

# OXMOOR<sup>®</sup>

C O R P O R A T I O N

A Limited Liability Company

## 4x4<sup>™</sup> & 4x4T<sup>™</sup> BUFFER AMPLIFIER



## Installation & Operation Manual

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## 4x4 INTRODUCTION

- UL and CE listed
- Front panel, screwdriver-adjustable gain trims
- Electronically balanced, XLR-type inputs and outputs
- +24 dBu input signal levels
- +26 dBu output signal levels
- Built-in RF suppression
- Compact, 1U rack space chassis
- Internal jumpers for setting various output configurations

The Model 4x4 is a compact, four-channel audio buffer/mixer/distribution amplifier. Any of four inputs can be assigned to any (or all) of the four outputs. Internal jumpers are used to configure the unit, thus affording complete flexibility with security from unauthorized tampering.

The 4x4 is intended for use in mobile or fixed-installation applications in sound reinforcement, broadcast or recording, and in other audio systems requiring high-quality performance, flexible audio routing and combining, and adjustable level matching.

While it is an exceptional distribution amplifier, with four independently adjustable gain stages, the 4x4 does more than distribute audio. Its mixing capability enables it to combine up to four inputs to drive a single output. Two independent mixing buses enable signals to be mixed before or after the gain stages. The 4x4 can be used as a zone mixer or a line driver. It is ideal for matching different signal levels to perform such common conversion tasks as interfacing hi-fi equipment with professional audio systems. The 4x4 can accomplish this while also providing both a stereo output and a mono sum.

Front panel gain trimmers provide  $\pm 15$  dB of gain adjustment that may be assigned to the inputs or outputs. RF suppression circuitry safeguards against radio-frequency interference. Input and output stages are electronically balanced and fitted with standard 3-pin, XLR-type connectors. The model 4x4T is supplied with output transformers. For enhanced flexibility, each output driver can be set for balanced or unbalanced operation using internal jumpers. Output gain is independently adjustable over a  $\pm 15$  dB range, with a +26 dBu maximum output level into a 600 ohm or higher impedance load, and an overall frequency response of 20 Hz to 20 kHz,  $\pm 0.3$  dB.

Designed to satisfy exacting professional standards, the 4x4 offers excellent performance in a highly dependable package. Its impressive audio specifications are ideally suited to recording and broadcast applications; yet its rugged 1U rack-mount chassis, coupled with exceptional immunity to environmental stress, also makes it an ideal choice for demanding road work and commercial installations.

The logo for OXMOR, featuring the brand name in a bold, serif, all-caps font. The letters are closely spaced, and there is a registered trademark symbol (®) at the end of the word.

# 4x4 CALLOUTS

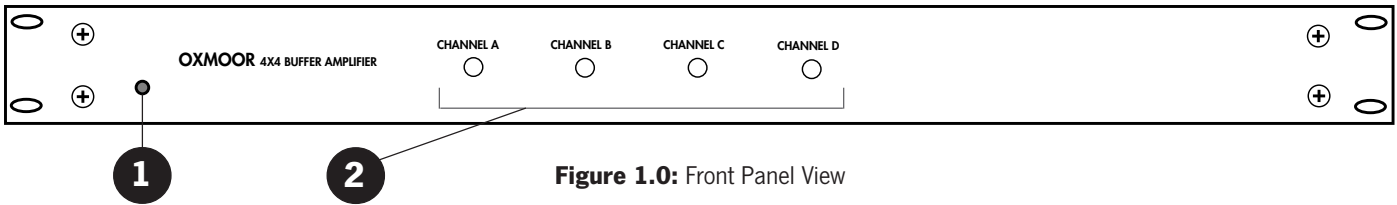


Figure 1.0: Front Panel View

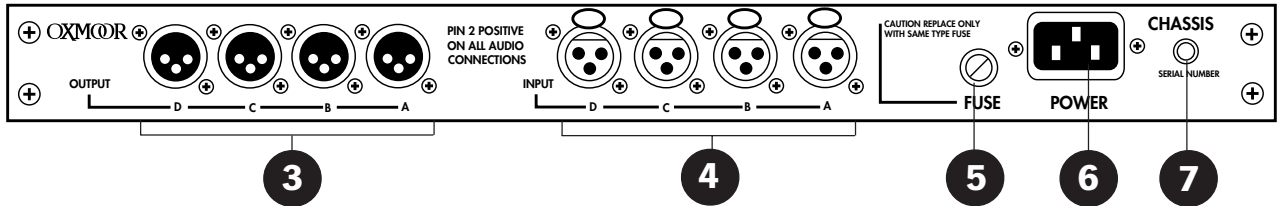


Figure 1.1: Rear Panel View

**1. POWER STATUS LED** – Indicator for AC Power On.

**2. INPUT TRIM** – Trim pots, accessed through the front panel with a small flat-blade screwdriver, offer  $\pm 15$  dB gain adjustment to match different operating levels or balance levels across channels.

**3. PROGRAM OUTPUTS** – Audio outputs, XLR-M-type connectors, Pin 2 positive, electronically balanced, accept balanced or unbalanced signals. Recommended load impedance is 600 ohms or greater. Maximum output level is +26 dBu.

**4. PROGRAM INPUT** – Audio input, XLR-F-type connector,

electronically balanced, accepts balanced or unbalanced signals from line-level devices. Normal input level is +4 dBu with a maximum input level of +24 dBu.

