

XO2 & XO3

ELECTRONIC CROSSOVER MODULES

**OPERATING INSTRUCTIONS
and trouble-shooting guide**

LECTROSONICS, INC.

Rio Rancho, NM

INTRODUCTION

The XO2 and XO3 are high quality electronic crossovers for use with bi- or tri-amped loudspeaker systems. The XO2 is a two-way crossover, while the XO3 is a three-way crossover. Crossover frequencies are fully adjustable, and level controls are included to match sound pressure levels from individual drivers.

The XO2 and XO3 each occupy one standard width in a Modular Audio Processor mainframe. All controls are recessed, and are covered by a supplied panel to prevent accidental misadjustment.

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GENERAL TECHNICAL DESCRIPTION

The XO2 and XO3 both use 24dB/octave Linkwitz-Riley aligned state variable active filters. The Linkwitz-Riley alignment minimizes lobing error. This alignment also provides a high out of band slope rate to assure that each driver receives only the desired frequencies, thus lowering distortion.

A balanced, RF filtered, XLR type input feeds the filter sections. In the XO2, one filter section is used to split the audio spectrum into two bands. The low frequency output comes out at unity gain, while the high frequency output has a level control with a range from 6dB of gain to off.

In the XO3, the low frequency output again comes out at unity gain. Two filter sections are used to split the audio spectrum into 3 bands. Both the mid and high frequency outputs have a level control with a range from 6dB gain to off.

The range of crossover frequencies for both the XO2 and XO3 is continuously variable from 90-900Hz in the x1 mode and 900-9kHz in the x10 mode.

INSTALLATION

The XO2 or XO3 module is installed from the rear of the Modular Audio Processor mainframe. The printed circuit board fits into one of the ten sets of card guides provided in the mainframe. The module is then slid forward in the mainframe until the female edge connector on the module board is firmly seated on the male pins of the male bus board. Care should be taken when inserting the edge connector onto the pins to be sure there is correct alignment. Two #4 machine screws are provided to fasten the rear panel to the top and bottom rear rails of the Modular Audio Processor mainframe. In addition, two #4 countersink machine screws are provided to secure the cover panel, also supplied, on the front of the Modular Audio Processor mainframe after system adjustment is complete.

FRONT PANEL DESCRIPTION

XO2 Front Panel:

LOW/HIGH CROSSOVER FREQUENCY - Sets the crossover frequency between high and low outputs. Continuously variable over a one decade range.

RANGE SWITCH - Sets the range over which the Low/High Crossover Frequency control operates. In the x1 position, the range is 90-900Hz. In the x10 position, the range is 900Hz-9kHz.

HF OUTPUT LEVEL - Controls the gain of the high frequency output. Gain range is from 6dB of gain to off.

XO3 Front Panel:

LOW/MID CROSSOVER FREQUENCY - Sets the crossover frequency between low and mid outputs. Continuously variable over a one decade range.

RANGE SWITCH - Sets the range over which the Low/Mid Crossover Frequency control operates. In the x1 position, the range is 90-900Hz. In the x10 position, the range is 900Hz-9kHz.

MF OUTPUT LEVEL - Controls the gain of the mid frequency output. Gain range is from 6dB of gain to off.

MID/HIGH CROSSOVER FREQUENCY - Sets the crossover frequency between mid and high outputs. Continuously variable over a one decade range.

RANGE SWITCH - Sets the range over which the Mid/High Crossover Frequency control operates. In the x1 position, the range is 90-900Hz. In the x10 position, the range is 900Hz-9kHz.

HF OUTPUT LEVEL - Controls the gain of the high frequency output. Gain range is from 6dB of gain to off.

