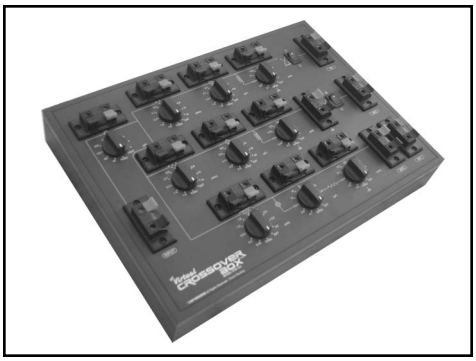
VCB-100 VIRTUAL CROSSOVER BOX

Audio 4 Industry - Hobbyists - Home / Car Installation Specialists



The Virtual CROSSOVER BOX™

MODEL VCB-100

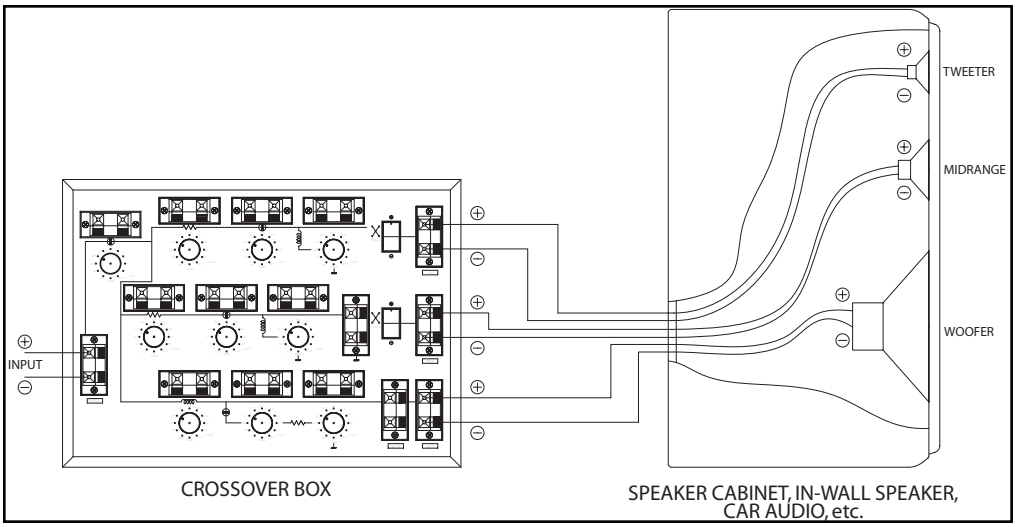


Fig. 1: Typical Set-up

COMMENTARY

An engineer designing a crossover network for a speaker system will typically design the crossover network on paper or with software, using generally known design principles. He will then make a sample or samples of the crossover with the components required, either using a breadboard or mock-up wiring. Next, he inserts the crossover into the speaker system and checks to see if the crossover performs as expected, obtaining the desired sound (from the speaker system).

If the crossover network does not perform as expected, the engineer must experiment with other components and versions of the crossover. As a result, more time is spent building, soldering, procuring, or placing the new components into the prototype system.

Introducing the Virtual Crossover Box. This unit is a self-contained, variable crossover circuit (passive and analog) that allows components to be changed instantly by the use of labeled rotary switches and pre-determined network paths using a printed circuit board. This box enables new crossover versions to be created and modified instantaneously, in real-time, resulting in the elimination of multiple prototype testing/building.

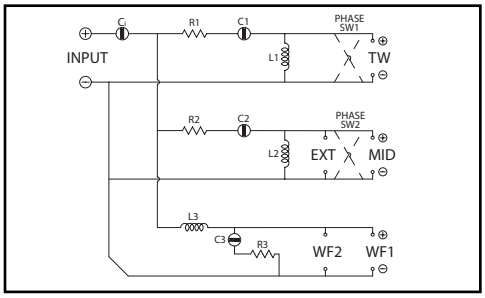


Fig. 2: Schematic

As a simple example, using the appropriate rotary switch in the tweeter section to change the capacitor value from 1.5uF to 2.7uF will lower the cut-off frequency of this high pass filter. As a result, the crossover points and frequency response of the overall system has been modified.

