


# CS-X2

## OWNERS MANUAL

## INTRODUCTION

### Scope of Manual

This manual is intended to provide the user necessary technical information required to operate the Peavey Electronics Corporation CS-X2 electronic crossover unit properly and to maintain the unit in optimum operating conditions.

A thorough reading of this manual and strict adherence to the instructions, procedures, and cautions will assure many years of professional service from your CS-X2 electronic crossover network.

### Equipment Description

The Peavey Electronics Model CS-X2 electronic network is a single-channel, two-filter crossover network designed for applications in professional or commercial sound, or home "hi-fi" applications.

The CS-X2 is a compact, ruggedly constructed unit designed to fit into one standard 19" (W.E. hole spacing) relay rack space.

Front panel controls are as follows:

LEVEL — Adjusts the optimum operating level of the CS-X2.

LOW DRIVE — Adjusts the signal level from the low pass section of the filter network.

HIGH DRIVE — Adjusts the signal level from the high pass section of the filter network.

### Installation

The CS-X2 crossover network may be mounted in any configuration as long as certain guidelines are followed. Although the CS-X2 does not generate any significant heat, the unit should not be mounted directly over large power amplifiers. There are two reasons for this precaution: First the excessive heat; and secondly, most power amplifiers contain large transformers which may cause hum in the CSX2 outputs.

For portable use, it is strongly suggested that the CS-X2 be mounted in a portable rack or other suitable carrying case. The CS-X2 is very ruggedly built but a few drops when being loaded or unloaded from an equipment truck may, in time, cause some type of damage.

### External Connections

The CS-X2 is designed to be both impedance and level compatible with most professional equipment. In accordance with accepted engineering practice, all outputs are low impedance (600 Ohms or less) and the inputs are both high impedance (50 K Ohms) unbalanced and 600-Ohms balanced configuration.

In most modern electronic equipment, no requirement exists to actually match impedances. An example of this is that if you have a console with a 150-Ohm output impedance, you can usually connect a load impedance of 150, 200 or 600 Ohms without signal degradation. The CS-X2 is provided with both transformer coupled balanced 600-Ohm inputs and outputs for professional and commercial sound applications. In addition, standard ¼" phone jacks are provided for interfacing the unit to semi-professional equipment.

### Wiring

You have purchased one of the finest crossover networks currently available. You can ruin or seriously degrade its performance by the use of incorrect cable and connectors. When connecting your crossover to external equipment, all wiring, with the exception of AC power leads, must be shielded and of good quality. Whenever you have a balanced input or output, it is desirable to use a completely balanced system. Be careful to watch the phase relationships when wiring your connectors. Standard industry practice in the United States is that pin 1 is shield, pin 2 is common or black, and pin 3 is "hot" or white. In Europe, the phase relationship between pins 2 and 3 are reversed. A single miswired connector has been known to cause everything from feedback to complete phase cancellation of the desired signal.

It should be noted that all balanced inputs and outputs of the CS-X2 are transformer coupled. All transformers used in the CS-X2 are capable of continuous operation at +23.0 dBm at less than 0.1% distortion.

The use of good quality cable and a balanced system will greatly reduce the possibility of R.F. (radio frequency) pickup such as C.B. sets and local radio stations. The use of balanced low impedance cables will also reduce the noise associated with stage light shows. It is a good idea to try to keep your signal cables away from the light man's power and control lines. If possible, run your cables on the other side of the room.

Whenever high impedance unbalanced cables are used as patch cords, try to keep these cables as short as possible. Do not under any circumstances use coiled or "stretch" types of cable for interconnecting your equipment. These cables are excellent antennas for all types of noise. They also tend to be quite microphonic in that when moved, they act as a capacitor microphone.

**WARNING:** To prevent electrical shock or fire hazard, do not expose this appliance to rain or moisture.

## AC Power Connection

Of all problems which plague sound reinforcement systems, AC power is often one of the most obvious and most difficult to correct. Because the CS-X2 is connected to three pieces of equipment (two power amplifiers and the driving source), the chances of a ground loop and resulting hum is quite high. In order to minimize the possibility of ground loops, you should have all equipment associated with the CS-X2 connected to the same AC power distribution point. This does not mean a set of wall outlets on one breaker; this means a single AC distribution point or outlet. Following this rule is the only way you can reduce the possibility of hum and light dimmer noise. The only precaution is to assure that the circuit will handle the required current load.

### CAUTION

**DO NOT REMOVE THE GROUND PIN FROM THE AC PLUGS. USE A SUITABLE ADAPTOR IF REQUIRED.**

The correct procedure for using ground lift adaptors is to attach the green wire from the adaptor to the metal distribution box and then rotate the power cord and adaptor as required for minimum hum.

## Input and Output Connections

If the CS-X2 is to be operated at the mixing console, the crossover network should be the last unit in the signal processing chain. In other words, it should be connected after all graphic equalizers, limiters, and digital delay devices and immediately prior to the power amplifiers. The two output lines (low drive and high drive) should then be routed to the power amplifier located at the stage.

## OPERATION

### Crossover Point

The crossover point is exactly wired for a crossover frequency of 800 Hz. This frequency has been found satisfactory in almost all applications. Additional crossover points of 500 Hz, 1,000 Hz, and 3,500 Hz are available by internal wiring changes. These changes should be performed by a qualified service technician.

