

## 3XS Specifications

All specifications are measured at 14.4 VDC (standard automotive voltage)

Frequency response ..... 10-20 kHz +- dB  
 Total harmonic distortion ..... 0.007%  
 Signal to Noise ratio ..... 120dB  
 Maximum output level ..... 9.5 Vrms  
 Crossover Slope ..... 24dB/Octave  
 Crossover type ..... 2 Way Linkwitz-Riley  
 Programmable Crossover frequency ..... Shipped @ 150/90/90 Hz (Programmable)

PFM filter slope ..... 18dB/Octave  
 PFM filter frequency ..... Shipped @ 33Hz (Programmable)  
 Power supply ..... Transformer isolated PWM DC/DC converter  
 Power draw ..... 350mA  
 Recommended fuse rating ..... 1 Amp  
 Size ..... 1.15" h x 8.75 w x 5.7" d  
 Weight ..... 31lbs  
 Balanced in ..... Yes  
 Input ground isolation jumpers ..... Yes  
 Output ground isolation jumpers ..... Yes  
 Country of origin ..... USA

©AudioControl 1998, AudioControl is a division of Electronic Engineering and Manufacturing, Inc. All Rights Reserved

AudioControl, Performance Match™, Making Good Stereo Sound Better™, 3XS™, 24XS™, and EQL™ are all trademarks of Electronic Engineering and Manufacturing, Inc.

This manual was written, designed, printed and stuffed into a neat box with a really neat product on a grey, misty day; considering where we live.

# AudioControl®

*making good stereo sound better®*

22410 70th Avenue West • Mountlake Terrace, WA 98043

Phone 425-775-8461 • Fax 425-778-3166

www.audiocontrol.com

P/N 9130300

# 3XS™

Concert Series

## Four Channel Crossover with Constant Bass Owner & Enjoyment Manual

### Congratulations!

You have purchased one of the most innovative autosound products available- The AudioControl 3XS. The 3XS will help you make your stereo system sound its best. Please take a moment to kick back, reflect on things and read this manual.

### Features of the 3XS

- Four Channel Operation
- Sharp two way 24 dB/octave electronic crossover
- Module Crossover Frequency Programming
- Non-Fading Constant Bass Output
- Subwoofer crossover can be underlapped
- Linkwitz-Riley alignment for minimum lobing error
- Programmable Frequency Match Filter
- Optimum output indicator LEDs
- Selectable power supply ground isolation
- Made in America

# AudioControl®

*making good stereo sound better®*

## The Most Important Instruction of All

**FILL OUT AND SEND IN YOUR WARRANTY CARD!**  
 Also, save your invoice or sales slip as proof of purchase. These actions will protect your investment and help prove that you really owned such a great piece of audio gear in case somebody takes a liking to it while your tanning in Cabo.

### Important

For the best product performance and the lowest use of Tylenol, nothing is better than a professional system installation. Your AudioControl dealer has the training and equipment to take care of the job quickly and to get the best sound out of your system. If you are a solid do-it-yourselfer then this manual should give you all the information you need to successfully make music with the 3XS. Happy Listening.

## Features

### Programmable 24dB/Octave 2-way Crossover

With module programmability, the two way electronic crossover in the 3XS can be matched up to any stereo system. By simply changing a resistor module, you can select almost any crossover frequency imaginable. The 24dB/Octave Linkwitz-Riley (a couple of real nice audio engineers) design is normally reserved for the best home and professional systems, but now this state of the art crossover is yours also.

### Programmable Frequency Match (PFM) Filter

This module programmable low cut filter allows the system designer to custom tune the bass response of the speaker system. Smaller woofers can be protected against the voice-coil-charring bass they are too small to reproduce. Tuned (Ported) subwoofer enclosures benefit by having the frequencies below their tuning cut off to reduce distortion and save system power.

### Selectable Ground Isolation

Ground loops and ground noises are constant threats to a quality car stereo installation. The 3XS helps you avoid these problems by providing a very flexible scheme of selecting how the signal ground and power ground are isolated. Ground loops are a thing of the past.

