
Subject: 4PI Cabinet plans / question

Posted by [thatsnasty](#) on Thu, 21 Jun 2012 06:07:49 GMT

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Hey Wayne, I was wondering if you could send me the cabinet plans?

I have a couple quick questions in regards to assembling them as well.

Do the plans include a terminal cut-outs? Should the terminals just be standard red/black if not? (I won't be bi-amping)

Will the \$125 pre-assembled x-over work fine with the 2226h? I assume you can upgrade components as well if needed.

Reason being is I just got 2x 2226's from the bay at a good price. They were both pulled from matching cabinets as well so they look to be legit / original cones.

I'm in the same boat about the CD as well. The other AVS'er posted about the Denovo-360 being a good replacement, so I'll most likely get that as well.

Edit: one more thing. If I build a 4pi center, can I build it sealed and ignore the port (similar to the other build thread in the listening room) and not have to worry? I figured since the 2226h works good sealed I'd only be sacrificing bass extension.

Cheers.

Subject: Re: 4PI Cabinet plans / question

Posted by [Wayne Parham](#) on Thu, 21 Jun 2012 14:32:28 GMT

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I've sent plans to your email address.

Kits include the binding post terminal, but crossovers by themselves do not. The one we ship in the kits need a 2-1/8" x 2-7/8" hole cutout.

buy our H290C waveguide, because the crossover was designed for that as well.

For a center channel, you can simply omit the port, if you wish. I would leave the left and right mains vented, as designed. Also use flanking subs to smooth room modes and the self-interference anomalies from floor bounce and the reflection off the wall behind the speakers.

Subject: Re: 4PI Cabinet plans / question
Posted by [zheka](#) on Thu, 21 Jun 2012 15:18:09 GMT
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Wayne Parham wrote on Thu, 21 June 2012 09:32 For a center channel, you can simply omit the port, if you wish. I would leave the left and right mains vented, as designed. Also use flanking subs to smooth room modes and the self-interference anomalies from floor bounce and the reflection off the wall behind the speakers.

what is the down side of doing sealed versions of 4PIs other than higher LF roll-off point? why do you not recommend going sealed for the L/R speakers?

It is often said that sealed mains are easier to integrate in multisub setups when mains and subs overlap. Do you think it is a valid point of view?

Thank you

Subject: Re: 4PI Cabinet plans / question
Posted by [Wayne Parham](#) on Thu, 21 Jun 2012 16:07:12 GMT
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I do not think it is valid to consider sealed mains to be easier to integrate with multisubs. In fact, I'd say this presumption goes against the whole multisub concept, which is to blend sound sources having various phase relationships and physical locations in the modal region.

The additional extension from vented mains helps increase overlap between mains and flanking subs. The venting also reduces excursion. It is a good thing, all the way around.

I'd rather the center be vented too, but I don't think we lose much to have one channel sealed. It has a different phase characteristic, but then again, being in a different location is sort of the same thing, and is even better. It's the various locations that matter the most.

Subject: Re: 4PI Cabinet plans / question
Posted by [zheka](#) on Thu, 21 Jun 2012 16:09:53 GMT
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very interesting.
thank you!

Subject: Re: 4PI Cabinet plans / question

Posted by [thatsnasty](#) on Thu, 21 Jun 2012 18:34:49 GMT

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Wayne Parham wrote on Thu, 21 June 2012 09:32 I've sent plans to your email address.

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For a center channel, you can simply omit the port, if you wish. I would leave the left and right mains vented, as designed. Also use flanking subs to smooth room modes and the self-interference anomalies from floor bounce and the reflection off the wall behind the speakers. Thanks for the quick response!

Sealed center seems like a good idea then. It will keep the speakers looking "even" as opposed to offsetting the port either way in the center.

I asked about the terminals because it'll likely cost more for shipping 3 terminals to Canada from PE then it would to get them when I buy the x-overs. Is it possible that I can buy 3 from you, without the kit, and get them shipped with the x/o?

