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Subject: New Pi 4 + Pi 3 Sub buildout

Posted by [jshupe](#) on Thu, 09 Jan 2014 15:28:51 GMT

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My wife and I are closing on our first house next Wednesday, and since my HTIB receiver has started having issues, I decided it is a great time to refresh my home theater/ home audio solution.

I grew up listening to music on my dad's Weber LBK-400s and my uncle's Aural-15s. Nothing I've ever heard comes close to replicating the sound those speakers made, and I've been searching high and low over the last couple of weeks for a off the shelf solution that competes, but have come up empty handed. I eventually found Pi, and think they're the ticket I'm looking for. I'm going to build two Pi 4 mains and two Pi 3 subwoofers and run a 2.2 configuration.

I'm putting together my build list and would like any thoughts/ advice anyone has. I inherited two Phase Linear PL 4000 preamps and two Phase Linear D-500 Series II amplifiers that I plan to refresh and drive everything with. These two specific amplifiers were modified by Bob Carver in the early 80's to significantly increase their output. I don't have any details of what those modifications were, but will probably be able to find out more once I pick them up in a couple weeks. I plan to replace all the caps in the preamp I decide to use (best of the two) and the two amplifiers before using them.

Since these are going to be part of my home theater solution, I need volume control and digital input from my SmartTV. I plan to facilitate this by using an Emotiva XDA-2 DAC to convert optical from the TV to RCA, and provide line level volume control. To control power on/ power off, I plan to use an Insteon RF controlled AC outlet for the Phase Linear equipment.

I see the configuration as this:

TV > Emotiva XDA2 > PL 4000 Preamp > D-500 | Harrison FMOD 200hz > D-500

The first D-500 will drive the mains, and the second will drive the subs after being filtered through a Harrison FMOD 200hz low pass filter.

I'll use other inputs on the PL 4000 for better quality sources - direct CD, phono, etc and control the volume manually.

For the cabinets, I'm currently planning on using baltic birch with amber shellac, but am worried that I won't be happy with the finish. Another user on this forum uploaded some photos of his speakers finished with amber shellac and they were beautiful, but I'm not sure what wood was underneath them. I'm currently investigating the MDF + veneer route. I will be recessing everything.

My build list (and budget) as follows:

Part	Price	Qty	Total
Pi 4 Kit	\$400.00	2	\$800.00
B&C DE250	\$75.00	2	\$150.00

JBL 2226 \$250.00 2 \$500.00  
15 guage \$30.00 2 \$60.00  
Pi 3 Sub Kit \$135.00 2 \$270.00  
Shipping \$78.52 1 \$78.52  
Emotiva XDA-2 \$269.00 1 \$269.00  
Insteon 2411R \$69.99 1 \$69.99  
Insteon 2473SWH \$45.99 1 \$45.99  
Jasper 200J \$45.88 1 \$45.88  
Dewalt DW618PKR \$156.98 1 \$156.98  
CMT 191.008.11 \$17.93 1 \$17.93  
MCLS 6077 \$41.91 1 \$41.91  
Baltic birch \$50.00 4 \$200.00  
R13 Insulation \$15.00 1 \$15.00  
Misc. bar clamps \$100.00 1 \$100.00  
Misc. finishing \$50.00 1 \$50.00  
Zinsser 00301 \$43.98 1 \$43.98  
Zinsser 00701 \$43.98 1 \$43.98  
Titebond II \$12.99 1 \$12.99  
Table saw have \$0.00  
Parts for amp \$200.00 1 \$200.00  
StreetWires ZN1210 \$3.40 3 \$10.20  
Toslink 3ft Optical \$1.80 1 \$1.80  
SKRL-12-50 \$24.20 1 \$24.20  
Harrison FMOD 200hz LP \$25.90 1 \$25.90  
#10-32 Mounting Kit \$3.59 6 \$21.54  
Total \$3,301.67