## A BRIEF TOUR OF THE 3XS

### The Outside

**OUTPUT LEVELS CONTROLS-** These variable gain controls adjust the high pass and low pass output levels independently.

### OUTPUT STATUS LEDS-

**Power:** Shows when the 3XS is turned on (need we say more?)

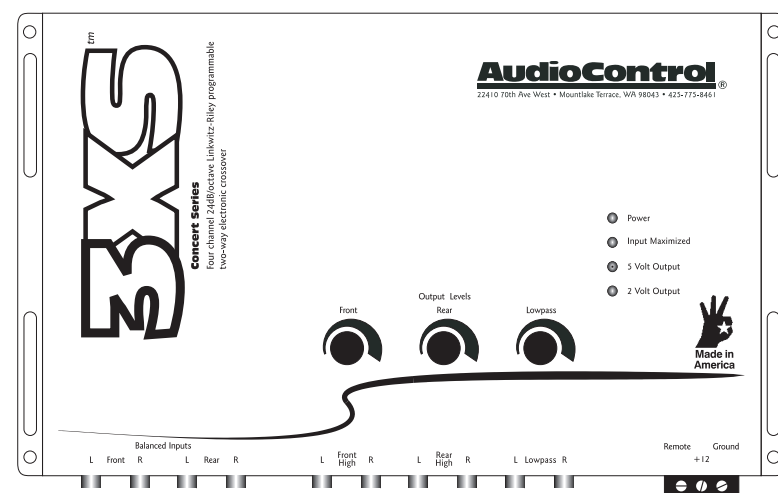
**INPUT MAXIMIZED:** Shows when the input levels are within 3dB of clipping,

**5 VOLT:** shows when the output levels are at five volts (make certain your amplifier can handle this much input)

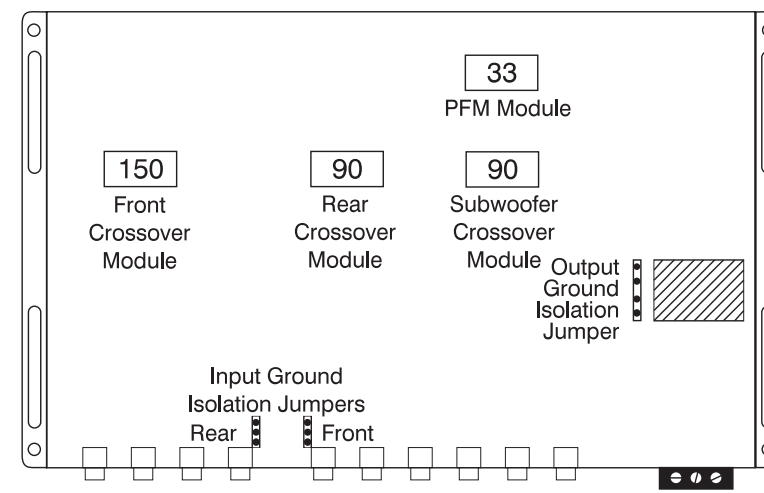
**2 VOLTS:** Shows when the output levels are at two volts (this is a common input level for most amplifier manufacturers. Don't guess on this, check your amp's owners manual to be certain.)

**POWER CONNECTOR-** A wonderful, removable connector that allows you to hook up all the power wires in the convenience of daylight and then plug them into your 3XS in the dark recesses of your trunk.

### The 3XS - Outside



### The 3XS - Inside



### The Inside

#### PROGRAMMABLE CROSSOVER MODULES-

These 16 pin resistor modules control the crossover frequencies. They are set from the factory. Different modules may be obtained from your dealer or custom built yourself. See the section on Making Your Own Modules for instructions. *Note: The 24dB crossover module is different than the 18dB PFM frequency module.*

