

Lanzar®



OPTIDRIVE



user's manual

www.lanzar.com

OptiX-10

***10-Channel Active
Electronic Crossover Network
with Subwoofer Level Control***



INTRODUCTION...

Congratulations on your purchase of a new Lanzar Opti signal processor. Opti mobile electronics are some of the most advanced car audio products available. These quality audio products are designed and engineered to afford you years of uncompromising musical service. Lanzar has utilized the latest electronic technologies in order to deliver a superb listening experience.

The X10 Active Crossover offers the listener the ability to enjoy the finest in mobile audio. The X10 unleashes the effortless, natural and open quality of the real performance. Car audio systems which utilize passive crossovers feed the music through chokes and capacitors, which creates a “bottleneck” through which the music must pass. Portions of the program material may pass through at different speeds, creating distortion – some of the music doesn’t make it through at all!

With the Lanzar Opti X10 you’ll hear all the dynamics in the bass, and still hear delicacies like fingers sliding across guitar strings. The X10 also allows the user to group amplifiers and separate speakers in discrete assemblages so they play as one cohesive unit, in harmony with each other. The X10 becomes the music conductor in the system, balancing volume, assigning the proper part of the music to a specific instrument, delaying some sounds so they reach your ear just as the rest of the music does, with the sole purpose of creating the illusion that there is only the music.



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general features

10 Crossover Channels

Blue Light Illumination

4 Channel Inputs

Signal Pass-through for Additional Processors

Remote Bass Level Control

High Channels: Separate Front and Rear Frequency and Gain Controls

Mid Channels: Separate Front and Rear Frequency and Gain Controls

Sub Channels: Frequency and Gain Control

Selectable Q Settings for Front and Rear Channels

Subwoofer Stereo/Mono Switch

High Channel and Subwoofer Phase Inverters

Bass Boost Frequency and Level Control

Gold-Plated Connectors and Terminals



Lanzar® **Precautions**

To prevent short circuits, be sure to disconnect the negative battery ground lead before wiring the system up.

When you finish the installation, be sure to make one more check to be sure everything is done correctly.

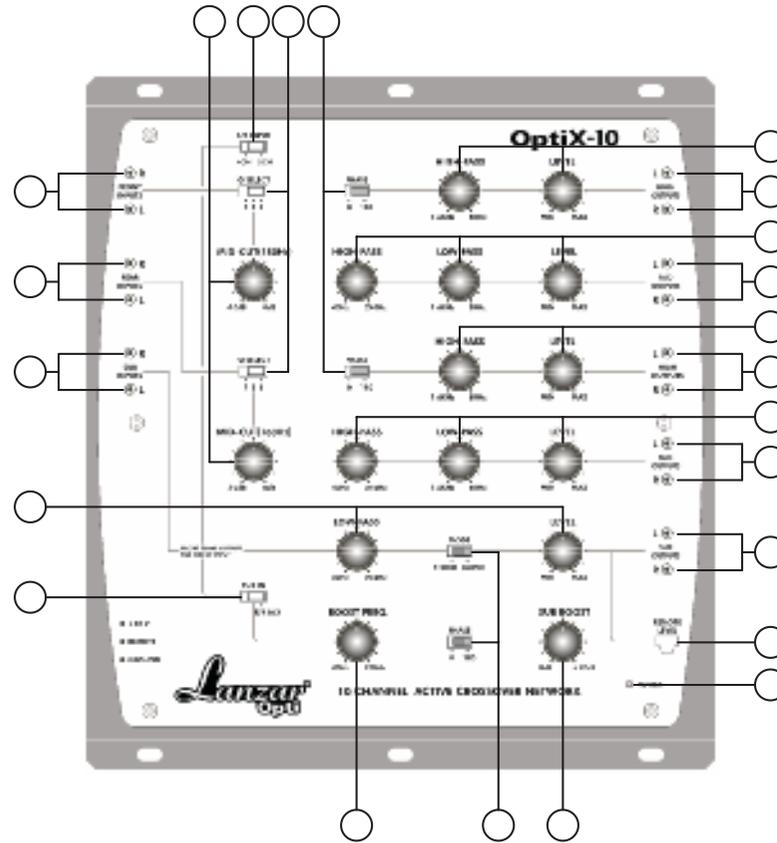
Reinstate all car parts that were removed.