**5. FUSE HOLDER** - Replace only with approved type of fuse in a rating appropriate to the mains voltage, as indicated on back panel. (*See SPECIFICATIONS, page 9.*)

**6. 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.

**7. CHASSIS GROUND POST** - A screw with a star washer enables the installer to secure a ground wire to the chassis.

## 4X4 BLOCK DIAGRAM

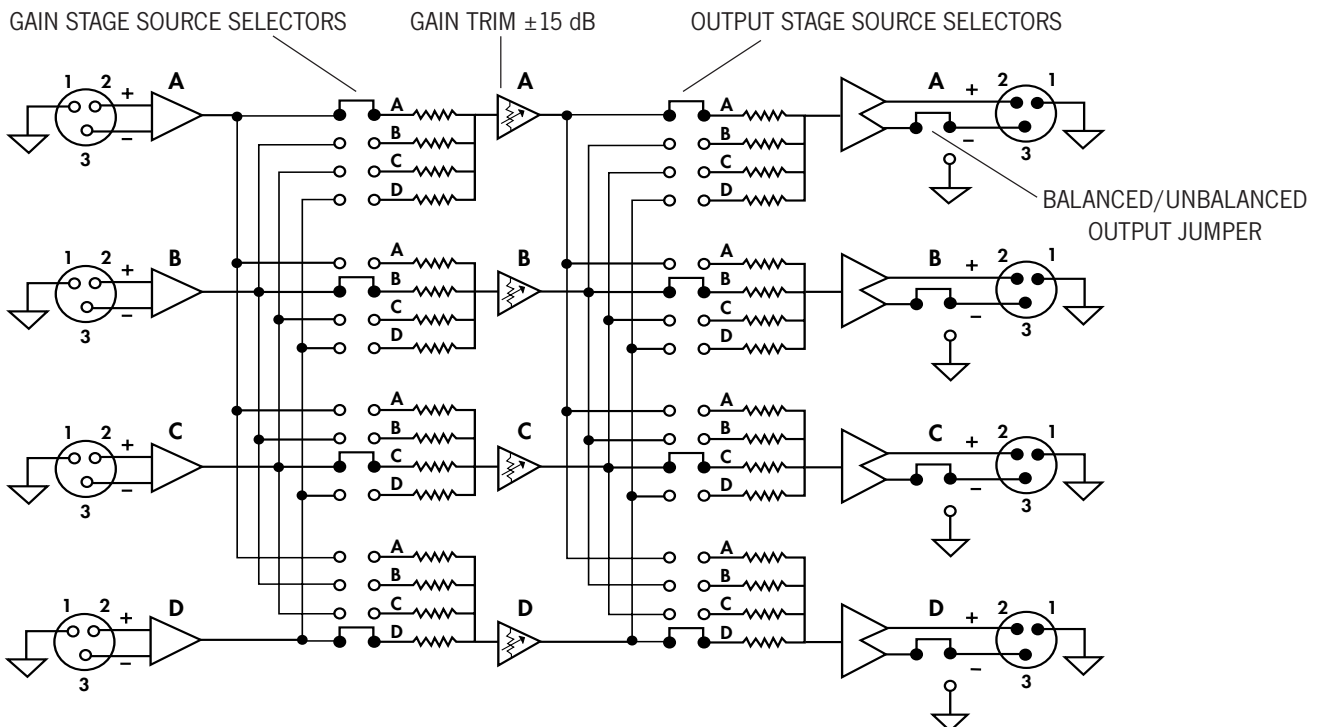


Figure 2.0: Block Diagram of Factory Set-Up

# 4x4 SET-UP

## BALANCED/UNBALANCED OUTPUT OVERVIEW

(Refer to Figure 2.0)

The 4x4 outputs may be independently set for either balanced or unbalanced operation. In the unbalanced configuration, pin 3 of the output connector is grounded, and the maximum output level drops by 6 dB.

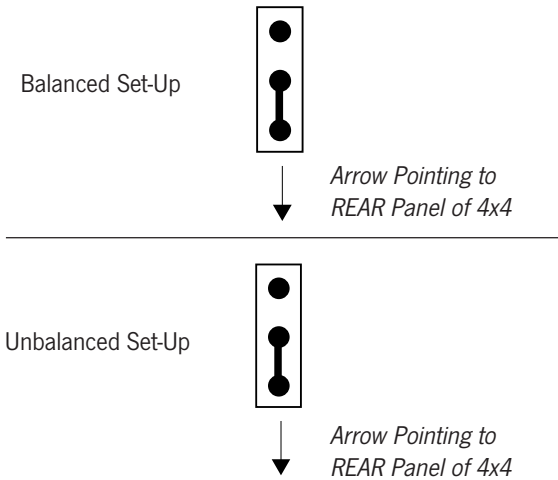


Figure 3.0: Output Jumper Set-Up

## BALANCED/UNBALANCED OUTPUT SELECTION

Internal jumpers are factory-installed to provide balanced outputs. Figure 3.0 shows the proper jumper positions for balanced or unbalanced operation. Correct internal jumper placement ensures the corresponding output driver will not be shorted to ground. (While an output short will not harm the circuit, it may result in increased distortion and crosstalk.) This procedure also simplifies output connections by allowing the use of standard cables in all cases. Outputs may be reconfigured for unbalanced operation in five simple steps:

**CAUTION!**  
Hazardous voltages are present inside the chassis. Before opening the case to gain access to the printed circuit board, always remove the power from the unit by disconnecting the AC power cord.

1. Disconnect the AC power cord.
2. Remove the screws that secure the top cover and set the cover aside.
3. The BALANCED/UNBALANCED jumpers are located on the circuit board next to their respective output connector. The jumper is factory-installed in the balanced position.
4. Observing the positions marked on the circuit board, remove the jumper and reinstall in the unbalanced position.
5. Replace top cover and screws.