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Wayne Parham](#) on Thu, 09 Jan 2014 16:44:14 GMT  
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Looking forward to following your build here! Any questions you have - about the design, assembly or cabinet finishing - don't hesitate to ask. I can obviously answer any design/technical or assembly questions, and while I am somewhat familiar with the cabinetry, I generally leave that to guys at the shop. But around here, we have a whole lot of really great cabinet makers, and they are always nice enough to share their advice.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Thu, 09 Jan 2014 17:16:31 GMT  
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I can't wait to get started. We have to close on the house before I can start spending money, but it's going to be a fun project and I'm optimistic for the results. Thanks for taking the time to speak with me about this the other day.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [NWCgrad](#) on Mon, 13 Jan 2014 22:56:01 GMT  
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Will follow along...2.2 = Nice!

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Tue, 28 Jan 2014 01:15:31 GMT  
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We're still getting settled in at the new house, but I pulled the trigger on the kits today. Probably should have waited a few extra weeks, but anticipation is mounting.

2 x three pi subwoofer kit  
2 x four pi kit  
... Resistors Standard  
... Capacitors Standard  
... Inductors 18 guage  
... Compression driver B&C DE250  
... Woofer JBL 2226

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Tue, 28 Jan 2014 18:46:44 GMT  
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I decided to go with a two stage buildout. When I refurb the Phase Linears, I want to do it right and take my time. Same goes for finishing my permanent cabinets which will have a rubbed finish on veneer that will take several weeks to cure and do properly.

I'm also not sure I want to give up all of the features I'm accustomed to with my HTIB, so I picked up a receiver with preouts for future use.

The first stage is going to be with the following gear combo and painted matte black (chalk paint) MDF boxes:

- Yamaha RX-A830
- Crown XLS-2500 (for subs)

Later, I'll see how I like the Crown and either:

- Replace it with a D-500 and use the other D-500 for the mains, or
- Add a separate XLS-1000 for the mains

And having the 7.2 receiver may be an issue, because I can see some Pi 1 or 2 surrounds in my future.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Thu, 30 Jan 2014 04:13:32 GMT  
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Today I finalized my cabinet design and created a cut list, then ran it through MaxCut (<http://www.maxcut.co.za/>) to calculate the best way to divide each sheet.

I set it for 5' x 5' baltic birch and sent the results off to a local lumber yard for a proper quote. It'll take four sheets at approximately \$47/sheet + \$45 for labor.

I originally planned to do the cuts myself, but it sounds like it'll cost the same to have them cut it and pick up the smaller pieces myself as having them deliver full sheets to my house (I don't have a truck.) As long as they follow my instructions, it sounds like a win! I'll of course still have to handle the cutouts for the drivers and ports, as well as the internal bracing. I bought my router and finishing supplies last night.

As mentioned earlier, I'm building a second series of more permanent cabinets later on, but the first set isn't going to be MDF after all. Due to space constraints, I'm going to have to stack my Pi 4s on top of my Pi 3 subs (I know that isn't the most desirable of configurations) so I'm going to stain them in different colors to differentiate. The subs are going to be Rustoleum Ultimate Kona and the mains Rustoleum Ultimate Driftwood. Both will be coated with a few coats of gloss polyurethane.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Tue, 04 Feb 2014 04:17:43 GMT  
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I'm still waiting on the receiver, various screws and mounting parts I ordered, and the Pi 4 kits but have started working on the boxes. The Baltic Birch doesn't take stain well. After three coats it still looked significantly lighter than I was going for, so I stripped it, sanded it, and tried another brand. Same result. My first set of boxes will be painted after all. I'm going to use chalk paint on both the subs and mains, but the mains will be a pale yellow while the subs will be black. In the near future I'll swap these boxes out for MDF+veneer and a natural color finish.

The boxes are mostly done, but I'm waiting on the components to arrive before I do the front panels, so that I can measure twice and cut once!