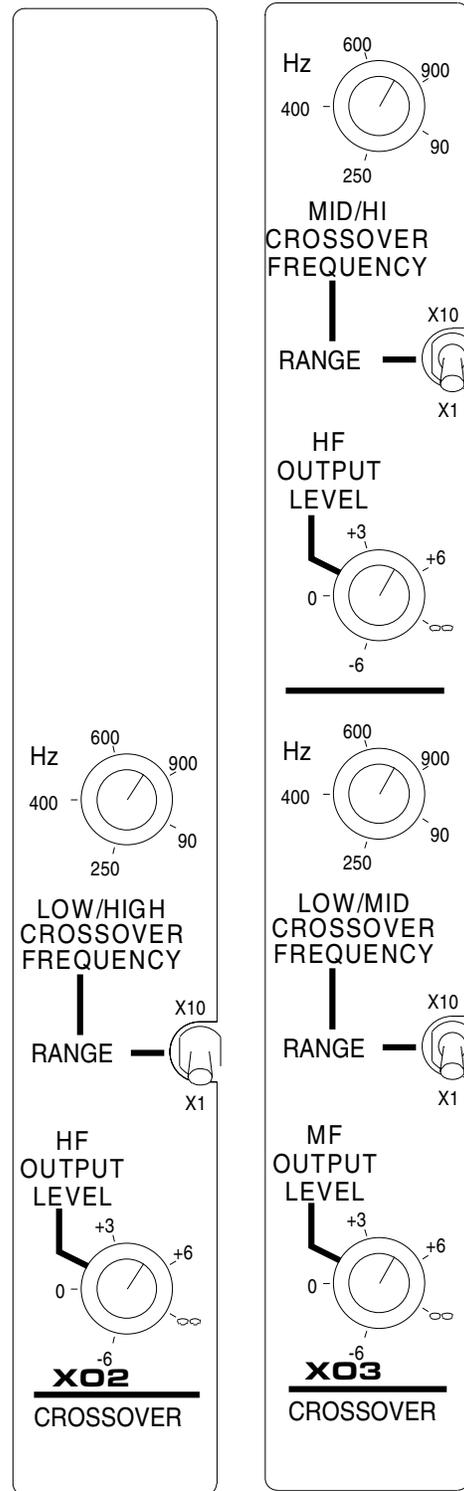


Figure 1 - XO2 and XO3 Front Panels

REAR PANEL DESCRIPTION

XO2 Rear Panel:

INPUT - Provides a balanced, RF filtered, XLR type line level input to the XO2.

HF OUTPUT - Provides a balanced and floating, RF filtered, XLR type line level output of frequencies in the high frequency band of the audio spectrum.

LF OUTPUT - Provides a balanced and floating, RF filtered, XLR type line level output of frequencies in the low frequency band of the audio spectrum.

XO3 Rear Panel:

INPUT - Provides a balanced, RF filtered, XLR type line level input to the XO3.

HF OUTPUT - Provides a balanced and floating, RF filtered, XLR type line level output of frequencies in the high frequency band of the audio spectrum.

MF OUTPUT - Provides a balanced and floating, RF filtered, XLR type line level output of frequencies in the mid frequency band of the audio spectrum.

LF OUTPUT - Provides a balanced and floating, RF filtered, XLR type line level output of frequencies in the low frequency band of the audio spectrum.

OPERATING INSTRUCTIONS

The following instructions assume a properly set up automatic or standard system.

1) Using the Crossover Frequency controls and the Range switch, set the correct crossover frequencies for the loudspeakers in the system. Take care to set the CORRECT frequency, as excess low frequency energy can damage high frequency drivers.

2) Adjust the relative levels of the drivers using the Output Level controls.