NOTE: In the unbalanced mode, use pin 2 as HOT and pin 3 as COMMON. Pin 1 is to be used as SHIELD.

## SOURCE SELECT OVERVIEW

(Refer to Figure 3.0)

The signal source from any of the 4x4 inputs may be independently assigned to the unit's four gain trim pots and/or to its four output stages. This capability greatly enhances the unit's flexibility, allowing it to assume a wide variety of signal distribution configurations. (See APPLICATIONS, pages 5-7.)

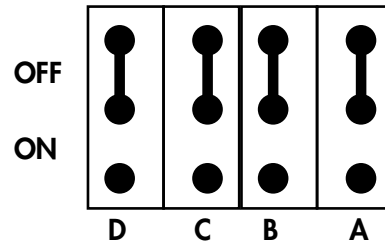


Figure 3.1: Source Selection

**CAUTION!**  
Hazardous voltages are present inside the chassis. Before opening the case to gain access to the printed circuit board, always remove the power from the unit by disconnecting the AC power cord.

## SOURCE SELECTION

1. Disconnect the AC power cord.
2. Remove the screws that secure the top cover and set the cover aside.
3. The GAIN STAGE source selector jumpers are located on the circuit board next to the Input Trim pots. The jumpers for the gain stage are factory installed as:

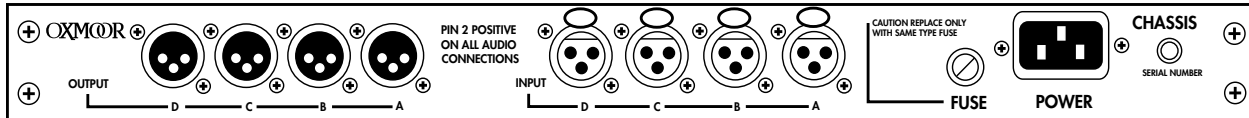
Input A assigned to Gain Stage A  
Input B assigned to Gain Stage B  
Input C assigned to Gain Stage C  
Input D assigned to Gain Stage D

4. The OUTPUT STAGE source selector jumpers are located on the circuit board next to the 4x4's front panel. The jumpers for the output stage are factory installed as:

Gain Stage A assigned to Output Stage A  
Gain Stage B assigned to Output Stage B  
Gain Stage C assigned to Output Stage C  
Gain Stage D assigned to Output Stage D

5. Observing the positions marked on the circuit board, remove the jumper(s) and reinstall in the desired positions.
6. Replace top cover and screws.

# 4x4 CONNECTIONS



**Figure 4.0:** Rear Panel View

## PROGRAM INPUT CONNECTIONS

(Refer to Figure 4.0)

The 4x4 Buffer Amplifier provides connections for four program channel inputs.

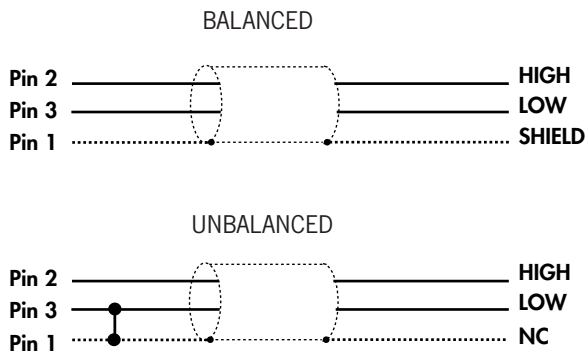
Each Program Input connection on the 4x4 is made through a female, XLR-type, 3-pin connector.

**PROGRAM INPUTS:** Pin 1 = Shield, Pin 2 = High, Pin 3 = Low, electronically balanced inputs accept balanced or unbalanced signals from line-level devices. Nominal input level is +4 dBu with maximum input level of +24 dBu.

## PROGRAM INPUT WIRING SCHEMES

(Refer to Figure 4.1)

The diagrams below illustrate the correct wiring of balanced and unbalanced program inputs.



**Figure 4.1:** Program Input Wiring Schemes

## PROGRAM OUTPUT CONNECTIONS

(Refer to Figure 4.0)

The 4x4 Buffer Amplifier provides connections for four program channel outputs.

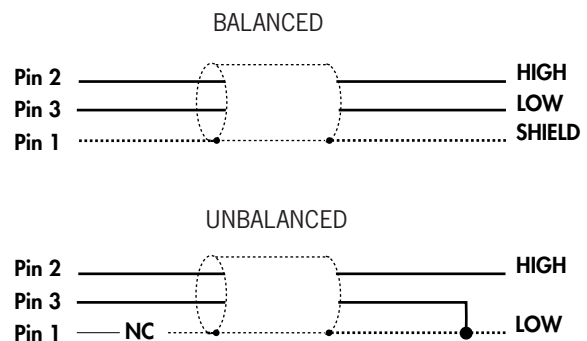
Each Program Output connection on the 4x4 is made through a male, XLR-type, 3-pin connector.

**PROGRAM OUTPUTS:** Pin 1 = Shield, Pin 2 = High, Pin 3 = Low, electronically balanced outputs accommodate balanced or unbalanced lines. Recommended load impedance is 600 ohms or greater. Maximum output level is +26 dBu.