My wife is a little upset about how large the cabinets are, so I'm working with her to redesign our

entertainment center a bit. I built the current one (it's pretty simple, but works well with our furnishings and gets the job done.)

A photo of the current setup and the proposed design is at <http://imgur.com/a/SGKeH>

I'm worried about the structural integrity of using single 4x4 posts for each main and the TV, but considering some of the things I've used 4x4 posts for in the past, they should be fine. Tipping is another concern, but the entire assembly could be subtly tethered to the wall.

Placement isn't ideal either, and neither is using the subs to support stuff.

Edit: alternate approach at <http://i.imgur.com/lvWu0uX.png>, which has cable management integrated via PVC channels in the wall (made up of 2x4s, wrapped in ply)

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [petew](#) on Wed, 05 Feb 2014 00:21:53 GMT  
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I think you've got the speakers too high. Maybe flip them so the horn is on the bottom? Tweeters should be near ear level.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Wed, 05 Feb 2014 01:21:35 GMT  
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Good point. I don't really want the speakers upside down, so I'm looking at dropping them down.

With the draft I made, the middle of the tweeter would be at exactly 58". Acceptable when standing, but might cause issues sitting.

If I sat the speakers directly on the top table, instead of putting them on special mounts, the middle of the tweeter would be at 43.125", or roughly in line with the 42" ear height I just measured while sitting on the couch.

Decisions...

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Mon, 10 Feb 2014 18:24:23 GMT  
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I still have a lot of cleaning up and finish work to do on the mains, but here they are so far.

Rectangles are hard to get right -- for my next set of cabinets I'll be making a router jig for them.

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## File Attachments

- 1) [1797582\\_10202947965522003\\_1799367399\\_n.jpg](#), downloaded 6543 times
  - 2) [1609848\\_10202948066924538\\_840280405\\_n.jpg](#), downloaded 6564 times
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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Wayne Parham](#) on Mon, 10 Feb 2014 18:58:05 GMT  
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Lookin' good!...

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Bill Epstein](#) on Tue, 11 Feb 2014 04:28:19 GMT  
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jshupe wrote on Mon, 10 February 2014 13:24  
Rectangles are hard to get right -- for my next set of cabinets I'll be making a router jig for them.

If you don't rebate the horn the cut out isn't critical but no way to get 'round the appearance of the vent.

Cheap trick is to craft a really square vent box and get it glued on to the baffle before glue-up just right. Then, make the cut with a flush trim router bit. The vent box is your guide.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Tue, 11 Feb 2014 05:01:26 GMT  
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Bill Epstein wrote on Mon, 10 February 2014 22:28  
If you don't rebate the horn the cut out isn't critical but no way to get 'round the appearance of the vent.

I'm not going to recess the horn this time around, but next time I will. I'm thinking about making a jig or even trying to get some CNC time.

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Bill Epstein wrote on Mon, 10 February 2014 22:28 Cheap trick is to craft a really square vent box and get it glued on to the baffle before glue-up just right. Then, make the cut with a flush trim router bit. The vent box is your guide.

Thanks for the tip. I tried using the vent box as a guide for the jig saw. I really wish I knew this before doing it -- I would have picked up a flush trim bit for the job. I didn't want to use my spiral upcut bit for fear of taking too many chunks out of the vent itself. I bought a router specifically for this project so I'm not too experienced with it and have a sparse bit selection.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Thu, 13 Feb 2014 02:22:55 GMT  
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Can't wait for the rest of the stuff to come in!

Just waiting on the components and a couple cables now.

Note: it looks like the posts under the mains go through the bottom of the cabinets, but they don't. I just happen to have my HTIB speakers sitting inside the cabinets temporarily and they are the same size and color as the posts.