Thanks again, if anything else comes up that the search function cannot find, I'll be sure to bug you

Subject: Re: 4PI Cabinet plans / question

Posted by [zheka](#) on Sun, 09 Dec 2012 16:04:44 GMT

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Wayne Parham wrote on Thu, 21 June 2012 11:07

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I'd rather the center be vented too, but I don't think we lose much to have one channel sealed. It has a different phase characteristic, but then again, being in a different location is sort of the same thing, and is even better. It's the various locations that matter the most.

Is there any reason why the same logic cannot be extended to tapped horn subs? In other words,

can THs be mixed with sealed and bass-reflex subs in multisub setups?

Subject: Re: 4PI Cabinet plans / question

Posted by [Wayne Parham](#) on Sun, 09 Dec 2012 18:48:09 GMT

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Tapped horns, front-loaded horns, bandpass boxes and front-loaded direct radiators - All can be mixed in home hifi and home theater environments. It will help spread out the modes.

This is a big no-no in prosound environments through. The path length differences between horns and direct radiators make integration difficult. Even if you match them with delay, this really only matches them at one frequency because the acoustic center shifts through the passband. So when outdoors or in a large space - where you want point source summing - use only one type of subwoofer.

Subject: Re: 4PI Cabinet plans / question

Posted by [zheka](#) on Sun, 09 Dec 2012 19:09:51 GMT

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Excellent. Thank you.

Subject: Re: 4PI Cabinet plans / question

Posted by [thatsnasty](#) on Sat, 22 Dec 2012 08:39:33 GMT

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Hey Wayne, just following up on this thread.

I have my 4Pi's built and they sound fantastic!

The center is sealed as I was talking about above, but I had a question.

I'm currently crossing over the center at 80hz and the L/R at 50hz. I originally had the center at 50hz as well, but during more bass heavy content, I saw it was seeing some pretty decent excursion.

I was wondering if you had an idea how much power the 2226H can take with a 50hz cross in a sealed box?

My receiver (pioneer vsx-1018) will put out around 100-150w at max so just making sure I don't blow the thing up, lol.

Cheers.

Subject: Re: 4PI Cabinet plans / question
Posted by [Wayne Parham](#) on Sat, 22 Dec 2012 15:46:48 GMT
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thatsnasty wrote on Sat, 22 December 2012 02:39I have my 4Pi's built and they sound fantastic!
The center is sealed as I was talking about above, but I had a question.

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That's one of the main reasons I prefer vented boxes. They reduce excursion while at the same time adding extension. And in the modal region, the changing phase of a Helmholtz resonator is unimportant, so it's definitely better to run vented mains.

Still, the center channel looks nicer sealed, and I think your solution is a good one. They just can't take quite as much power, but they can be high passed a little higher for protection, as you've done. When high-passing the mains, do it as low as you can to increase overlap/blending so the room modes are mitigated as much as possible with multiple sound sources. The high-pass numbers you've chosen are just about perfect.

Here are some response and excursion charts, for comparison:

File Attachments

- 1) [2226H_vented_response.gif](#), downloaded 3368 times
 - 2) [2226H_sealed_response.gif](#), downloaded 3304 times
 - 3) [2226H_vented_excursion.gif](#), downloaded 3043 times
 - 4) [2226H_sealed_excursion.gif](#), downloaded 3100 times
-

Subject: Re: 4PI Cabinet plans / question

Posted by [thatsnasty](#) on Sun, 23 Dec 2012 07:05:40 GMT

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Thanks Wayne, that pretty much clears everything up!

No point in crossing it lower then 80hz, that's what subwoofer(s) are for (when they are finished).

Cheers and hope you have a great holiday.

Subject: Re: 4Pi loudspeaker performance data

Posted by [Wayne Parham](#) on Sun, 27 Jan 2013 06:06:24 GMT

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More information:

Subject: Re: 4Pi loudspeaker performance data

Posted by [dheflin44](#) on Sun, 27 Jan 2013 18:29:59 GMT

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Hi Wayne,

Do you recommend a high-pass starting just below the port tuning frequency to limit excursion?

Thanks,
Darrell

Subject: Re: 4Pi loudspeaker performance data

Posted by [Wayne Parham](#) on Sun, 27 Jan 2013 18:59:13 GMT

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If you are going to run high power levels, then sure, a high-pass filter at the Helmholtz frequency makes sense.

Helmholtz frequency of each model