## PROGRAM OUTPUT WIRING SCHEMES

(Refer to Figure 4.2)

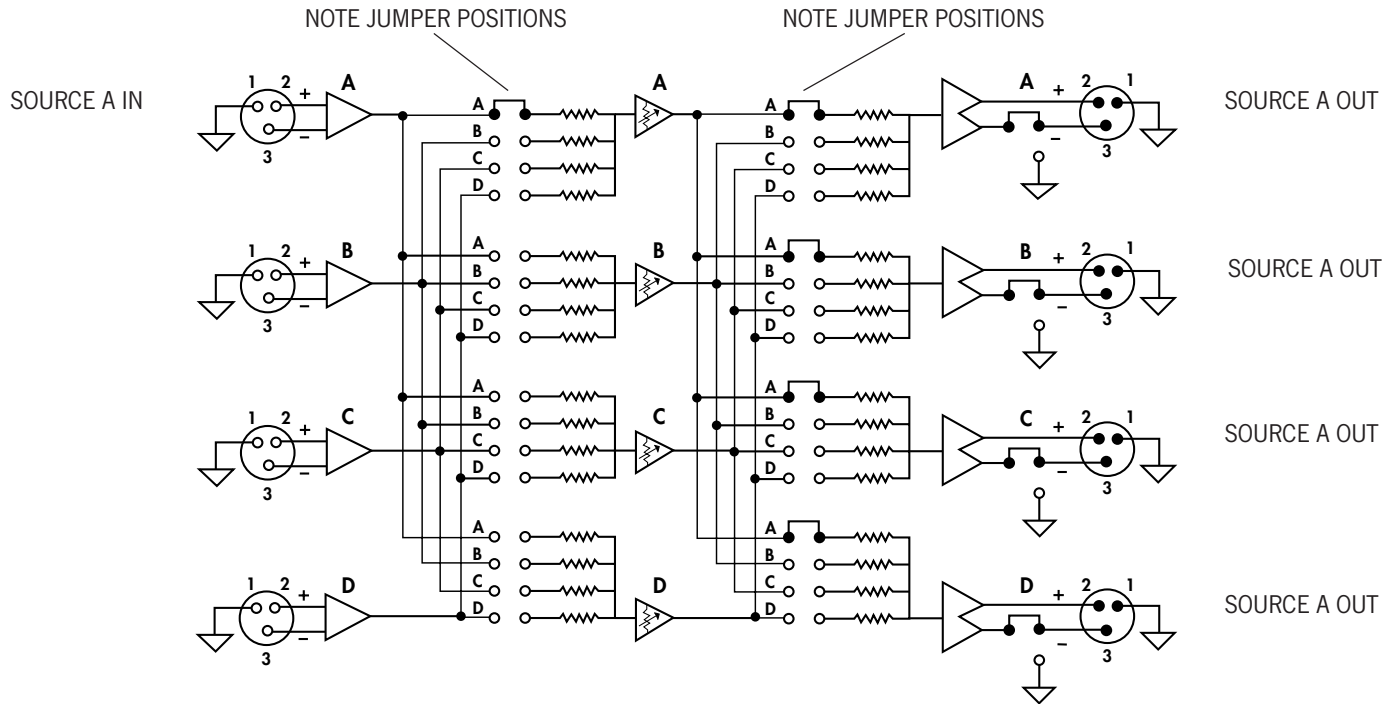
The diagrams below illustrate the correct wiring of balanced and unbalanced program outputs.



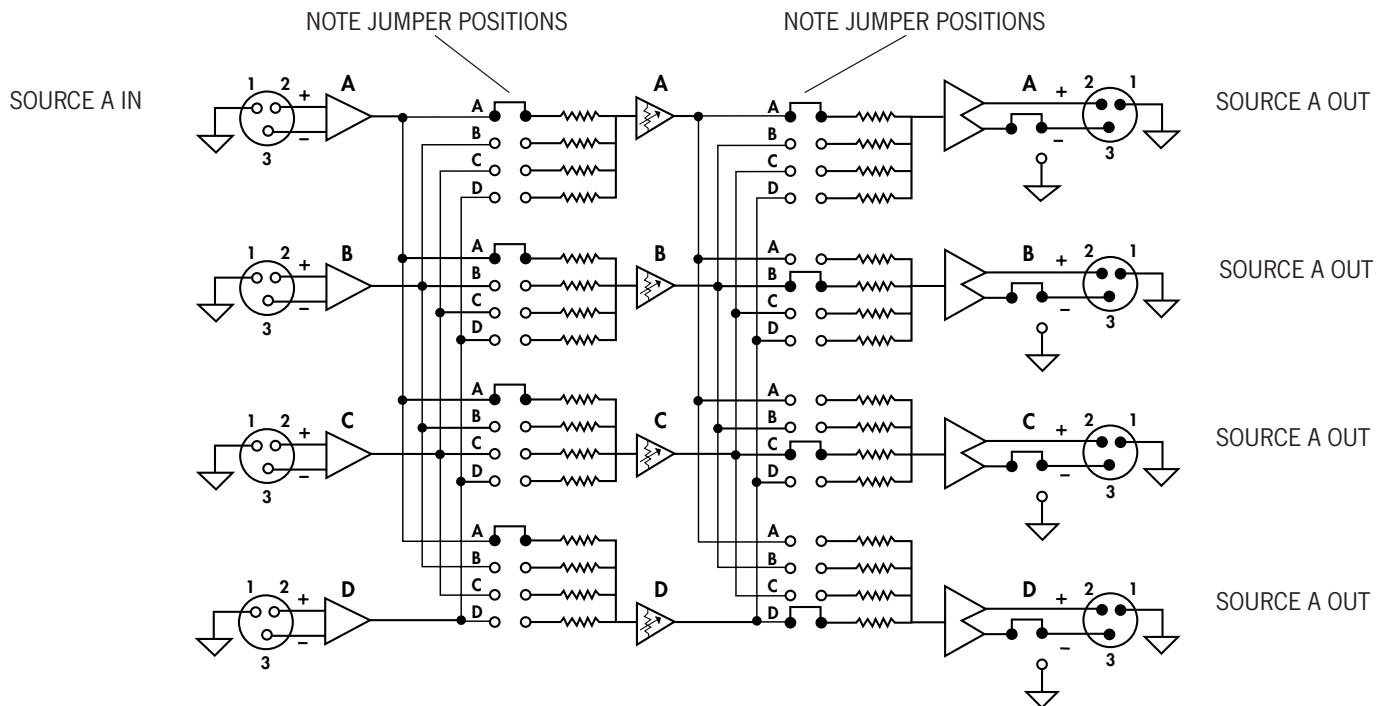
**Figure 4.2:** Program Output Wiring Schemes