#### File Attachments

1) [IMG0212201941.jpg](#), downloaded 6391 times

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Nick77](#) on Thu, 13 Feb 2014 14:09:38 GMT  
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Looking good, although i would want to try them sitting on the shelf. They would be positioned almost perfect for listening. I believe Wayne recommends roughly 15" off ground.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Thu, 13 Feb 2014 15:56:10 GMT  
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Nick77 wrote on Thu, 13 February 2014 08:09 Looking good, although i would want to try them sitting on the shelf. They would be positioned almost perfect for listening. I believe Wayne recommends roughly 15" off ground.

Thanks. I thought about that in my design -- originally they were supposed to be even higher. I

may drop them down some more or eventually put them on the shelf like you said. I'm trying to compromise with my wife on the aesthetics so I can keep these in the living room.

Anyway, here is an updated photo from when I called it a night. I installed the R13 and added a divider that also acts as a support to keep the shelf from bowing under the weight of TV and the mains.

I'll probably build a 1pi for a center channel and put it right under the TV, and add four more in the future for full 7.2 audio.

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### File Attachments

1) [IMG0213094628.jpg](#), downloaded 6316 times

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Tue, 18 Feb 2014 04:15:09 GMT  
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Would a 1pi be too small to work as a center with these? What about surrounds?

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Wayne Parham](#) on Tue, 18 Feb 2014 16:24:02 GMT  
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or a small stereo. But I'm not sure I would want the center to be different than the mains. I would probably go with a phantom center with your layout.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Wed, 19 Feb 2014 02:42:15 GMT  
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These sound amazing. I'll post a full review after a few weeks with them and playing with some different amp configurations.

I'm not really satisfied with my cabs, but that's another story and another time to fix.



## File Attachments

- 1) [75963\\_10203002675009706\\_1917219579\\_n.jpg](#), downloaded 379 times
  - 2) [IMG0219092327.jpg](#), downloaded 6129 times
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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Wayne Parham](#) on Wed, 19 Feb 2014 16:07:07 GMT  
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They look awesome in pics! I think sometimes we're our own worst critics.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Wed, 19 Feb 2014 16:30:54 GMT  
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Wayne Parham wrote on Wed, 19 February 2014 10:07  
They look awesome in pics! I think sometimes we're our own worst critics.

Thanks! I'm sure that's the case; I'm a perfectionist and won't sleep right until they're exactly as I envision them.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [BFP](#) on Sun, 23 Feb 2014 21:27:32 GMT  
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That's a nice looking setup. It looks like a Crown XLS amp in your equipment stand. I'm looking at one of those, the 2000, for a sub amp. How do you like it?  
I just finished Pi 3's and am very happy with the sound.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Mon, 24 Feb 2014 16:07:00 GMT  
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BFP wrote on Sun, 23 February 2014 15:27 That's a nice looking setup. It looks like a Crown XLS

amp in your equipment stand. I'm looking at one of those, the 2000, for a sub amp. How do you like it?

I just finished Pi 3's and am very happy with the sound.

Thanks. I'm temporarily using the Crown XLS-2500 to power the subs, and the Yamaha RX-A830 receiver to power the mains.

I have to set the gain near max on the Crown because of low output voltage on the analog outs on the Yamaha.

That being said; the Crown is easily powerful enough to shake the house apart while sounding very clear and precise. I knew about the analog voltage from reading on other forums --, it isn't really a problem for me, but can apparently be with certain receivers, so be aware. Pro Audio pre's usually give an extra volt or so.

I'll soon be replacing the amps I'm using with some vintage Phase Linear D-500s, leaving the Crown out of my setup -- but that has nothing to do with the Crown and was simply the ultimate goal to begin with.