Reconnect the negative battery ground lead.



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features and specifications





features and specifications

1. F/R INPUT SWITCH

In the "2CH" position, rear inputs are split and directed to the front and rear channels simultaneously. This feature should be used when the head unit has only one pair of output jacks. If the source unit has independent front and rear channel outputs, disengage the parallel input by sliding the switch to the "4CH" position.

2. FRONT & REAR CHANNEL MID CUT Q SELECTORS

The Q slide switches select Q values of 1, 3 or 6 on the 180Hz Mid Cut filters. The maximum amount of cut possible (at 180Hz) with the Mid Cut Controls increases with Q value : at Q=1, cut is -10dB; at Q=3, cut is -13dB; and at Q=6, cut is -17dB. Lanzar suggests that for the wider gentler attenuation which is effective in larger vehicles, one should use a low Q value, which affects a wider band of frequencies. In smaller vehicles, setting a higher Q value is usually preferable, which affecting a narrower band of frequencies. For best results, you may wish to use the Mid Cut controls and Q Selectors in conjunction with the PHASE switches, in different combinations.

3. FRONT & REAR CHANNEL MID CUT CONTROLS

These controls permit the frequencies around 180 Hz to be attenuated or cut the amount set by the Q selector. In the 180 Hz frequency range, by a maximum of 10dB. In this frequency range many automobile sound systems require attenuation, due to the acoustic peak that exists in the acoustical response of typical vehicles. This acoustical peak in response is usually a result of the relatively small interior listening volume of an automobile, as well as the listener's close proximity to the bass speakers.

4. Front & Rear Channel High-Pass Phase Inverters

Positioning the switch to "180" position shifts the signal 180° out of phase relative to the front and rear output signals.

5. Front Frequency & Gain Controls

There are 3 frequency controls for the front channels. Mid High Pass Control sets the low crossover point for the midrange drivers, between 40Hz and 240Hz. Mid Low Pass Control locates the high crossover point for the midrange drivers between 1.6kHz and 8kHz. High Pass Control sets the low crossover point for the high frequency drivers between 1.6kHz and 8kHz. There are Front Gain Controls for both the midrange drivers and the high frequency drivers.

6. Rear Frequency & Gain Controls

There are 3 frequency controls for the rear channels. Mid High Pass Control sets the low crossover point for the midrange drivers, between 40Hz and 240Hz. Mid Low Pass Control locates the high crossover point for the midrange drivers between 1.6kHz and 8kHz. High Pass Control sets the low crossover point for the high frequency drivers between 1.6kHz and 8kHz. There are Rear Gain Controls for both the midrange drivers and the high frequency drivers.

7. Subwoofer Frequency & Gain Controls

The Subwoofer Frequency Control is used to select a crossover point between 40Hz and 240HZ. At the selected frequency the bass begins to roll off a 12dB per octave. A Subwoofer Output Gain Control adjusts the output signal level for the sub channel.

8. Subwoofer Phase Inverter & Stereo/Mono Switches

Positioning the Subwoofer Phase Switch to "180" position shifts the signal 180° out of phase relative to the front and rear output signals. This is especially valuable in minimizing some of the "tubbyness" that is characteristic of many vehicles. The Stereo/Mono Switch sums the signal, in the mono mode, to provide a mono output for those users who are utilizing a single channel subwoofer design.

9. Bass Boost Level & Frequency Controls

These controls are used to equalize the subwoofer channel. The Bass Boost Frequency Control is used for selecting a frequency between 40Hz and 120Hz. The Bass Boost Level Control adjusts the gain from 0 to +12dB.