**NOTE:** The unbalanced output configuration is valid **ONLY** if the internal Balanced/Unbalanced output jumper block has been set to the unbalanced position. (See *BALANCED/UNBALANCED OUTPUT SELECTION*, page 3.)

# 4x4 APPLICATIONS

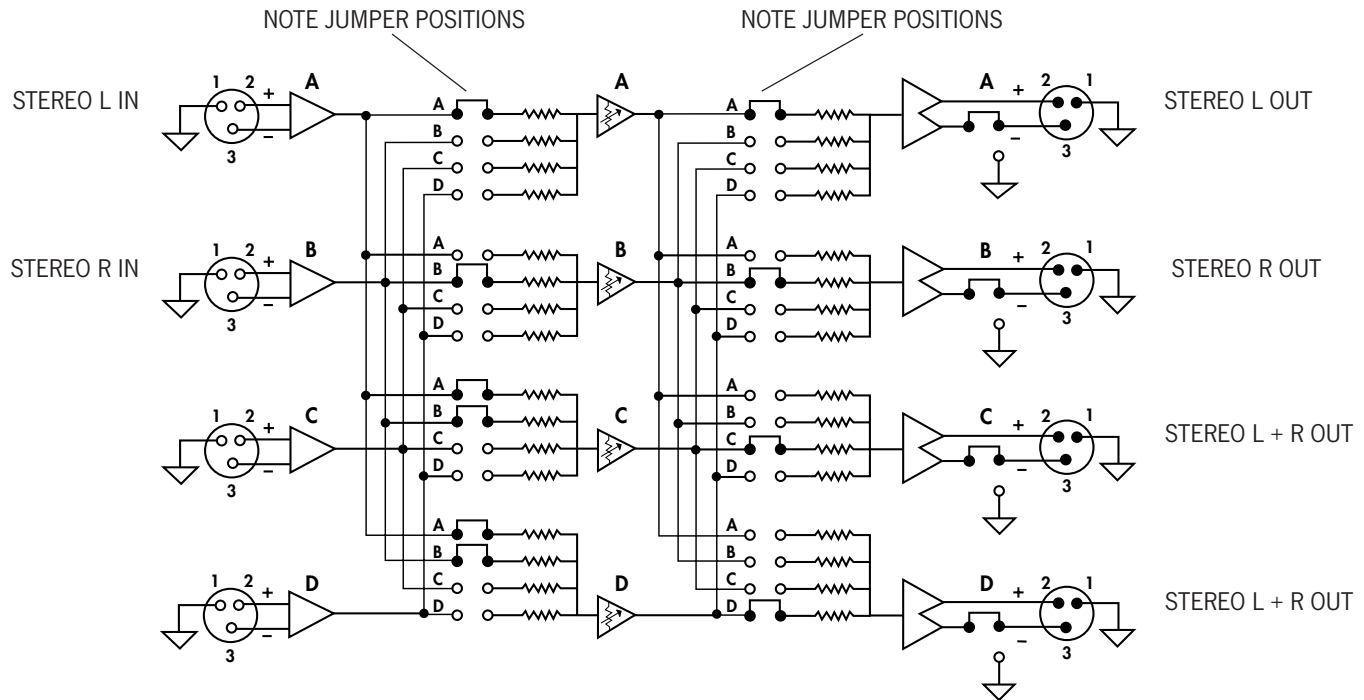


**Figure 5.0:** 4x4 Configured as a 1x4 Distribution Amplifier with