
SX2

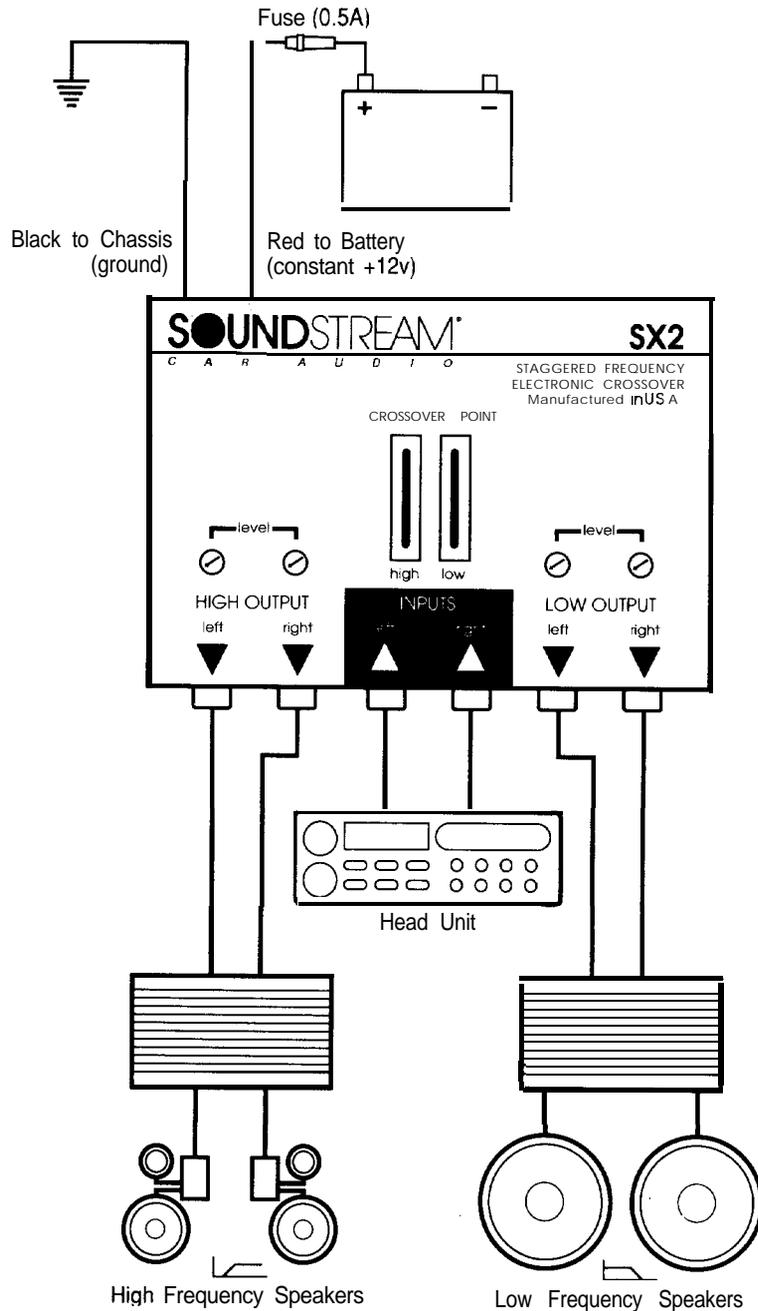
Staggered Electronic

Crossover Network

OWNER'S MANUAL

SOUNDSTREAM[®]
T E C H N O L O G I E S

CONNECTIONS DIAGRAM



SX2 Staggered Electronic Crossover Network

OWNER'S MANUAL

Thank you for purchasing the Soundstream SX2. You now own one of the finest electronic crossovers made, a precision component capable of audiophile quality performance.

To get the most out of your crossover, we suggest that you acquaint yourself with its capabilities and design. Please retain this manual for future reference.

Model Number: _____

Serial Number: _____

Dealer's Name: _____



This Soundstream Product is the result of American craftsmanship and the highest quality control standards; your SX2 should deliver many years of pleasure.

Should it ever require service or replacement, recording the information below for your own records will help protect your investment.

Date of Purchase: _____

Date of Install: _____

DESIGN FEATURES

The SX2 receives a stereo input and provides both a high pass and low pass stereo output. These two outputs can be crossed to create three different types of configurations; Symmetrical, Staggered Asymmetrical, and Overlapped Asymmetrical, which will be explained later in this manual.

