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Subject: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [coolgeek](#) on Sun, 04 Sep 2011 02:22:00 GMT

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Hi,

I am quite a newbie in DIY so please bear with me..

I am looking to build a HT room in the house i just bought and before the complete the renovation, i need to sort of figure out what sort of speaker systems to have (sizes, etc).

I have heard that the 4pis are great.. so, this is why I have joined this forum.

Ok, here are some questions.. I hope I can get some answers.

First, placements for my speakers:

- I intend to hide the speakers inside a purpose built cabinet (my room will be built by carpenters). I hope this would not distort the sounds.

1. What's the difference between the 4pis, and 7pis corner horn? as LR speakers? Do you have to place the 7pis in a corner or just anywhere?

2. 4pis only goes up to 16khz, would this affect the normal playing of music? Or, would the JTR 12s be better option?

3. What sort of sub should i build to complement these speakers? Should I build the 12pi base horn, or say build one using the TC Sounds LMS Ultra 5400 18" DVC Subwoofer? Basically i don't know much about subwoofers and what i would need to complement these speakers..

4. Could I use a regular Receiver to power the 4pis (say if i use them as LCR, and the 2pis as surround?) or, do i need separate amps for them? If i use separate amps, how do i hook it up? do i still hook the source material to my receiver, and then output to the amps, and then output to the speakers? Wouldn't that be double amplification?

That's all i can think of for now..

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [Wayne Parham](#) on Sun, 04 Sep 2011 03:18:53 GMT

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Answers by numbers:

matched-directivity two-way loudspeaker. The difference is that a constant directivity cornerhorn provides constant directivity from the Schroeder frequency up, all the way through the audio band.

A matched-directivity two-way speaker is the next best thing, having a pattern that collapses gradually up to the crossover point, where it becomes constant. More information is available in the following article:

High-Fidelity Uniform-Directivity Loudspeakers If you have the right corners, I'd suggest the seven

corners that are unobstructed for at least five or six feet, and it's usually best for them to be placed along a short wall. You need to be able to sit back behind where their forward axes cross, which is 1/2 the distance that the wall is long. In other words, if you are placing the speakers at each end of a 20 foot wall, you have to be able to sit more than 10 feet back from that wall. That's an ideal placement.

If you don't have the right corners, the matched-directivity two-way speaker is the next best thing. Run them with flanking subs for the best results. A matched-directivity two-way with flanking subs is 95% as good as a constant directivity cornerhorn, and has the benefit of greater placement flexibility. But to get this kind of performance, you'll need to set them up as shown in the document referenced above, similarly to the cornerhorns, with 45° tow-in, forward axes crossed in front of the listeners and flanking subs a couple feet away from each main speaker in each axis.

I like having the mains on stands, and flanking subs on the floor beside them and behind them. Like this:

2. All models with the (upgrade) DE250 compression driver reach 18kHz. They're smooth and extended, and offer the dynamics and low distortion that only a compression driver can provide. Other tweeters can hit 20kHz, and sometimes even more. But none can do it with the dynamics of a compression driver. I'd trade the dynamics for that last 2kHz any day.

good, clean, powerful bass and their relatively small size allow you to use several of them in a multisub configuration. Use at least two as flanking subs, and possibly two more at the other side of the room, if space permits. More information on that in the following link:

Room modes, multisubs and flanking subs4. A "regular" receiver is all that's needed to drive any best speakers and driving them with a mediocre amp or source.

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [coolgeek](#) on Sun, 04 Sep 2011 03:48:40 GMT

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Thanks for the detailed reply.

Now to the business end.

Could you ship the kits to Malaysia? Time is not a problem for me because i still need to renovate my house and that takes time, so I would build the speakers first, before finalizing the design my of ht to match the sizes of the speakers..

What do you recommend for the surrounds? Would the 2pis be enough?

Also, I know this is a competitor, but would a JTR 12 be better as a center channel? or another 4pi? Have you heard the JTRs? would they complement the 4pis?

