Subject: ART Array Crossover Question
Posted by blake on Tue, 13 Mar 2007 04:12:31 GMT
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Another question about the ART arrays I'm building.I'm ready to build the 1st order crossover(tweeter and woofer), but I'm just not sure about the actual wiring. Although I understand the schematic, I'm not 100% sure on how to get everything connected. I've read schematics plenty, but never actually built any of them. I'm afraid I'm going to use too much wire. Could someone either post a pic of their built 1st order xo or even email it to me?I would really appreciate it, and sorry for the somewhat dumb request Blake

Subject: Crossover wiring options
Posted by Marlboro on Tue, 13 Mar 2007 13:49:45 GMT
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I don't do a lot of curcuit wiring for crossovers since I use electronic crossovers, but.....While its not as classy, you can actually put the parts on a big piece of plywood or peg board, and solder them together exactly as it looks on the paper diagram. You can glue the parts on the board with hot glue. Don't worry about using too much wire; that's pretty hard to do unless your wiring thing is on a 15 foot x 15 foot board.Hope this helps.

Subject: Re: ART Array Crossover Question
Posted by FredT on Wed, 14 Mar 2007 00:48:09 GMT
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The first order crossover is very simple: A 1.2mH inductor in series with the woofers and a 10uF cap in series with the tweeter. You will also need a 16 ohm resistor across the tweeter terminals.I suggest you try both the first and second order woofer crossovers. Wayne did some measurements of the speaker with both, and the results indicated the 1st order woofer crossover makes the overall response much smoother. But he did the measurements the standard way, with the speaker laying on its side and the mike placed one meter away from the front baffle in line with the tweeter. Measuring a line array with the mike placed so closely can reveal some peaks and nulls that aren't audible from the typical listening distance of eight to twelve feet. Wayne said he prefers the first order; I don't like the sound of the first order woofer crossover at all - it sounds too forward to my ears. You will find a picture of the 2nd order crossover at the link below. In that picture the input is the inductor lead that has the white wire connected to it. The white wire connects to the tweeter crossver input. The black wires are connected to ground The woofer output is the other lead of the inductor. The tweeter output is the other end of the black capacitor (opposite the white input wire). Click on the picture to enlarge it. The white capacitors are 5uF surplus GE poly caps I got from Madisound for 60 cents each. You will also find the wiring

diagram in this picture gallery.I believe the Art array crossover design may be the weak link in these speakers, and if anybody has any ideas for improving it I'm open to suggestions.
Art Array Crossover

Subject: Re: Crossover wiring options
Posted by blake on Wed, 14 Mar 2007 01:33:57 GMT
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Thanks for the reply Marlboro.I did just that today, but I'm just not too happy with the way it looks. If I can't figure out anything else, I'll stick with this.Thanks again for replying and the help Blake

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Subject: Re: ART Array Crossover Question
Posted by blake on Wed, 14 Mar 2007 01:49:37 GMT
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Thanks for the great description Fred!Its funny, but I saw a link to you gallery a while back and copied the picture of your crossovers to look at later. I've actually been using them while drawing the 2nd order xo to get an idea how to wire mine more efficiently.If you don't mind, I have a couple of questions regarding the wiring of yours. The positive speaker terminal will connect to the input side of the inductor(where the white wire is connected). The other side of the inductor is your woofer out connection. Your tweeter output will be connected to the topside of the 16ohm resistor, between it and the cap. I can see that. Where on the ground side will you connect your woofer return, tweeter return, and negative speaker terminal? Here's what I'm guessing...you'll connect the woofer return to the backside of the resistor that's in series with the 4.7 cap. You'll connect your tweeter return to the backside of the 16ohm resistor. And you'll connect your negative speaker terminal to the backside of the remaining 4.7 cap that is in parallel with the cap/resistor. Is that right?Thanks for taking the time to read this. I never realized that I could read a schematic easily, but have so much anxiety putting it together.Blake

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Subject: Re: ART Array Crossover Question
Posted by FredT on Wed, 14 Mar 2007 09:19:23 GMT
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Your description of the connections is correct. Building a crossover from a schematic sounds easy until you try to fit everything on a board in some logical way and avoid cross-wiring anything:) Solder the crossover elements' leads directly to each other wherever possible. Where they can't be connected directly it's helpful to use white insulated wire for any positive leads and black insulated for any negative leads. I like to use perf board with wire ties to hold the parts in

place.The link below is a tutorial on building crossovers that you might find helpful.
Crossover Construction

Subject: Re: Crossover wiring options
Posted by FredT on Wed, 14 Mar 2007 09:38:01 GMT
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I haven't done this because the crossover is hidden and I never tell anybody how ugly it is, but it should be possible to build a neat looking crossover by using pegboard, laying out the parts at 90 degree angles, and connecting the leads underneath the board where they aren't visible.

Subject: Re: ART Array Performance
Posted by Wayne Parham on Wed, 14 Mar 2007 13:58:16 GMT
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I think your ART Array design is excellent, and measures very well. If you saw the actual unsmoothed measurements of a lot of speakers, you'd be horrified. What you see in advertisements is usually highly post-processed and smoothed, and sometimes isn't even at all close to actual performance. A few manufacturers are more careful to publish measurement that are more accurate, but even those usually have a fair amount of smoothing applied. Your speakers measured very well, so don't mis-interpret the measured response charts. True measurememts aren't the flat line with a few little squiggles that some manufacturers publish for their speakers.In particular, ART Array response through the difficult midbass is excellent, largely due to the multiple path length distances which scatter floor bounce and average the response. I measured ground plane and standing upright and response didn't change. The difference in midbass measured upright compared to ground plane is usually very different because of floor bounce, but your ART Array is much more immune to placement. Response is good through the crossover region, and while there is a difference in the two variations, both are pretty good. The 1st order version measures flat from 40Hz to 30kHz +/-5dB, with no smoothing applied to the response chart. All in all, the ART Array is a very fine loudspeaker.

Subject: Re: ART Array Crossover Question
Posted by blake on Sat, 17 Mar 2007 04:21:05 GMT
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Sorry for the delay, but thanks much for your response Fred. I believe I'll be ok from this point forward.