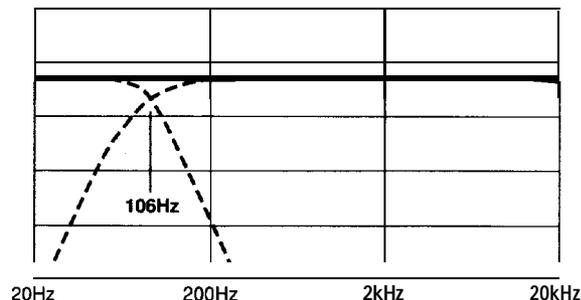
The SX2 provides almost unlimited flexibility. Crossover points can be selected from 53Hz to 4800Hz, making the SX2 suitable for any driver configuration. For applications requiring more than a single two way crossover, multiple SX2s can be cascaded to create three way, four way, or even five way configurations.

Crossover frequencies are selected by means of plug-in SIP resistor modules. These modules are supplied in matched pairs for precision adjustment of the crossover in half-octave or quarter-octave steps. Crossover slopes are 12dB per octave.

Only premium parts are used in the SX2, such as 1% metal film resistors, gold-plated input and output connectors, double-sided masked glass-epoxy circuit boards, and immersible sealed potentiometers. A switching power supply provides extended headroom and isolation from noise.

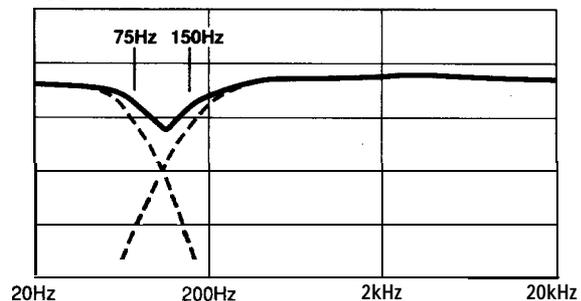
CROSSOVER CONFIGURATIONS

Symmetrical Configuration



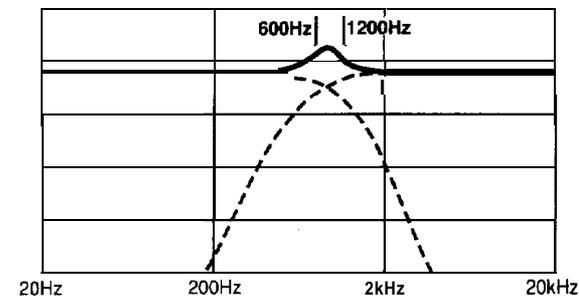
In this type of filter configuration, each frequency band has evenly distributed energy. A single crossover frequency is chosen and each band (high pass and low pass) receives information above and below this center frequency. This is the typical configuration of most electronic crossover. In practice, two of the same value "SIP" chips are inserted into the SX2.

Staggered Asymmetrical Configuration



In this type of filter configuration, different frequency points are selected for both the low and high pass filters. The high pass starts above the higher crossover frequency and the low starts below the lower frequency. This yields a "dip" in the acoustic response. Most automobiles, due to their interior dimensions, exhibit a tendency to "ring" at a certain frequency. This is commonly known as a resonant frequency. In a Staggered Asymmetrical crossover, the electrical response is reduced by a corresponding amount at this resonant "peak" to yield a flat overall response. The SX2 comes from the factory with a 75Hz low pass and 150Hz high pass chip already installed. These two frequencies correspond with the most common frequency choices for use with automotive subwoofer installations.

Overlapped Asymmetrical Configuration



In this configuration a specific range of frequencies is overlapped, yielding a peaked response between the two crossover points. This is often done to make up for driver response errors. These errors can be due either to placement or to the driver itself. An example is overlapping of mid-bass and midrange drivers in the 600-1200Hz range can counter the effect of the mid-bass being located in the lower portion of the door.

INSTALLATION

Proper installation and adjustment will reward you with reliable operation and optimum performance. Automotive sound system installations can be tricky, especially for first-timers. For this reason, you may want to consider using a professional installer who has the tools and more importantly, the experience to do the job right. If you decide to install your equipment yourself, we hope this manual will serve as a helpful guide. At the end of this manual you will find several recommended, proven system variations. Review these systems prior to attempting your installation.