One Master Level Control

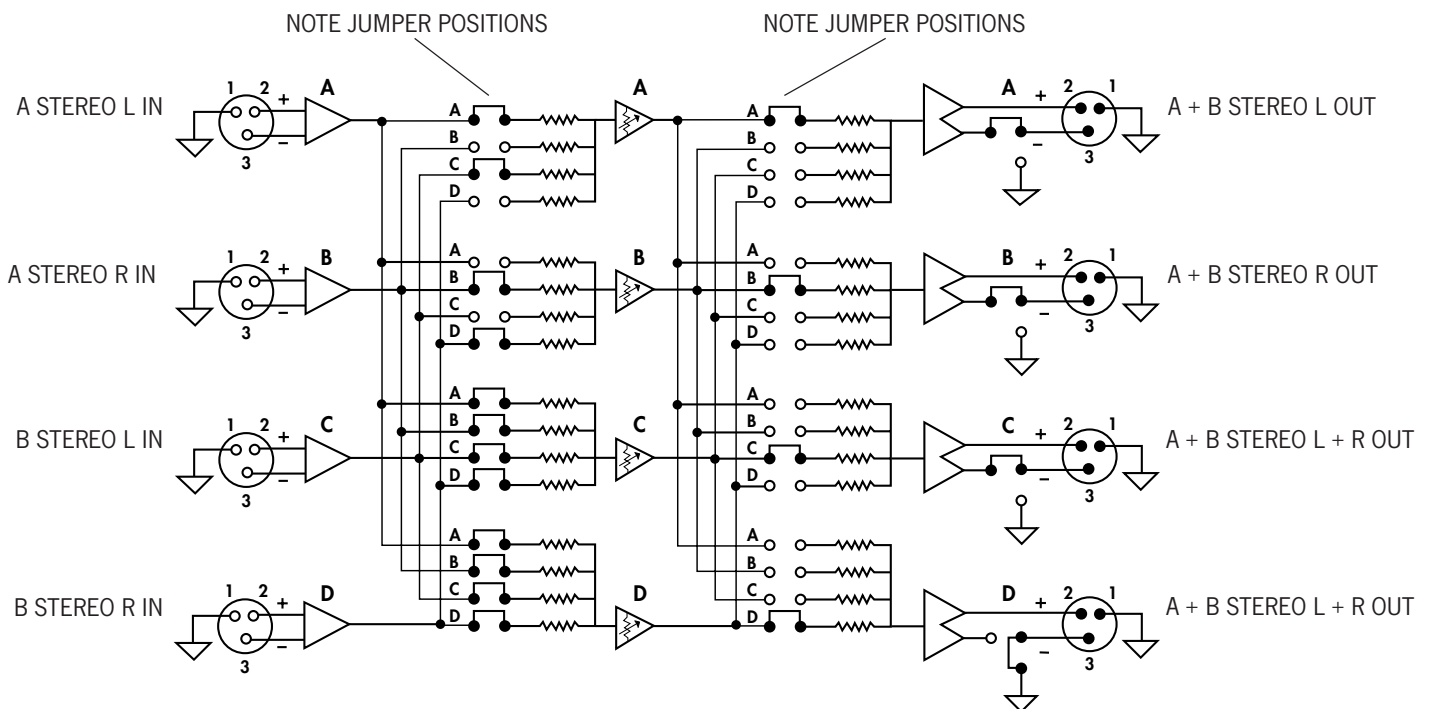


**Figure 5.1:** 4x4 Configured as a 1x4 Distribution Amplifier with Independent Output Level Controls

## 4x4 APPLICATIONS (CONTINUED)



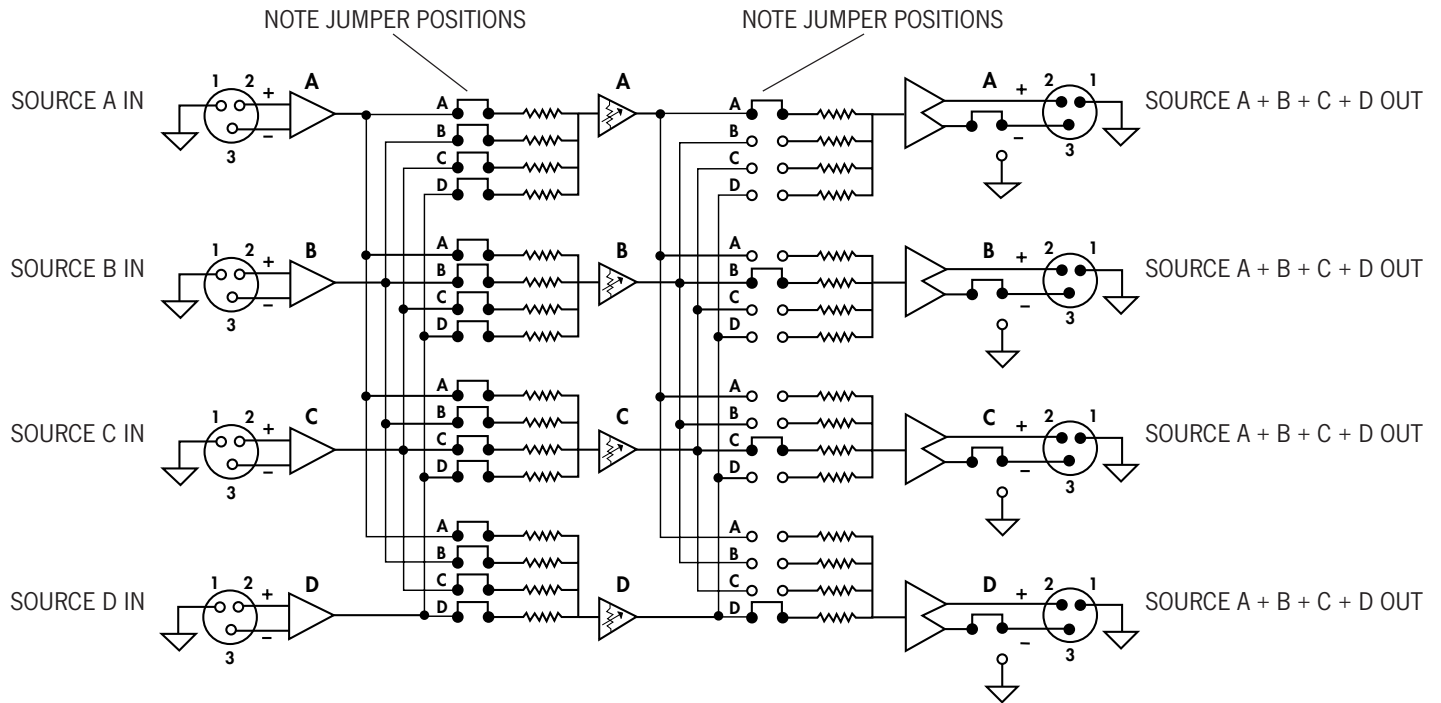
**Figure 5.2:** 4x4 Configured as a Stereo Input to a Stereo Output with Two Mono Sum Outputs