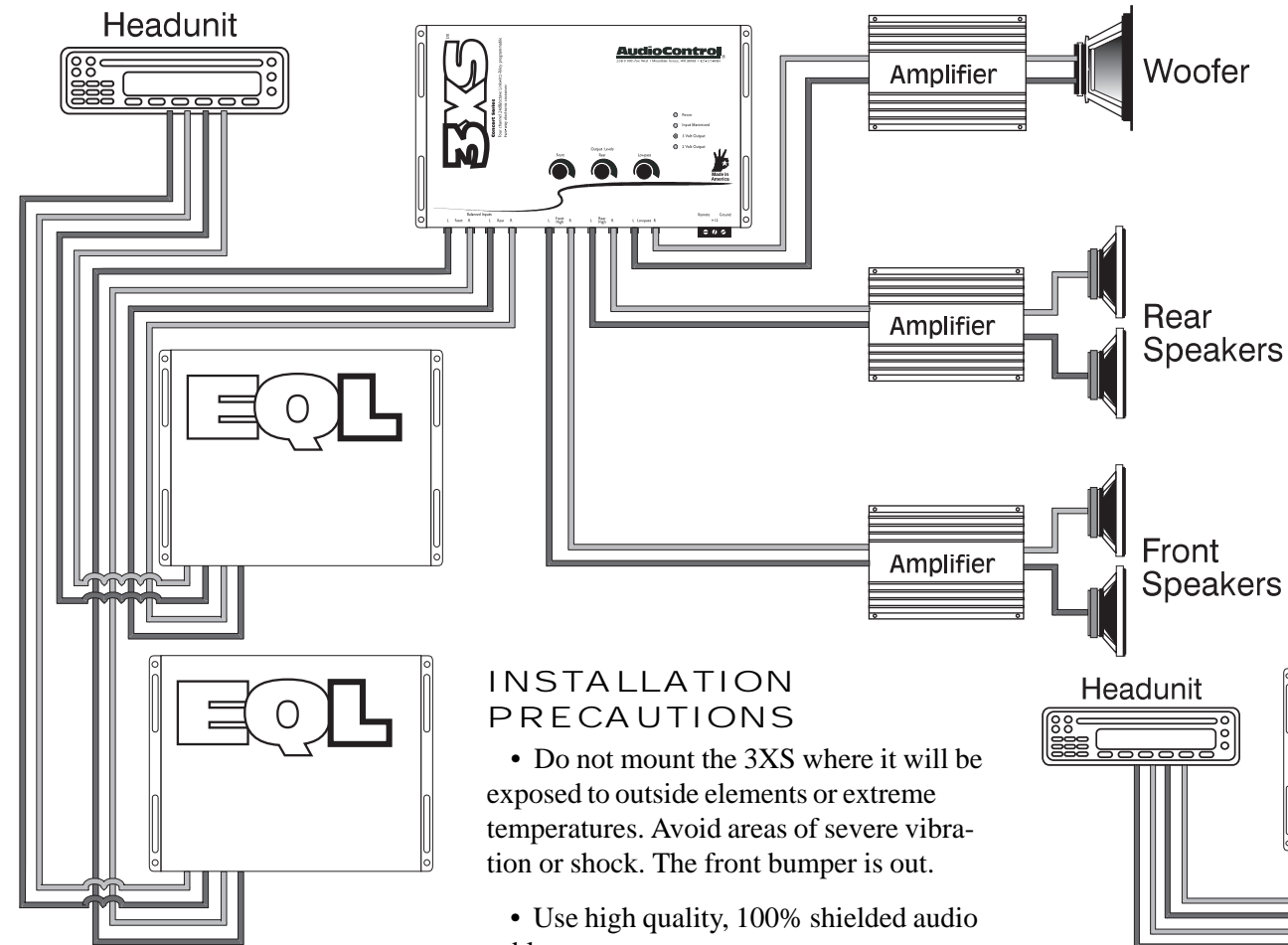
**PROGRAMMABLE FREQUENCY MATCH(PFM) FILTER MODULE-** This 14 pin Module controls the cutoff frequency for the PFM Filter. The PFM is the bottom limit for the low pass output. It is set from the factory at 33 Hz.

**GROUND ISOLATION SELECTOR-** Allows the installer to change the power supply ground isolation for different systems. This is shipped in the fully isolated position from the factory. The other selections can help if you have a ground loop noise in the system that doesn't seem to want to go away.