Location & Mounting

The SX2 is compact and generates virtually no heat. It can be located almost anywhere within the passenger compartment or trunk. Do not install the SX2 in the engine compartment or in any outside location exposed to dirt and moisture. The SX2 should be mounted firmly to your car's chassis with the two screws provided. Use the SX2 as a template for making pencil marks where you intend to drill. It is a good idea to bench test your system prior to mounting any components. If you have a 12-volt power source, you can connect and test the components outside the car. Or, you can connect them inside the car before mounting them. Either way, connect the components exactly as you intend to in the final installation; make all power connections last; test the system; then disconnect all power until final installation is complete.

Wiring

Predetermine how your car's wiring is laid out, and run your wires in the same locations when possible. Keep all wiring inside the vehicle. Good audio practice suggests keeping signal wires away from all power lines. Wires can be run under carpet, however, make sure not to interfere with normal operation of the vehicle. All wires should be hidden; an exposed wire can inadvertently be pulled, causing disconnection or shorting.

Power Wires

The power wires for the SX2 are permanently attached to the crossover. The red wire should be directly connected to a constant +12 volt source. It should be "hot" even when the ignition key is off (don't worry, battery drain will not occur). This may be done by connecting to the battery terminal itself or tapping into the lead bringing power to your amplifiers. Be sure this +12 volt line is fused, using a 0.5A fuse. At idle, the SX2 draws minimal current, and keeping power applied constantly avoids any possible turn-on and turn-off thumps.

The black wire is a ground wire. This ground wire should be connected directly to the chassis of the vehicle. A nearby bolt can serve as a ground terminal, but make sure that the wire contacts bare metal, not coated metal or paint.

Signal wires

All audio connections to the SX2 attach by means of standard RCA type jacks. Since the SX2 achieves a level of performance at which cable and connector quality is important, we recommend the use of Soundstream DL•1 or Streamline Audio Cable or an equivalent premium cable.

Input Connections

Connect the audio output of the head unit to the left and right input jacks of the SX2. Be sure left is connected to left and right is connected to right.

Output Connections

Connect the left and right high output jacks of the SX2 to the amplifier which you intend to run the high pass portion of your system. Connect the left and right low output jacks to the amplifier which you intend to run the low pass portion of your system.

Level Controls

The SX2 provides individual level control for all four outputs. These outputs may be adjusted with a small insulated flat bladed screwdriver.

The SX2 has 3dB of available gain, meaning that the signal level is boosted with the control in the full clockwise position. There are two goals when setting levels, whether using the controls on the SX2 or on your amplifier. One is to achieve the best balance between the high and low outputs. Do this by ear, using familiar program material. If there is an equalizer in the system, make sure it is off or in the "flat" position when setting these levels. Now set the SX2 or amplifier levels for the most pleasing balance between high and low.

The second use of the level controls is to adjust overall system gain. If the gain is set too high, noise from various sources may be a problem. If gain is set too low, you will not be able to get adequate volume with your head unit volume control. Adjust all of the SX2 level controls together so that the volume control on your head unit provides the adjustment range you want.

Crossover Frequencies

Crossover frequencies are separately selectable for the high and low outputs, by means of plug-in SIP resistor modules. The SX2 comes from the factory with SIP resistors already installed for a high pass of 150Hz and a low pass of 75Hz. This factory setting works well for most typical

applications. Soundstream has also provided 90Hz and 180Hz values in the packaging; you may wish to experiment with these values as well.

At the end of this guide you will find system diagrams utilizing single and cascaded SX2 crossovers. These system diagrams also include our recommended SIP values. If you wish to purchase additional resistors, they are available from your authorized Soundstream dealer. Below you will find a listing of the values currently available, the Soundstream color dot code and what frequency bandwidths they effect.

Freq.	Dot Code	Resistor Value
53Hz Red	1000 kOhms
63 Hz	. . Orange . .	820 kOhms
75Hz Blue	680 kOhms
90 Hz	. . Brown	560 kOhms
106 Hz	. Green	470 kOhms
125Hz Violet	430 kOhms
150 Hz	. White .	330 kOhms
180 Hz	. . Red-Brown . .	300 kOhms
212 Hz	. . Red-Green . .	240 kOhms
250 Hz	. . Red-Violet . .	200 kOhms
300 Hz	. Red-White .	180 kOhms
425 Hz	Orange-Green . .	120 kOhms
600 Hz	. . Orange-White .	82 kOhms
850 Hz	. Blue-Green .	62 kOhms
1200 Hz	. Blue-White .	43 kOhms
1700 Hz	. Green-Green .	30 kOhms
2400 Hz	. . Green-White . .	22 kOhms
3400 Hz	. Violet-Green .	15 kOhms
4800 Hz	. Violet-White .	1 kOhms

SERVICE

Your SX2 is protected by a limited warranty. Please read the enclosed warranty information carefully. Should any problem occur, contact your local Soundstream dealer.