Ok, this may be a silly question... we use 240V here in Malaysia vs the 110v in the US.. does this have anything to do with the drivers in the 4pis?

Sub question: Could I upgrade the 3pi sub with LMS Ultra 5400 18? using your kits? i mean, basically build a bigger box, but use your crossovers, etc.. i want to get HUGE base with powerful punches... I heard that that is the best sub driver around from the avsforum.. (or, am i naive to think that?)

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [coolgeek](#) on Sun, 04 Sep 2011 04:21:55 GMT

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I haven't made up my mind about which receiver to use yet..

how about this one?

Onkyo TX-NR709 7.2

Would it be good enough?

It has 2 hdmi out, which is great for both my LCD tv and projector...

How do i power 4 subs from such a receiver? I mean, if i got the 4pis as the main speakers, and the 3pi subs to complement each, how do i hook it up? does the sub have an 'output' to the main speakers?

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [NWCgrad](#) on Sun, 04 Sep 2011 04:47:12 GMT

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I will have a pair of 4 Pi's (upgraded to the JBL woofer and DE250 CD) and 2 modified 3 Pi subs in Phnom Penh by the end of the month.

If you find yourself in the area you could stop by for a listen.

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [coolgeek](#) on Sun, 04 Sep 2011 04:54:53 GMT

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NWCgrad wrote on Sat, 03 September 2011 23:47 I will have a pair of 4 Pi's (upgraded to the JBL woofer and DE250 CD) and 2 modified 3 Pi subs in Phnom Penh by the end of the month.

If you find yourself in the area you could stop by for a listen.

Great, i'll definitely take you up on that.. it's just an AirAsia flight away and I have been to Phnom Penh. Please update this thread when you have it all built!

How did you modify the subs?

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [NWCgrad](#) on Sun, 04 Sep 2011 05:40:47 GMT

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I am building as sealed instead of vented so I can get away with a smaller box due to space constraints. I am giving up deep bass (from low of 20 Hz to ~45 Hz) with the smaller boxes. I will power them with an old two channel amp I brought over from the states (Adcom GFA555) that is rated for 200 watts into 8 ohms.

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [coolgeek](#) on Sun, 04 Sep 2011 05:45:32 GMT

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NWCgrad wrote on Sun, 04 September 2011 00:40 I am building as sealed instead of vented so I can get away with a smaller box due to space constraints. I am giving up deep bass (from low of 20 Hz to ~45 Hz) with the smaller boxes. I will power them with an old two channel amp I brought over from the states (Adcom GFA555) that is rated for 200 watts into 8 ohms.

Cool, I guess you don't need the bass as you have the 3pi bass units... i'll def take u up on it once you have finished them. Good luck with your build...

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [Wayne Parham](#) on Sun, 04 Sep 2011 06:23:21 GMT

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coolgeek wrote on Sat, 03 September 2011 22:48 Could you ship the kits to Malaysia?

Yes, we ship around the world. Use the shopping cart to check shipping prices. Start an order and let it calculate shipping prices for you. It won't ask for payment information until after the shipping quote, so you can back out or complete the order if you wish.

coolgeek wrote on Sat, 03 September 2011 22:48 What do you recommend for the surrounds? Would the 2pis be enough?

Yes, perfect.

coolgeek wrote on Sat, 03 September 2011 22:48 Also, I know this is a competitor, but would a JTR 12 be better as a center channel? or another 4pi? Have you heard the JTRs? would they complement the 4pis?

I like Jeff a lot, he's a great guy. But I wouldn't want a different speaker for a center channel. It is a coaxial speaker, having different polar response, and probably different spectral balance and character. You don't want that. The center channel speaker should be the same as the right and left speakers.

