For 24-hour access to product specs and information visit Oxmoor's complete product line on the internet at www.oxmoor.com.

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Specifications and design are subject to change without notice.