**INPUT GROUND ISOLATION JUMPERS-** These jumpers provide a hard ground for the balanced input circuitry. Some head units or preamps require this for optimum low noise operation. To change the input ground isolation, move the jumpers on the lower left portion of the 3XS Circuit board( near the input RCAs.) The 3XS is shipped in the balanced input position. This should be optimum for most applications. If you would like to experiment for some reason, feel free to turn the system off and change the setting to see if it helps.

# EXAMPLE SYSTEMS

Equalized with a pair of EQLs



## INSTALLATION PRECAUTIONS

- Do not mount the 3XS where it will be exposed to outside elements or extreme temperatures. Avoid areas of severe vibration or shock. The front bumper is out.
- Use high quality, 100% shielded audio cables.

- Plan on a single-point (star) grounding scheme so all components, including the head unit, connect to a common ground point. Use no less than 14 gauge wire for the ground connections.
- Make certain that there are no fuel lines, brakes lines, electrical wires or anything else that you don't want to run a drill bit through. That includes things on the back side of that floor panel you're about to punch a hole in.
- Make certain the 3XS is firmly mounted with screws so it won't come flying off the next time you blast over a speed bump.

## Making Your Own Modules

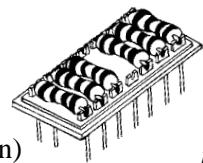
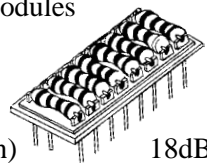
Additional crossover and PFM filter modules are available from your authorized AudioControl dealer, or you can create custom modules by using the following formula:

$$\frac{7200}{\text{Frequency (Hz)}} = \text{Resistor Value (in Kiloohms)}$$

Example- For a 2500 Hz module, the formula yields a resistor value of:  
 $7200 \div 2500 = 2.88 \text{ K}\Omega$

The 24 dB crossover module requires eight of this resistor value; the 18 dB PFM module needs six.

Examples Modules



24dB (16 pin)

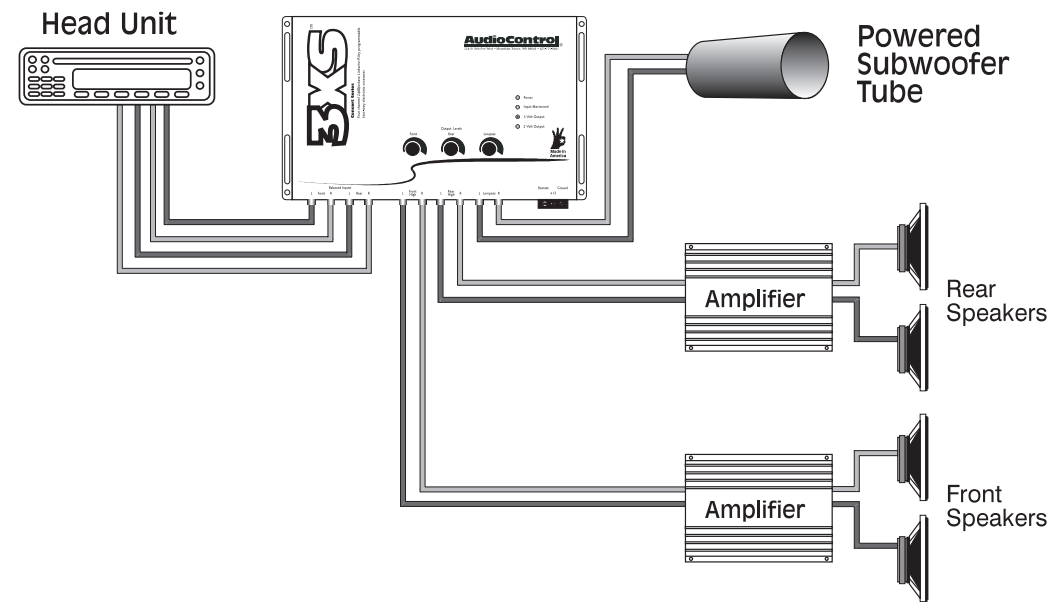
18dB (14 pin)