My advice is to forego the center channel entirely, unless the distance between right and left channels is greater than about 20 feet. The crossed-axes configuration makes a wonderful phantom center with great imaging and detail.

coolgeek wrote on Sat, 03 September 2011 22:48 Ok, this may be a silly question... we use 240V here in Malaysia vs the 110v in the US.. does this have anything to do with the drivers in the 4pis? No.

coolgeek wrote on Sat, 03 September 2011 22:48 Sub question: Could I upgrade the 3pi sub with LMS Ultra 5400 18? using your kits?

No, but subwoofer design is very easy, at least direct radiating subs. The mains have issues to deal with but not the subs. You can pretty much simulate the box with a T/S program and expect the device to act the same as the simulations.

One word of advice though - don't build one massive sub. Build two to four competent subs that are easy to put in different places around the room. Multiple subs are much better than one powerful sub.

Put two subs flanking the mains, as I showed earlier. If you build two more, put them on the opposite side of the room somewhere. That will make the bass smooth and full throughout the room.

Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [coolgeek](#) on Sun, 04 Sep 2011 06:45:55 GMT

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Wayne Parham wrote on Sun, 04 September 2011 01:23

No, but subwoofer design is very easy, at least direct radiating subs. The mains have issues to deal with but not the subs. You can pretty much simulate the box with a T/S program and expect the device to act the same as the simulations.

What's a ts program? can you send me the link to buy it?

Quote:One word of advice though - don't build one massive sub. Build two to four competent subs that are easy to put in different places around the room. Multiple subs are much better than one powerful sub.

Put two subs flanking the mains, as I showed earlier. If you build two more, put them on the opposite side of the room somewhere. That will make the bass smooth and full throughout the room.

This brings me a couple more questions regarding the subs.. I was looking at your 3pi sub kit... does it include the 400watt amp? If it does, can you send one which is 240v? and if not, how do i add an amp to it? can you suggest amps for this? Also, how do i hook up a 4pi with a 3pi sub together? Should the out from my receiver go into the 4pi which then has an out to the subs? If I am not mistaken, the receivers have ONE out for each main channel only. This is the confusing part.. i know how to hook up powered subs.. ie, thru the receivers' sub-output.. but not passive subs, especially as per your recommendation of hooking it up with the 4pis..

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I was adding stuff to my cart then relize that upgrading the capacitor - Audience AuriCaps costs over \$200, which is very significant. Should i add this, in your opinion or just the cheaper upgrade of \$50? Does it make a lot of difference?

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Final question on the 4pi build, i notice that apart from the square port, the other parts of the speakers looks great.. the sauare hole is just ugly.. could i replace that square hole with a commercial flare port?:

<http://www.parts-express.com/pe/showdetl.cfm?Partnumber=268-350>

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and

what to use for bass

Posted by [coolgeek](#) on Sun, 04 Sep 2011 06:55:19 GMT

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BTW: I followed your suggestion in calculating the shipping, but there was an error in your shopping cart:

"An error occurred with the UPS shipping calculations.

The maximum per package weight for the selected service from the selected country is 150 pounds."

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [Wayne Parham](#) on Sun, 04 Sep 2011 07:26:54 GMT

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coolgeek wrote on Sun, 04 September 2011 01:45 What's a ts program? can you send me the link to buy it?

It's a Thiele/Small modeling program. Lots of freeware/shareware programs available that can be used to calculate subwoofer box/port combinations for any given driver.

coolgeek wrote on Sun, 04 September 2011 01:45 This brings me a couple more questions regarding the subs.. I was looking at your 3pi sub kit... does it include the 400watt amp?

No, you have to purchase the amp separately. It can either be a plate amp or a stand-alone amp, whichever you prefer.

coolgeek wrote on Sun, 04 September 2011 01:45 how do i hook up a 4pi with a 3pi sub together?

Should the out from my receiver go into the 4pi which then has an out to the subs? If I am not mistaken, the receivers have ONE out for each main channel only. This is the confusing part.. i know how to hook up powered subs.. ie, thru the receivers' sub-output.. but not passive subs, especially as per your recommendation of hooking it up with the 4pis..