### Crossover Point Adjustment

### CAUTION

**BEFORE APPLICATION OF AC POWER, BE ABSOLUTELY SURE THAT THE HIGH PASS OUTPUT IS CONNECTED TO THE POWER AMPLIFIER ASSOCIATED WITH THE HIGH FREQUENCY SPEAKER SYSTEM. FAILURE TO CORRECTLY CONNECT THE OUTPUT LINES CAN COMPLETELY DESTROY HIGH FREQUENCY DRIVER DIAPHRAGMS IN A VERY SHORT PERIOD OF TIME. COLOR CODE OR OTHERWISE MARK THESE CABLES.**

If the CS-X2 is located at the stage, only one cable is required to connect the crossover network input to the last signal processing device or console output.

As a general rule, the higher the crossover point, the greater protection afforded the driver diaphragms. It does not hurt to try different crossover points as long as you do not apply too much power.

### CAUTION

**WHEN PERFORMING A REAL-TIME EQUALIZATION PROCEDURE, USE AS LITTLE POWER AS POSSIBLE. PINK NOISE IS CHARACTERIZED BY HAVING THE SAME AMPLITUDE ACROSS THE AUDIO SPECTRUM. THIS MEANS THAT IF THE HIGH DRIVE AND LOW DRIVE CONTROLS ARE ADJUSTED THE SAME, THE BASS SYSTEM AND THE HORN DRIVERS WILL RECEIVE THE SAME AMOUNT OF ELECTRICAL ENERGY. THIS TYPE OF SIGNAL WILL BLOW HORN DRIVERS ALMOST INSTANTANEOUSLY IF LARGE POWER AMPS ARE USED.**

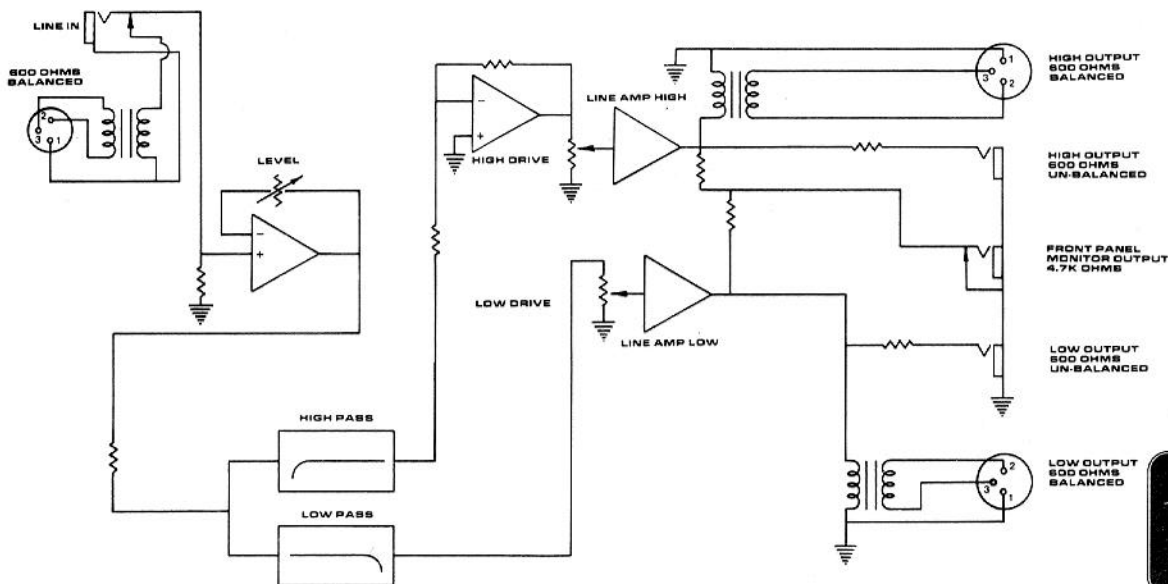
### Drive Level Adjustment

The following procedure should be used as a guide for adjusting the drive and output levels from the CS-X2 crossover network. This procedure should be used as a general guide as every installation will have different operating requirements.

### NOTE

**THE AUDIO POWER AMPLIFIERS SHOULD ALWAYS BE THE LAST DEVICES TURNED ON AND THE FIRST TURNED OFF TO PREVENT TRANSIENTS FROM REACHING YOUR SPEAKER SYSTEM.**

1. Apply AC power to all equipment feeding the CS-X2 crossover network. This includes the console, graphic equalizers, limiters, and other signal modification devices.
2. Adjust all controls on the CS-X2 for minimum output and apply AC power to the crossover network.
3. Adjust the audio power amplifier level controls to their minimum positions and apply AC power to the amplifiers.
4. Adjust the audio power amplifier level controls to their near maximum positions.
5. Adjust the HIGH DRIVE and the LOW DRIVE controls on the CS-X2 to the "30" position as indicated by the front panel controls, and slowly bring up the LEVEL control. Adjust the HIGH and LOW DRIVE level controls for a correct balance between the bass and high frequency speaker systems. There will be an interaction between the three controls located on the CS-X2. You should always try to run the LEVEL control in the "0" to "9" range and the HIGH and LOW DRIVE controls as required for proper balance. Because the CS-X2 has an extended dynamic range input circuit and the capability of +20.0 dBm output, distortion due to overloading or insufficient output will be insignificant when compared to other devices in the audio processing chain.



FUNCTIONAL DIAGRAM

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