page 8

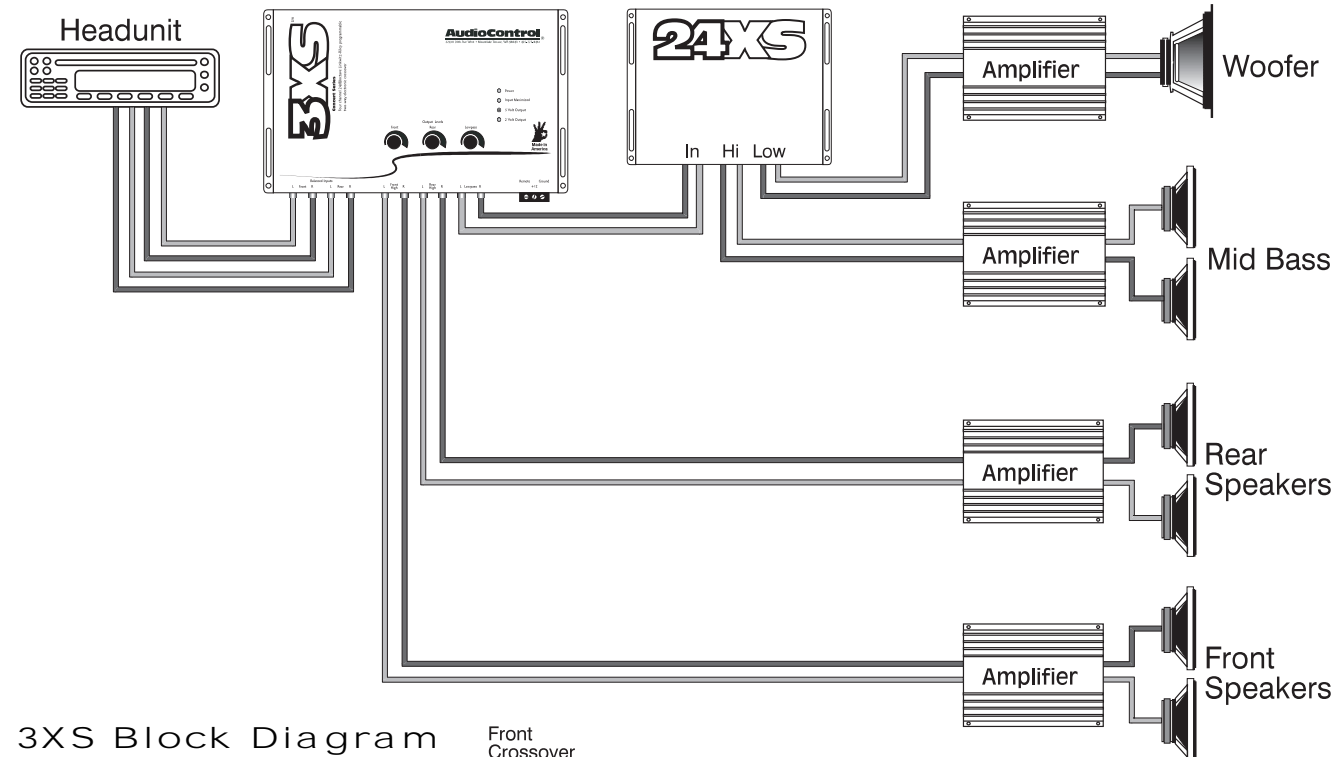
Notes:

- Use 1/4 watt carbon or metal film resistors of a 5% tolerance or better.
- Center remains open for 18dB modules.