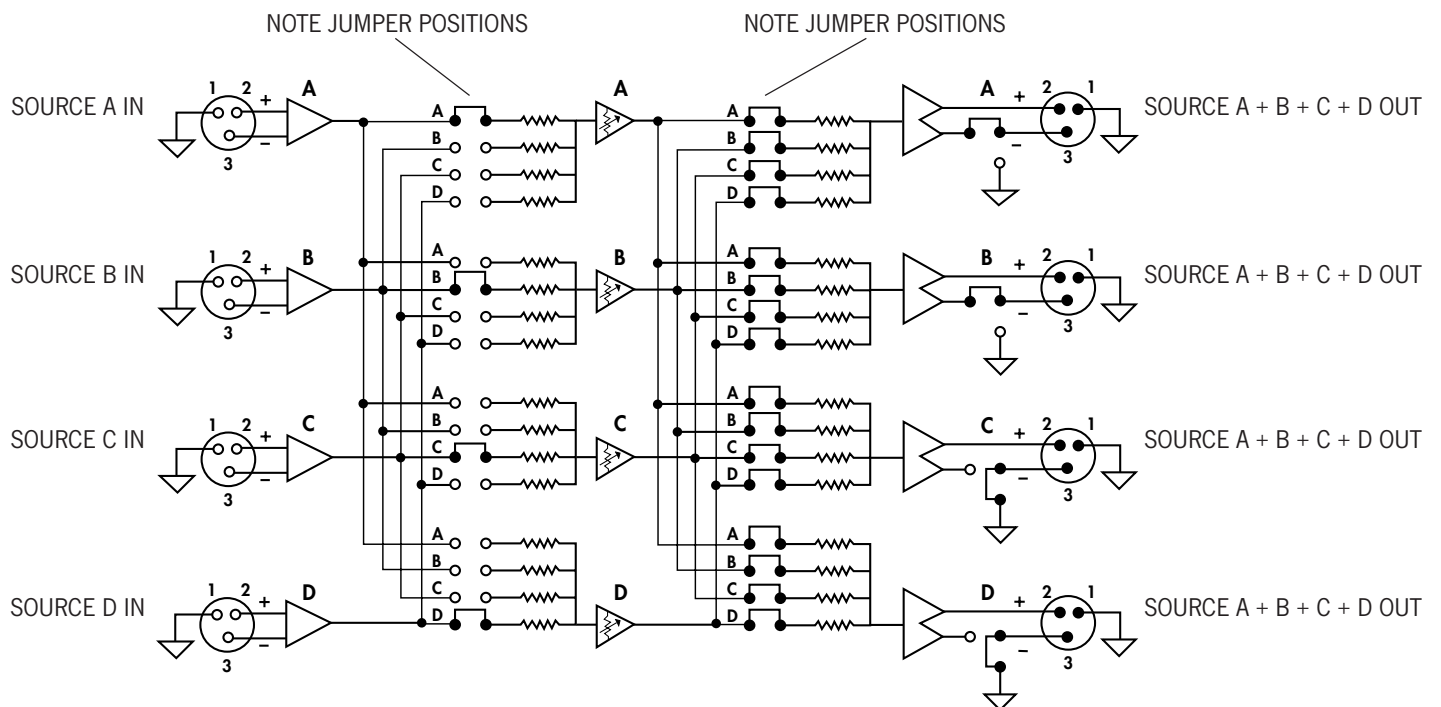
**Figure 5.3:** 4x4 Configured as Two Stereo Inputs to One Stereo Output and Two Mono Outputs