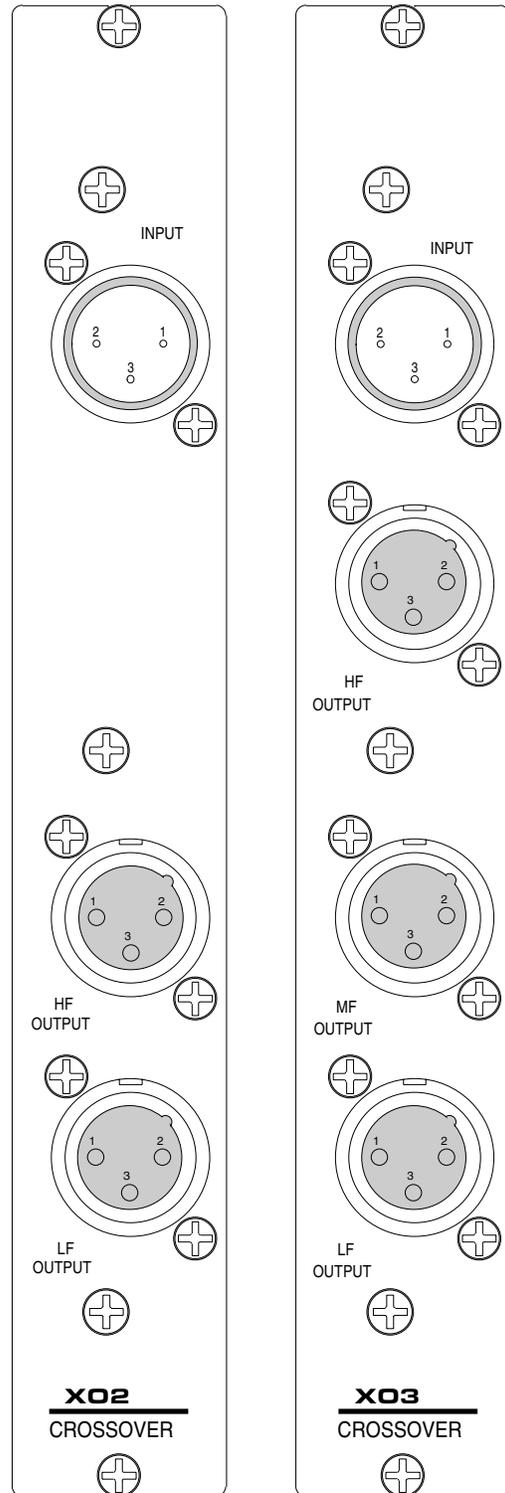


Figure 2 - XO2 and XO3 Rear Panels

SPECIFICATIONS

Filter Type:	24dB/octave Linkwitz-Riley state variable active filter
Noise (20-20kHz):	-90dBu
THD @ +4dBu:	Less than 0.02%
IMD @ +4dBu:	Less than 0.02%
Gain:	
LF Out:	unity
MF Out:	+6db to off (XO3 only)
HF Out:	+6dB to off
Frequency Range:	90-900Hz (x1 position) 900-9kHz (x10 position)
Input Impedance:	20K balanced, 10K unbalanced
Output Impedance:	100 Ohms balanced, 50 Ohms unbalanced
Maximum Input Level:	+20dBu
Maximum Output Level:	+20dBu
Input/Output Connectors:	3 Pin XLR
Maximum Power Consumption:	100mA at ± 15 Volts

SERVICE AND REPAIR

If your system malfunctions, you should attempt to correct or isolate the trouble before concluding that the equipment needs repair. Make sure you have followed the setup procedure and operating instructions. Check out the inter-connecting cords and then go through the TROUBLE SHOOTING section in the manual

We strongly recommend that you **do not** try to repair the equipment yourself and **do not** have the local repair shop attempt anything other than the simplest repair. If the repair is more complicated than a broken wire or loose connection, send the unit to the factory for repair and service. Don't attempt to adjust any controls inside the units. Once set at the factory, the various controls and trimmers do not drift with age or vibration and never require readjustment. **There are no adjustments inside that will make a malfunctioning unit start working.**

LECTROSONICS service department is equipped and staffed to quickly repair your equipment. In-warranty repairs are made at no charge in accordance with the terms of the warranty. Out of warranty repairs are charged at a modest flat rate plus parts and shipping. Since it takes almost as much time and effort to determine what is wrong as it does to make the repair, there is a charge for an exact quotation. We will be happy to quote approximate charges by phone for out of warranty repairs.

RETURNING UNITS FOR REPAIR

You will save yourself time and trouble if you will follow the steps below:

- A. DO NOT return equipment to the factory for repair without first contacting us by letter or by phone. We need to know the nature of the problem, the model number and the serial number of the equipment. We also need a phone number where you can be reached 8 am to 4 pm (Mountain Standard Time).
- B. After receiving your request, we will issue you a return authorization number (R.A.). This number will help speed your repair through our receiving and repair departments. The return authorization number must be clearly shown on the outside of the shipping container.
- C. Pack the equipment carefully and ship to us, shipping costs prepaid. If necessary, we can provide you with the proper packing materials. UPS is usually the best way to ship the units. Heavy units should be "double-boxed" for safe transport.
- D. We also strongly recommend that you insure the equipment, since we cannot be responsible for loss of or damage to equipment that you ship. Of course, we insure the equipment when we ship it back to you.

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World Wide Web: <http://www.lectrosonics.com>

email: sales@lectrosonics.com

LIMITED ONE YEAR WARRANTY

The equipment is warranted for one year from date of purchase against defects in materials or workmanship provided it was purchased from an authorized dealer. This warranty does not cover equipment which has been abused or damaged by careless handling or shipping. This warranty does not apply to used or demonstrator equipment.

Should any defect develop, we will, at our option, repair or replace any defective parts without charge for either parts or labor. If we cannot correct the defect in your equipment, we will replace it at no charge with a similar new item. We will pay for the cost of returning your merchandise to you.

This warranty applies only to items returned to us, shipping costs prepaid, within one year from the date of purchase.

This warranty gives you specific legal rights. You may have additional legal rights which vary from state to state.

LECTROSONICS, INC.

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