
Subject: Pi3 vs Pi4

Posted by [arbakken](#) on Sat, 11 Mar 2023 22:16:13 GMT

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I originally wanted to build an econowave but the more I think about it I sort of feel like I'd rather spend the extra \$\$ to get the real deal. (I do have to convince the wife first either way!)

I've read the FAQ, but surely there is more difference than brand preference. I know I'd like to build the highest end version of either. Surprisingly, the 4 is smaller and more expensive but the bass seems to be better on the 3.

Other factors:

I plan to run without a sub for a while.

One speaker is stuck in a corner, the other is not

Thanks!

Subject: Re: Pi3 vs Pi4

Posted by [Wayne Parham](#) on Sun, 12 Mar 2023 15:19:22 GMT

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Honestly, it really is mostly a brand preference thing. Both speakers have similar sonic character, and both have similar directivity characteristics. They're both great speakers. The efficiencies are a little different between models, but even that isn't too far apart.

Subject: Re: Pi3 vs Pi4

Posted by [arbakken](#) on Wed, 15 Mar 2023 02:26:13 GMT

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Dang, I was hoping for a more concrete answer. I want to build the 4pi because it's smaller and it would be awesome to have a 15 up front, but the 3pi has a -3db probably 20hz lower than the 4pi. Maybe I should just bite the bullet and do subs now? Originally I wanted Rythmik subs, but I'm not sure they're worth 3x the price of your pi3 sub.

Is it a dumb idea to build a subwoofer that is a stand for the 3pi or 4pi?

Which drivers are used in the posted frequency response curves? Does it change with different drivers, or are they similar enough that it's the same?

Thanks, I appreciate the help and expertise!

Subject: Re: Pi3 vs Pi4

Posted by [Wayne Parham](#) on Wed, 15 Mar 2023 14:41:35 GMT

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The posted measurements are for the fully upgraded models, but the differences in response aren't major. The benefit of upgraded midwoofer drivers is mostly reduced distortion because the upgraded drivers have shorting rings.

That's not the case with the tweeter compression drivers - they don't have shorting rings - but the biggest differences are in the top octave and are easy to see when comparing the individual drivers. Below 10kHz, they're very similar.

As for bass response and subs, I always suggest flanking subs be used. Both the three Pi and four Pi speakers provide powerful midbass, but neither reach the bottom octave and both benefit from flanking subs. The things you get from flanking subs are not just added extension but also baffle step compensation and SBIR mitigation. It provides much better in-room response than any full-range main speaker with built-in woofer, no matter how deep the response goes.

To be able to provide that benefit, the flanking sub must be placed offset in all three planes - slightly behind, below and beside the main speaker it is flanking. That is what gives it the ability to smooth the SBIR notches from nearest boundaries.

Subject: Re: Pi3 vs Pi4

Posted by [arbakken](#) on Fri, 17 Mar 2023 02:38:34 GMT

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I wanted to get your opinion on the amount of room I have. I modeled up the corner that the left speaker would be stuck in and... it's tight.

The 4pi is correct dimensions. I wasn't sure how big the 3pi sub was, so I made it a 14" cube. Either way, I think I would have to make the sub shallower and taller to fit back there. Let me know what you think! Thanks!

Actual Picture (there is a rug now!)

Iso, front, and top vies

File Attachments

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Subject: Re: Pi3 vs Pi4

Posted by [Wayne Parham](#) on Fri, 17 Mar 2023 14:50:35 GMT

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I think that will work but is there any reason you can't move the television console a little bit?

The three Pi subwoofer is a 20" cube, but you can modify dimensions slightly with no ill-effects. Don't make it too long though - we don't want standing waves to develop along the long dimension - and keep the internal volume the same.

Subject: Re: Pi3 vs Pi4

Posted by [arbakken](#) on Sat, 18 Mar 2023 02:46:57 GMT

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I've moved the TV as far right as I can. Any further and it blocks the hallway where the couch is. I wish there was more room.

I played around with the dimensions on the sub and there is not a way that everything fits back there. From the top view, the sub already interfered at 14" sq, 20" sq is 3x the volume. I really thought my biggest hurdle to good sound was going to be money, not physical space. Really both sub and speaker need to be smaller to fit.

I really wanted to build exactly to plan, but it seems the only way forward is to change something. Maybe build a 80% scale version or the 4pi with 3pi internals, buy a microphone, and see what I need to do the crossover to get it to work out? The whole reason I'm here is I don't want to reinvent anything, just use all your blood, sweat, and tears! That, and I think your waveguide is the best available! lol

Subject: Re: Pi3 vs Pi4

Posted by [Wayne Parham](#) on Sat, 18 Mar 2023 14:34:09 GMT

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I wouldn't modify the mains because too much rides on their dimensions. You could modify the subs but I think they might still be too large.

I think it might be best to look for a smaller subwoofer cabinet. I'll bet you can find a high-quality small sub that will work well. It would trade some efficiency for size, so you'll need a little more power, but that's OK. It's just physics.

Subject: Re: Pi3 vs Pi4

Posted by [arbakken](#) on Tue, 21 Mar 2023 03:41:19 GMT

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Alright, I got the go ahead to build the 4pi. Can I have the plans please?

I need to put grills on, I was thinking of embedding magnets in the front. Do I need a 'frame' around the grills to hold them in place and deal with edge diffractions, or is there a better route to take? I don't want my 19 mo toddler to push in my dust caps!

I think no matter how I slice it, the 3pi subs are going to be too big. I think I'll run them as is for a bit, and see how much room I'm left with for subs down the road. Luckily, physics is on my side and I don't need an efficient sub because I have a Carver 900w amp laying around...

Thanks!

Subject: Re: Pi3 vs Pi4

Posted by [Wayne Parham](#) on Tue, 21 Mar 2023 15:07:00 GMT

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You've got mail!

And - yes - embedded magnets will work just fine for mounting a grille. I've done that on a few of my personal loudspeakers, and several other people have too. It works great.

A routed recess will help seat the grille frame. You can be creative with the shape of the grille and its position as well as the depth of the recess.