Dozens of different circuit topologies may be created, and the nearly 100 components allow you to choose your own filter type, creating Butterworth, Chebychev, or Bessel filter alignments where necessary. The crossover box is a must have companion for any speaker system design or analyzing software.

KEY FEATURES

❍Design, test, and modify crossovers in real-time while listening (invaluable for A/B testing) or comparing software curves.
❍Eliminate countless hours of design and mock-up building time.
❍A great tool for industry, hobbyists, or home / car installation specialists looking to "tune" their systems.
❍Allows for any type of external components to be used via quick-connect push terminals, or select from over 85 internal components using robust, long-life rotary switches.
❍Uses internal PCB (printed circuit board) for tight tolerances and reliable performance.
❍Tough, injected molded plastic top panel with silk-screened component values guarantees years of productive use.
❍Streamlined dimensions: 14 1/4"(l) x 10 1/4"(w) x 2 1/2"(h); fits into a standard briefcase. Weight: ~4lbs.
❍Procuring all the required parts and assembling a similar circuit by hand would cost far more in time and money than the cost of this unit!!
❍Full one-year function warranty.

COMPONENT LIST/SPECIFICATIONS

The circuit allows for:
1. An overall high pass filter.
2. A 2nd order network with a resistor for the tweeter section.
3. A 2nd order network with a resistor for the midrange section, with the allowance for an external conjugate filter.
4. A 2nd order network with conjugate filter on the woofer(s). [3rd and 4th order network topologies may be added easily via the external connectors].
5. Allowance for 1-way, 2-way, and 3-way system crossover design with up to two woofers, two midranges, and a tweeter.
6. The midrange and tweeter circuit also have a switch to change their respective polarity in reference to the woofer(s).
7. The internal circuit uses quality 100V electrolytic capacitors (+/- 10%), ferrite core coils (0.8mm wire dia.), and cement type resistors (3W). All values measured at 1KHz.

Ci: 47, 68, 100, 200uf, thru, ext. | R1 (TW): 1.0, 1.5, 2.2, 2.7, 3.3, 3.9, 4.7, 6.8, 10, 15ohms, thru, ext. | C1(TW): 1.0, 1.5, 1.8, 2.2, 2.7, 3.3, 3.9, 4.7, 6.8uf, thru, ext. | L1(TW): 0.1, 0.25, 0.3, 0.35, 0.5, 0.8, 1.0mH, open, ext. | R2 (MID): 1.0, 1.5, 2.2, 2.7, 3.3, 3.9, 4.7, 6.8, 10, 15ohms, thru, ext. | C1(MID): 3.3, 3.9, 4.7, 6.8, 10, 12, 15, 22, 33uF, thru, ext. | L1(MID): 0.1, 0.25, 0.3, 0.35, 0.5, 0.8, 1.0mH, open, ext. | L3(WF): 0.25 (DCR<0.15ohms), 0.5, 0.8, 1.0, 1.2, 1.5, 2.1, 2.5, 3.0, 3.5mH (DCR<0.55ohms), thru, ext. | C3(WF): 4.7, 6.8, 8.2, 10, 12, 15, 22, 33, 47uF, open, ext. | R3 (WF): 1.0, 1.5, 2.2, 2.7, 3.3, 3.9, 4.7, 8.2, 15ohms, thru, ext. | SW1;SW2: Polarity Rocker Switch.

8. Using other component types such as mylar capacitors, polyswitches, light-bulbs, or any number of other component/driver combinations is obtainable by simply utilizing the external terminal connections.

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Vidsonix Design Works is an independently owned and operated U.S. company which designs and manufactures its own line of home theater, marine, and professional speaker products and accessories, along with its exclusive line of *Audio 4 Industry* products. Founded in 2000 by audio engineer Charlie Miltenberger (Charlie has designed or assisted in the design and manufacture of literally hundreds of speaker system models for major consumer electronic companies over an 11 year period), Vidsonix is dedicated to bringing you the most ergonomic, aesthetic, great sounding, cost effective audio products on the market today.

In addition to the VCB-100, Vidsonix has a whole line of crossover and system design tools in development for the upcoming year...

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