10. Front Channel Output Terminals





features and specifications

11. Rear Channel Output Terminals

12. Subwoofer Output Terminals

13. Subwoofer Level Remote Control Terminal

This terminal may be used to connect the Remote Subwoofer Level Control. This enables the user to have easy access to adjust the bass levels to compensate for increased road noise or recording variations.

14. Power Indicator

This indicator lights up when the internal power supply is activated and the unit is operational.

15. Front Inputs

To be connected to the Front outputs of the head unit. Make sure the Dual Input Switch is in the "4CH" position.

16. Rear Inputs

To be connected to the Rear outputs of the head unit. If your head unit has only one set of outputs connect them to the Rear set of inputs.

17. Dual Inputs/Outputs

When used as inputs, these terminals are connected to the sub out of the source unit. When used as outputs these terminals are connected to the Rear channel inputs of another electronic crossover in a multi-crossover system.

18. Dual SUB IN & F/R MIX Switch

When this switch is in the "F/R MIX" position, the stereo sum of the front and rear input signals is routed to the Dual In/Out terminals. This summed signal can then be used by the subwoofer channel or become output to another electronic crossover. In the "SUB IN" position the Dual In/Out terminals become the input terminals for the subwoofer channel.

Crossover Frequencies

-Front High-Pass 1.6K - 8KHz

-Front Mid High-Pass 40Hz - 240Hz

-Front Mid Low-Pass 1.6KHz - 8KHz

-Rear High-Pass 1.6KHz - 8KHz

-Rear Mid High-Pass 40Hz - 240Hz

-Rear Mid Low-Pass 1.6KHz - 8KHz

Crossover Slope Rate 12dB per octave

Subwoofer Boost Single octave 0dB - 12 dB

Boost Frequency at 40 - 120Hz (variable)

Mid Cut -10dB (180Hz Q=1)

Mid Cut Q: 1, 3, 6

Distortion 0.01% THD at 1 volt output

Frequency Response 10Hz - 30KHz ± 3 dB

Signal-to-Noise Ratio (A) 95dB

Separation 60dB

Power Source 14.4 Volts DC

Negative ground

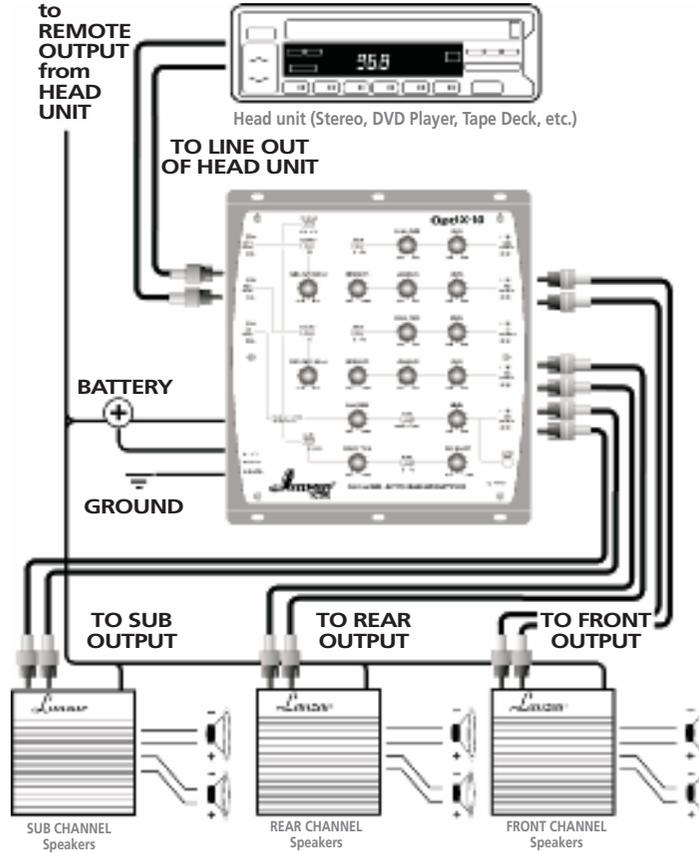
Dimensions 9-21/32"W x 10-5/8"D x 1-1/2"H
(245 x 270mm x 38mm)