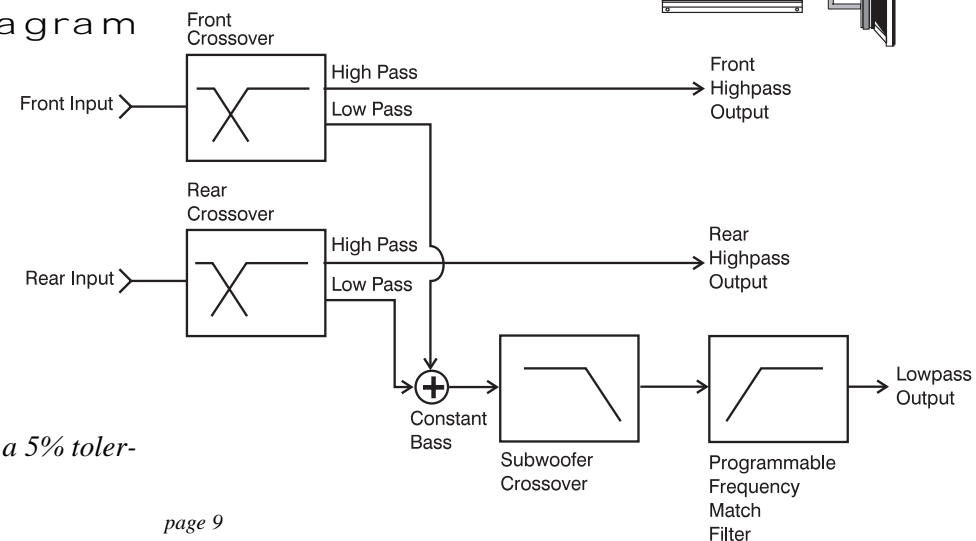
Simple 4-channel biamp with a powered sub tube



Adding a mid-bass to the system with a 24XS



## 3XS Block Diagram



page 9

and now a word from the legal department...

## 3XS Limited Warranty

People are scared of warranties. Lots of fine print, lots of nonco-operation, months of waiting around.

Well, don't be scared of this warranty. It's designed to make you rave about us to your friends. It's a warranty that looks out for you and helps you resist the temptation to have your friend "Who's good with electronics", try to repair your AudioControl 3XS. So go ahead and read through this warranty, then enjoy your new component for a few days before sending in the warranty card and comments.

"Conditional" doesn't mean anything ominous. The Federal Trade Commission tells all manufacturers to use the term to indicate certain conditions have to be met before they'll honor the warranty. If you honor these conditions, we will warrant all materials and workmanship on your 3XS for FIVE YEARS from the date you bought it if installed by an authorized AudioControl dealer. We will fix or replace it, at our option, during that time. If you are a "do-it-yourselfer" we will offer the same warranty for a period of ONE YEAR.

Here are the conditions that make this warranty conditional:

1. You have to fill out the warranty card and send it to us within 15 days after you purchased your 3XS.
2. You must keep your sales slip or receipt so you have proof when and from whom you bought your 3XS. We're not the only company to require this, so it's a good habit to be in with any stereo equipment purchase.
3. Your 3XS has to have been originally purchased from an authorized AudioControl dealer. You do not have to be the original owner to take advantage of the five year warranty, but the date of the purchase is still important so be sure to get a copy of the sales slip from the original owner.
4. You cannot let anybody who isn't (a) The AudioControl Factory; (b) An authorized service center; or (c) Someone authorized in writing by AudioControl to service your 3XS. If anyone other than (a), (b), or (c) messes with your 3XS, that voids the warranty.
5. The warranty is also void if the serial number has been altered or removed, or if the AudioControl 3XS is used improperly. Now that sounds like a big loophole, but here is all we mean by it. Unwarranted abuse is; (a) Physical damage (our mobile products are not meant to be used as jack stands for your car); (b) Improper connection. We have done the best we can to protect the inputs, however, 120 volts into the jacks can fry the innards of the poor beastly. (c) Sadistic things. This is the best mobile product we know how to manufacture, but if you use it for the front bumper of your Baja bug and get it full of water, things will go wrong.

Assuming you conform to numbers 1-5, and it isn't all that hard to do, we get the option of deciding whether to fix your old unit or replace it with a new one.

## Legalese Section

This is the only warranty given by AudioControl. This warranty gives you specific legal rights that vary from state to state. Promises of how well your 3XS will work are not implied by this warranty. Other than what we've covered in the warranty, we have no obligation, express or implied. Also, we will not be obligated for direct or indirect damages to your system caused by hooking up the AudioControl 3XS.

Failure to send in a properly completed warranty card negates any service claims.

page 10

page 11