There are a lot of right ways and a lot of wrong ways. Briefly, the distant subs can be run from the receiver's subwoofer output. Just be sure that the crossover frequency is 60Hz or below. If running a plate amp, the crossover frequency is usually variable. Flanking subs should be driven with the same L/R channel as the main speaker they are next to, but with a low-pass filter, usually set for 80Hz to 120Hz, second-order is best. This will be done by a separate crossover. They aren't too expensive or difficult to use. See the following thread for a couple suggestions:

Sub crossovers

coolgeek wrote on Sun, 04 September 2011 01:45 I was adding stuff to my cart then realize that upgrading the capacitor - Audience AuriCaps costs over \$200, which is very significant. Should i add this, in your opinion or just the cheaper upgrade of \$50? Does it make a lot of difference? See the link below.

Upgrades

coolgeek wrote on Sun, 04 September 2011 01:45 Final question on the 4pi build, i notice that apart from the square port, the other parts of the speakers looks great.. the square hole is just ugly.. could i replace that square hole with a commercial flare port?



No, it doesn't have enough area and a round vent with enough area won't fit.

I personally think the rectangular port looks great. It's one of the coolest aesthetic things about that speaker, in my opinion.

coolgeek wrote on Sun, 04 September 2011 01:55BTW: I followed your suggestion in calculating the shipping, but there was an error in your shopping cart:

"An error occurred with the UPS shipping calculations.

The maximum per package weight for the selected service from the selected country is 150 pounds."

That's the message returned from UPS when the shopping cart sent details about what you wanted to ship. You might try checking items one at a time. Put one kit in the cart and see how much it calculates the shipping charges would be.

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Subject: Re: New HT - Need Advice on Speakers - 4pis or 7pis for main, 2pis, and what to use for bass

Posted by [coolgeek](#) on Fri, 09 Sep 2011 14:48:12 GMT

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Hi Wayne,

I just heard from PennGray at avsforum that you thought the 3pi is better than the 4pi when used with the right drivers...

Your quote: Build as shown, and you have a world-class, price-no-object loudspeaker. The three Pi with TD12S and DE250/H290 is the best "waveguide" speaker I've ever heard or measured. No warts, smooth, perfect pattern and excellent response. Sorry, that's kind of bragging, I know. But this one sets the standard. It's that good.

So, just to confirm, is it truly better than the 4pi with the above configuration? If so, I may as well build the 3pi instead as it's smaller and nicer looking! And if it sounds better, then it's a no brainer!!!!

btw: I am still trying to source for stuff here.. it's proofing futile.. even the JBL distributor don't have the 2226h in stock and they had to ship it in if I wanted it and it'll still cost a lot for shipping..

In the end, I am thinking of finalizing all the speaker kits I want and just have you ship it all to me (I'll of course pay for the shipping in advance and add a little for your trouble)...

Meanwhile, I'll try to hunt around Singapore and maybe Hong Kong...

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Posted by [Wayne Parham](#) on Fri, 09 Sep 2011 15:23:58 GMT



I tend to try and refrain from giving my subjective opinions on the comparisons between the JBL

highly of both models. I don't hesitate to point out the benefits of midwoofers that have shorting rings, which is why I suggest the upgraded drivers over the stock ones. But once you get into the upgraded drivers, you're into the realm of what I consider to be the best speakers you can build or buy. It just doesn't get any better than that, both models are superb.

I sometimes make the comparison to cars. Which would you prefer, a Ferrari F40 or Porsche 959? Both are world class cars, both exceed 200MPH. It is like this with the fully upgraded three

differences are mostly below 100Hz, where multisubs should be employed. And once the subs are in place, it almost doesn't matter what the mains are doing. But below 100Hz, the 2226 shifts a little bit as power is increased. At very low power levels, it has slightly reduced bass. Again, when flanking subs are used, this just doesn't matter.

Above 100Hz, the two speakers are virtually identical in sound character and quality. Their directivity patterns are similar, their spectral balance is similar, in all respects, they are very much the same.