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2-CHANNEL 3 WAY SYSTEM

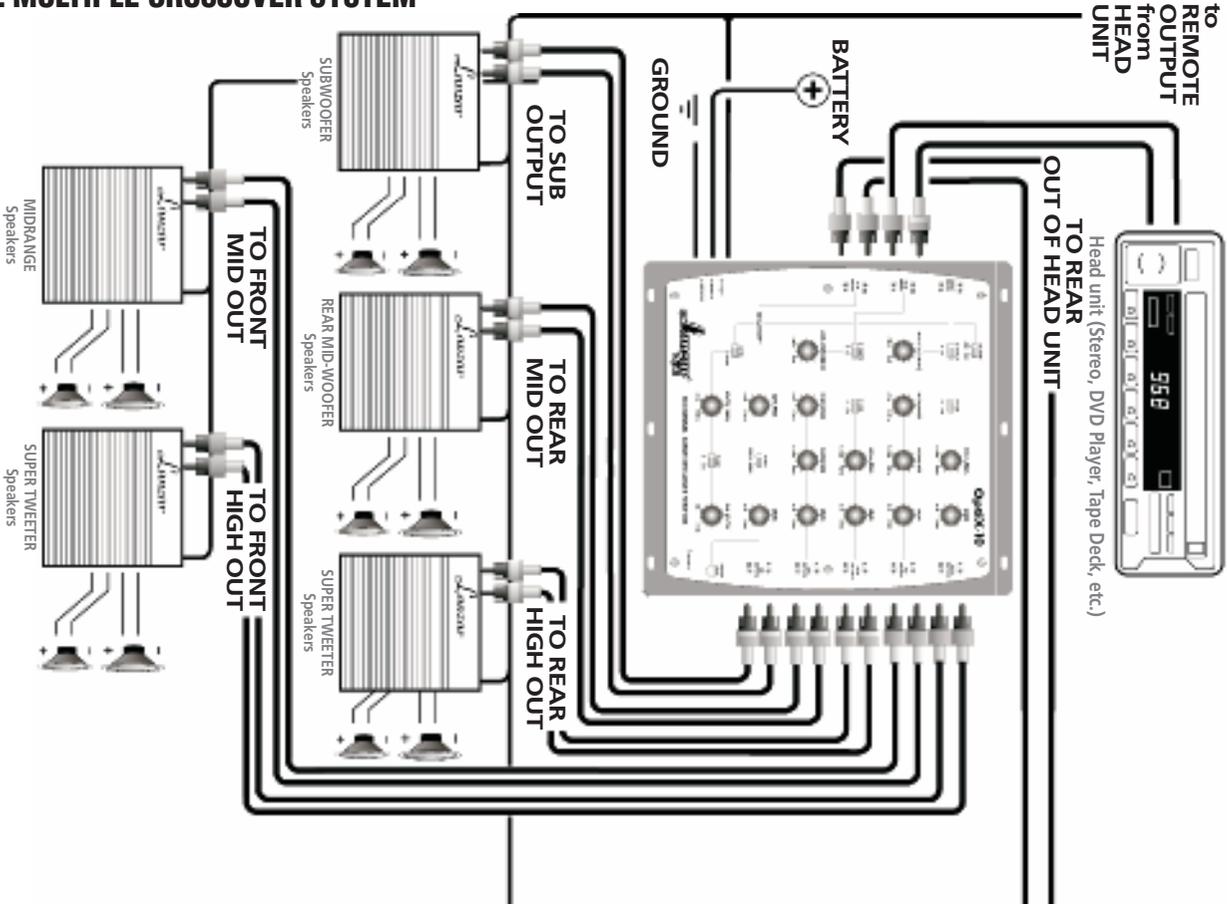
System wiring

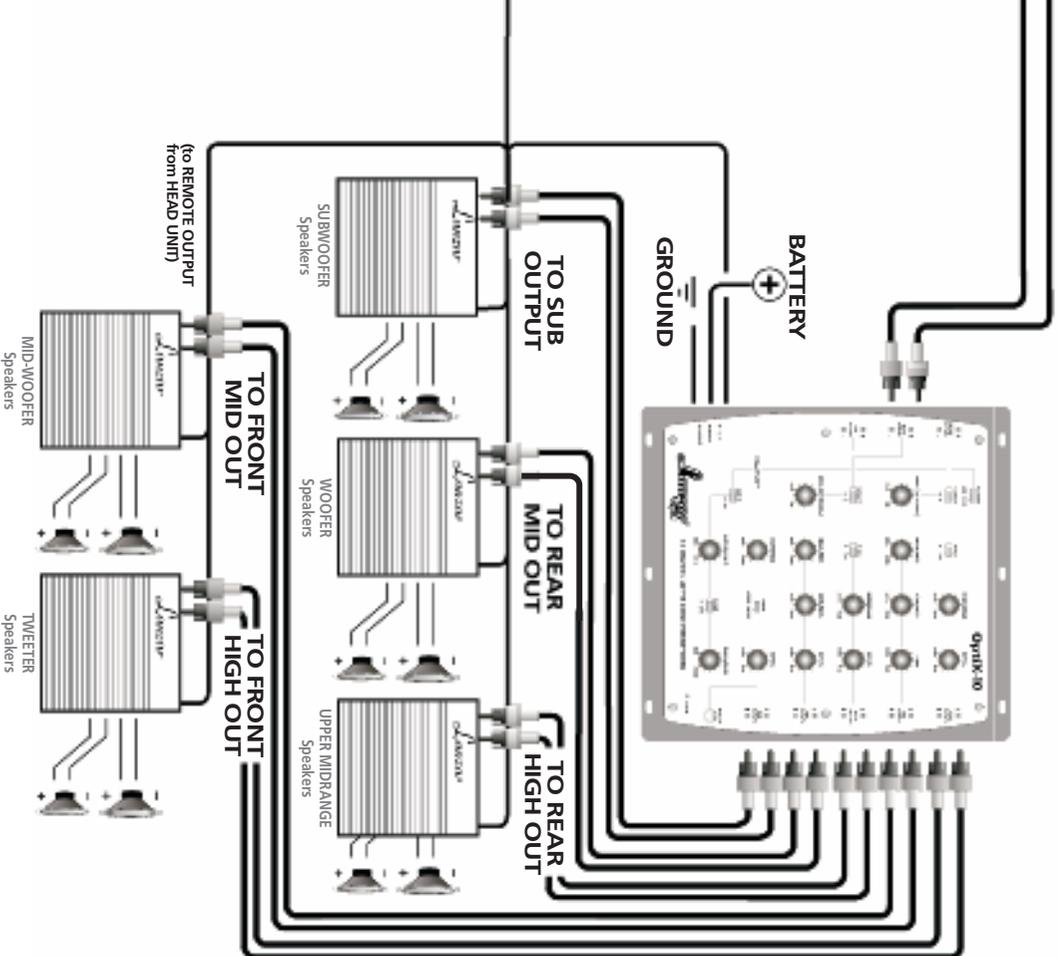


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System Wiring

2-CHANNEL MULTIPLE CROSSOVER SYSTEM

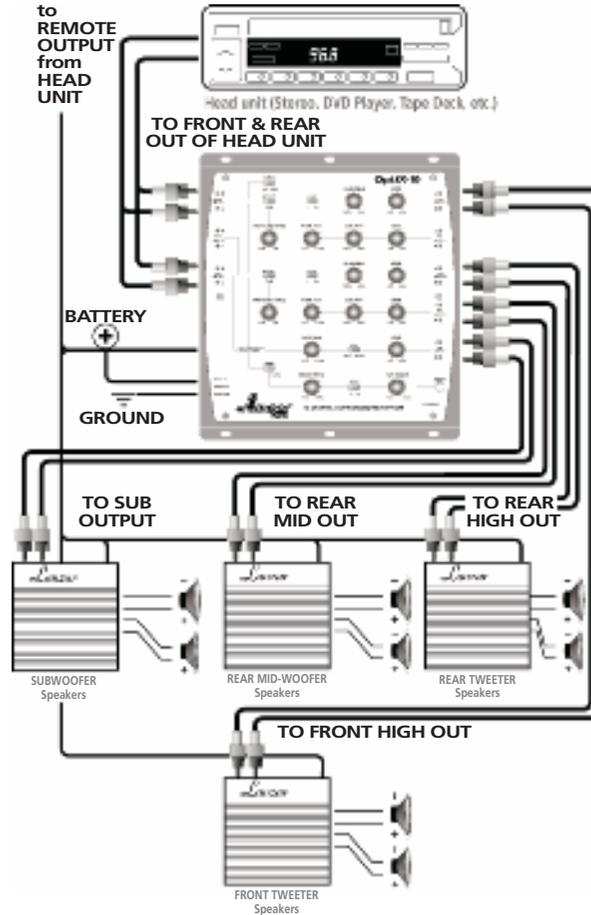




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4 CHANNEL 4 WAY SYSTEM

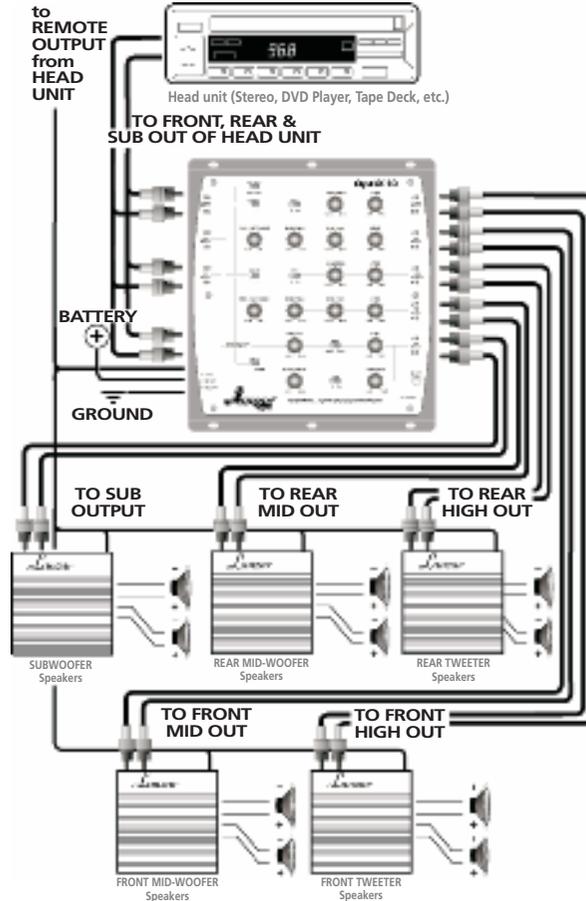
System wiring



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6-CHANNEL 5-WAY SYSTEM

System wiring





Mounting and installation

Your new Opti Series crossover comes complete with all required mounting hardware.

Please read the Installation Precautions section below before installing your Lanzar Opti signal processor, and then refer to the diagrams provided to connect power, audio input and output connections according to your own system configuration requirements.

Precautions

Mark the location for the mounting screw holes by positioning the crossover where you wish to install it and use a scribe (or one of the mounting screws) inserted in each of the mounting holes to mark the mounting surface. If the mounting surface is carpeted, measure the hole centers and mark with a felt tip pen.

Before you drill or cut any holes, investigate your car's layout very carefully. Take care when you work near the gas tank, fuel lines, hydraulic line and electrical wiring.

Do not operate the signal processor when it is unmounted. Attach all audio system components securely within the automobile to prevent damage, especially in an accident.

Do not mount this signal processor so that the wire connections are unprotected or in a pinched condition, or likely to be damaged by nearby objects. Be sure to select a location inside your vehicle which has adequate ventilation.