SPECIFICATIONS

Total Harmonic Distortion: < 0.05%, 20Hz-20kHz

Crossover Slope Rate: 12dB/octave

S/N Ratio: >100 dB

Gain: +3dB

Input Impedance: 10 kOhms

Output Impedance: 10 kOhms

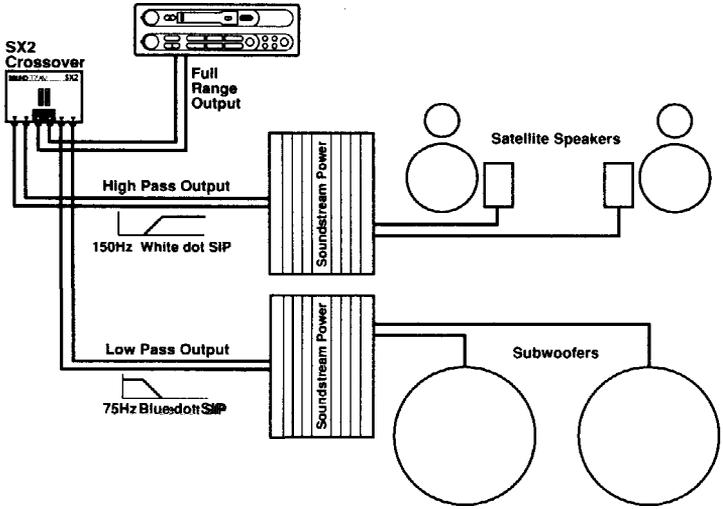
Maximum Input Level: 5v RMS

Maximum Output Level: 5v RMS

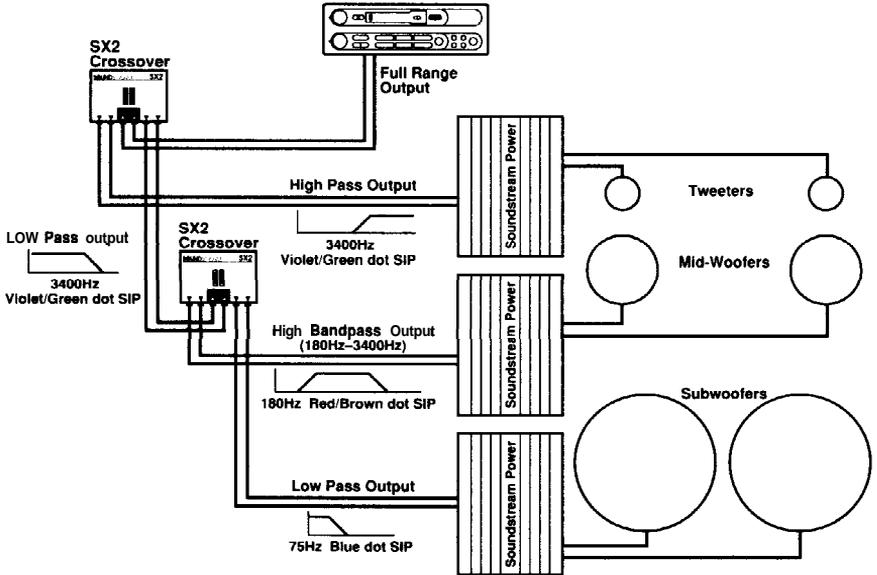
Maximum Current Draw: 5 mA

Dimensions: 4-3/4" x 2-9/16" x 1"

Bi-amplified Satellite/Subwoofer System



Tri-amplified Tweeter/Mid-Woofers/Subwoofer System utilizing "cascaded" SX2 Crossovers



SOUNDSTREAM
TECHNOLOGIES

120 Blue Ravine Road, Folsom, California 95630 USA
tel 916.351.1288 fax 916.351.0414