## 4x4 APPLICATIONS (CONTINUED)

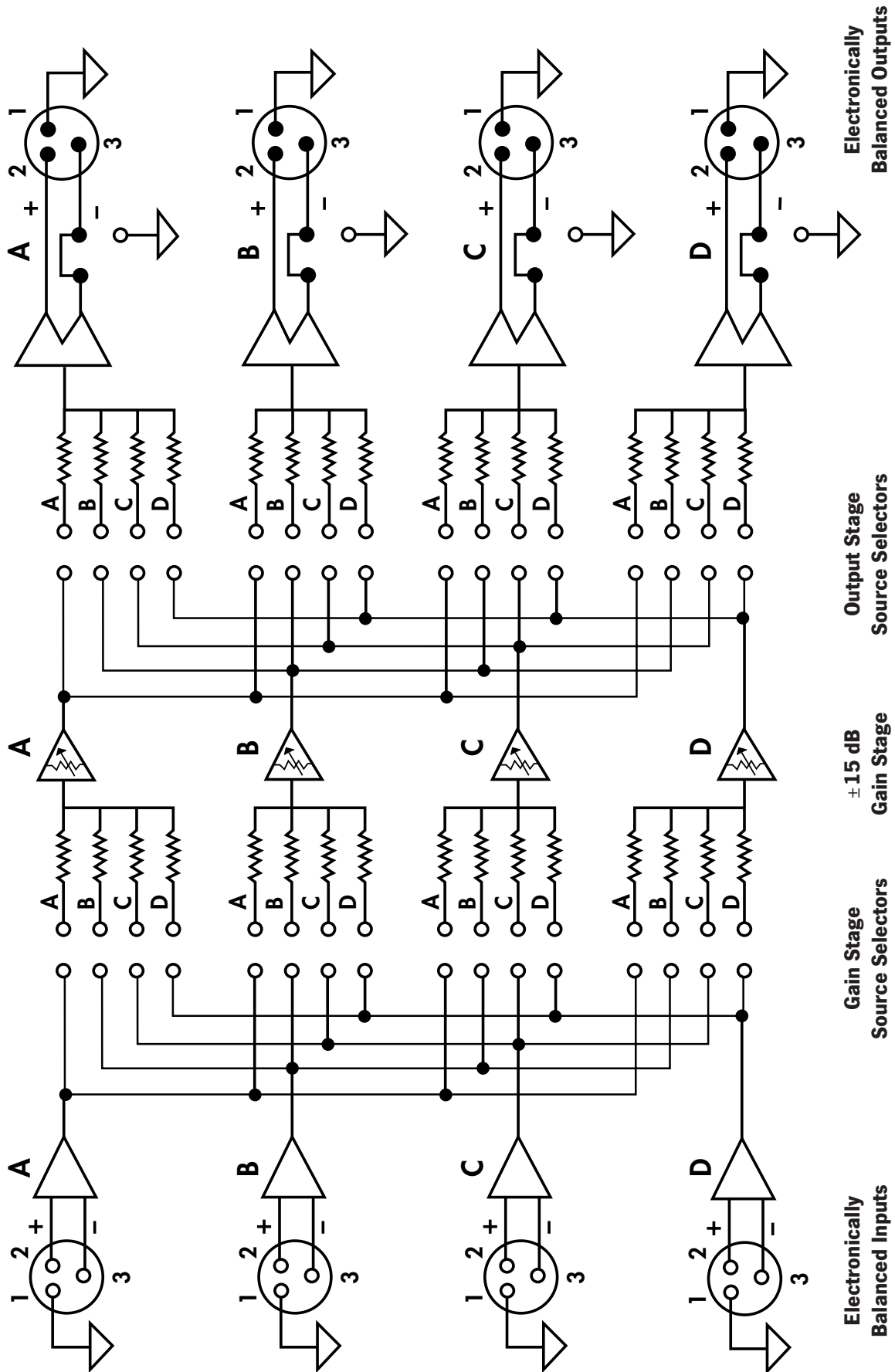


**Figure 5.4:** 4x4 Configured as Four Discrete Inputs Combined to Four Mixed Outputs with Independent Gain Controls



**Figure 5.5:** 4x4 Configured as Four Discrete Inputs with Independent Gain Controls Combined to Drive Four Mixed Outputs (Channels A & B Balanced and Channels C & D Unbalanced)

# 4x4 USER SET-UP TEMPLATE



## 4x4 & 4x4T SPECIFICATIONS

<b>FREQUENCY RESPONSE</b>	20 Hz to 20 kHz ..... +0, -0.3 dB
<b>HUM AND NOISE</b>	Ref. +4 dBm Output @ Unity Gain ..... -94 dB (20 Hz to 20 kHz, Unweighted)
<b>DISTORTION</b>	Ref. +4 dBm Output @ Unity Gain THD + Noise ..... 0.0016% (20 Hz to 20 kHz) SMPTE IMD* ..... 0.0021% Transient IMD ..... 0.0031% (3.15 kHz SQ + 15 kHz Probe, 30 kHz)
<b>CROSSTALK</b>	Channel to Channel** ..... -80 dB (20 Hz to 20 kHz)
<b>AUDIO INPUTS</b>	Type ..... Electronically Balanced (RF Suppressed) Connectors ..... Female, 3-Pin, XLR-Type Input Impedance ..... 80 K Ohms Input Sensitivity ..... Nominal +4 dBu, Maximum +24 dBu Common Mode Rejection Ratio ..... 50 dB at 1 kHz
<b>AUDIO OUTPUTS</b>	Type ..... Electronically Balanced (RF Suppressed) Connectors ..... Male, 3-Pin, XLR-Type Source Impedance ..... 150 Ohms (75 Ohms/Side) Recommended Load Impedance ..... 600 Ohms or Greater Maximum Output Level ..... Ref. 1 kHz @ Rated THD Terminated w/600 Ohms ..... +24 dBm (All Outputs Driven Simultaneously) Unterminated ..... +26 dBu
<b>TRIM POT GAIN RANGE</b>	Ref. +4 dBm, Output @ Unity Gain ..... $\pm 15$ dB
<b>SAFETY</b>	Listings ..... UL and CE
<b>MAINS POWER</b>	Power Requirements ..... 100 - 125 VAC or 200 - 230 VAC, 50/60 Hz Current Requirements ..... 8 Watts Fuse Type ..... 125 mA (1/8 Amp) SB @ 115 VAC 65 mA (1/16 Amp) SB @ 230 VAC
<b>ENVIRONMENTAL</b>	Storage Temperature ..... -25°C to 70°C (-13°F to 158°F) Operating Temperature ..... -10°C to 50°C (-14°F to 122°F) Humidity ..... Less than 80% RH, Non-condensing
<b>MECHANICAL</b>	Overall Dimensions ..... 44 mmH x 482 mm W x 183 mmD (1.72 "H x 19" W x 7.18" D) Finish ..... Textured Black Paint Weight ..... Shipping: 3.9 Kg (8.5 lb) Net: 3.1 Kg (6.9 lb)

\* 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

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**Toll Free: 1 (800) 262-6898**  
**Fax: (205) 982-8250**  
**Internet: [www.oxmoor.com](http://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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For 24-hour access to product specs and information visit Oxmoor's complete product line on the internet at [www.oxmoor.com](http://www.oxmoor.com).

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*Specifications and design are subject to change without notice.*