Before making or breaking power connections in your system, disconnect the vehicle battery. Confirm that your head unit or other equipment is turned off while connecting the input and output jacks.

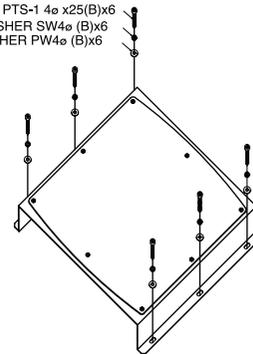
If you need to replace the power fuse, only replace it with a fuse identical to that supplied with the system. Using a fuse of a different type or rating may result in damage to your system which isn't covered by the manufacturer's warranty.

Suggested Tools and Other Parts

- In-line fuse holder
- Felt-tip marking pen
- Electric drill with a Phillips-head screwdriver bit
- Crimping tool or needle-nose pliers
- Wire strippers
- Tape measure and ruler
- Orange wire, 20 gauge or heavier
- Red and Black wire, 18 gauge or heavier
- RCA stereo audio cables (quantity and length determined by application)
- Solder-less connectors or soldering gun with heat shrink tubing



TAPPING SCREW PTS-1 4e x25(B)x6
SPRING WASHER SW4e (B)x6
PLAIN WASHER PW4e (B)x6





Mounting and installation

Processor Installation

1. Find a suitable location in the vehicle to mount the processor. The X-10 is a trunk mount unit and it should be installed in close proximity to your amplifier system on the amp rack. You should pick a location that offers easy access to the unit for adjustment.
2. Before starting, disconnect the vehicle's negative battery ground to prevent short circuits.
3. There are three power terminals on the X-10:
 - A red 18 gauge stranded or heavier and insulated wire should be connected to the terminal marked B+. Wire an in-line fuse holder on this lead as it is the 12 Volts DC wire for the system. This wire should be connected to your vehicle's battery. If a wire is run directly to the battery make sure to install a in-line fuse on this wire within 12" from the battery.
 - A black stranded wire of at least 18 gauge should be connected to the terminal marked B-. This is the ground wire for the X-10 and should be attached to the same ground point with the amplifiers in the system. Keeping this ground wire as short as possible improves the electrical circuit and keeps ground related noise problems to a minimum.
 - An orange stranded wire of a least 20 gauge should be connected to the terminal marked Remote. This wire connects to your head unit's remote out or power antenna lead out. This wire should supply 12 Volts DC any time the radio, cd or cassette are playing. This lead must also be connected to any other components in your system that utilize a remote turn-on lead for powering up.
4. Connect all line inputs and outputs using high-quality RCA-RCA cables.
5. Recheck all connections before powering up.
6. Set all level controls to their least sensitive positions and set all crossover controls, switches, etc. to the desired frequency or position.
7. Once the system is powered up, set the volume control on the head unit to about the 2 o'clock position, and then set all the amplifiers' level controls for half output level.
8. You are now ready to do an engine noise test. Start the vehicle's engine. Turn the audio system on and listen to the system at various volumes and engine RPMs. If you have ignition noise, turn the engine off and refer to the "Trouble Shooting Page" of this manual.
9. If there is no ignition noise in the system, securely tighten the crossover mounting screws and double check the wiring for security. You are ready to start adjusting your X-10 Active Crossover



Lanzar® Noise check and system adjustment

NOISE CHECK

Check the entire audio system for noise before permanently securing the CROSSOVER mounting

1. Start the engine.
2. Turn the audio system on.
3. Rev the engine and vary the VOLUME of the audio system to determine if there is any unwanted noise.
If so, turn both the audio system and the engine off. Do not secure the CROSSOVER mounting screws. Refer to the "Trouble Shooting Guide" at this manual.
4. If the audio system does not have any noise, securely tighten the CROSSOVER mounting screw and double check the wiring cables for safe placement.

SYSTEM ADJUSTMENT

Preliminary Adjustments

Pre-setting the system provides a necessary starting point for fine-tuning the entire audio system to maximum performance.

NOTE: DO NOT MOUNT CROSSOVER UNTIL THE FOLLOWING PROCEDURES HAVE BEEN COMPLETED.

1. Preset each amplifier input gain adjustment at the amplifier to half of maximum.
2. Before turning the audio system on, preset-adjust the front, rear and sub-woofer output level controls, as well as the front channel high-pass and sub-woofer channel low-pass crossover points.
3. Slowly turn the volume up and listen carefully for: obvious trouble in sound (distortion, no sound, no hiss, total silence). Turn the system off refer to "Trouble Shooting Guide" at this manual.

Caution

DO NOT ROUTE AUDIO CABLES AND POWER CABLES TOGETHER! THIS CAN CAUSE ENGINE NOISE IN YOUR AUDIO SYSTEM. ALWAYS DISCONNECT THE SYSTEM FROM THE BATTERY BEFORE ATTEMPTING TO MAKE OR ALTER ANY CONNECTIONS. THIS PRODUCT IS DESIGNED FOR USE IN ANY 12 VOLTS NEGATIVE GROUND ELECTRICAL SYSTEM ONLY. INSTALLING THIS PRODUCT IN ANY POSITIVE GROUND ELECTRICAL SYSTEM COULD SERIOUSLY DAMAGE THE AUDIO SYSTEM.

PROBLEM	POSSIBLE CAUSE
1. There is an audible distortion at a low volume level.	<ul style="list-style-type: none">• Output levels NOT set correctly.• Crossover frequencies NOT set correctly.• Check for shorts on the speaker leads.
2. A whining sound can be heard through the speakers when the audio system is at low volume with the engine running. The whining noise remains unchanged or seems to disappear when the volume level is increased.	<ul style="list-style-type: none">• Check the red power wire. It must be connected directly to the battery.• Check the system's ground point. It must make good contact with chassis ground (bare metal).• The radio and the CROSSOVER must be grounded at the same reference point.
3. There is a "motor boating" type of sound when the engine is running and the audio system volume is set at a reasonably high level.	<ul style="list-style-type: none">• Check the red power wire. It must be connected directly to the battery.• Check the system's ground point. It must make good contact with chassis ground (bare metal).
4. High squeal noise from speakers	<ul style="list-style-type: none">• This is almost always caused by a poorly - grounded RCA patch cord.

limited warranty policy

C R O S S O V E R

All Lanzar Signal Processors are carefully constructed and thoroughly tested before shipment. Units purchased in the USA are warranted to be free of defects in material and workmanship for three (3) years from the date of purchase. This warranty is limited to the original retail purchaser of the Signal Processor.

Should the unit fail due to a factory defect in material or workmanship, your unit will be repaired or replaced at the sole discretion of Lanzar.

To obtain warranty service, you must first call our Consumer Return Hotline number at (718) 236-6948 to obtain a Return Authorization (RA) number. This RA Number must appear on the outside of your package and on all paperwork relating to your return.

When returning the unit to us for warranty service, it must be carefully packed and shipped prepaid to:

R.A. # _____
Lanzar Service Center
1600 63rd Street
Brooklyn, NY 11204

www.lanzar.com

You must also include the following items with your return:

- A copy of your sales receipt or other proof of purchase
- A brief letter indicating the problem you are experiencing with the product
- Include in your letter your return address, daytime phone number and RA Number
- Also include a check or money order for \$20.00 for return shipping, handling and insurance, or provide your VISA/MasterCard number with expiration date.

Our obligation under this warranty is limited to the repair or replacement of the defective unit when it is returned to us prepaid. This warranty will be considered void if the unit was tampered with, improperly serviced, or subject to misuse, neglect or accidental damage.

All implied warranties of merchantability and fitness for a particular purpose are limited in duration to the length of the warranty. Lanzar expressly disclaims any liability for incidental or consequential damages caused by product defects. This warranty does not cover any expense incurred in the removal and/or reinstallation of the Signal Processor. Lanzar's total liability will not exceed the purchase price of the Signal Processor.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.