---

Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [BFP](#) on Tue, 25 Feb 2014 15:57:20 GMT

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Thanks for the heads up on the input levels. I am currently using a Hafler DH220 to power my 2 subs and the 3 pi will play much louder than my old setup. I now need to upgrade to more power so the subs can keep up. The pro amps offer great value. I just got a line on a lightly used QSC amp that I am going to consider for sub duty.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Mon, 17 Mar 2014 04:58:28 GMT

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I'm running into some issues with my Phase Linear amps, and it'll be a while before they're up and running. I'm going to end up having some custom PCBs made up to replace the original ones that are damaged in both amps, and going in with all new resistors, diodes, opamps, and caps. I'll be upgrading the opamps while I'm at it.

In the mean time, I ordered a Crown XLS-1500 tonight to drive my Pi 4s, along with two Art CleanBox Pro's and XLR cables to put between the CleanBox's and the two Crown amps. The CleanBox's will be used to correct the gain issues mentioned in the last post. I've read great

things about them on other forums.

In the last week, I also cleaned up my Sansui XR-Q7 turntable and replaced the cart with a Denon DL-110 and built a Bugle 2 phono preamp w/ 1k loading and 50dB gain. It works and sounds great.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Bill Epstein](#) on Mon, 17 Mar 2014 17:45:17 GMT  
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jshupe wrote on Mon, 17 March 2014 00:58  
In the mean time, I ordered a Crown XLS-1500 tonight to drive my Pi 4s,

Where are the tubes?

Coming soon to Pi 4s near you

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#### File Attachments

- 1) [Crown.jpg](#), downloaded 11078 times
  - 2) [IMG\\_3526\\_1.jpg](#), downloaded 10920 times
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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [BFP](#) on Tue, 18 Mar 2014 16:03:09 GMT  
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That 1500 should drive those 4s really well. I'm using a pretty big amp on my 3s a W4S STI500. It's nice to have lots of power on them because they do dynamics really well. I have a 50wpc tube amp but haven't tried it yet.

How do you like the subs. I want to upgrade and am wondering how you like those Lab 12 drivers.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Tue, 18 Mar 2014 18:43:00 GMT  
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I love the subs. The Pi 4's sound great without them, but there is no comparison to listening with them. They're a must-have.

I wouldn't change a thing about them.

I'm working on fixing a gain staging issue. My AVR pre-out is driven to clipping when my Crown XLS-2500 is only driving 293w ((measured by tonegen/oscilloscope) which, by the way, is plenty loud.) Hoping an Art Cleanbox will correct that issue.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Wayne Parham](#) on Tue, 18 Mar 2014 19:44:43 GMT  
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Pro amps generally need more preamp drive level than consumer gear. Your amp needs 1.4vrms input drive level to reach full power, and this is about twice the voltage commercial preamps deliver (0.775v).

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Wed, 19 Mar 2014 01:17:05 GMT  
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Bill Epstein wrote on Mon, 17 March 2014 12:45jshupe wrote on Mon, 17 March 2014 00:58  
In the mean time, I ordered a Crown XLS-1500 tonight to drive my Pi 4s,

Where are the tubes?

Coming soon to Pi 4s near you

Very nice. I hope to pick up a kit amp using tubes in the near future, but need to let my budget recover first! Any suggestions for one?

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Wed, 19 Mar 2014 01:22:14 GMT

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Wayne Parham wrote on Tue, 18 March 2014 14:44

Pro amps generally need more preamp drive level than consumer gear. Your amp needs 1.4vrms input drive level to reach full power, and this is about twice the voltage commercial preamps deliver (0.775v).

After a lot of research I purchased an Art Cleanbox Pro for each of my Crown amps. They're supposed to be very transparent while increasing the output voltage to something usable with Pro gear. There are very long threads about them on some other forums.

I bought a new oscilloscope (nothing fancy, an Owon SDS7102v) and decided to test it myself. I found the result (293w) to be right inline with the expected 50% capacity.

---

Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Wayne Parham](#) on Wed, 19 Mar 2014 16:21:41 GMT  
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Excellent! Sounds like you'll get the most out of your Crown amp that way.

By the way, I'm a big fan of Crown amps too. I've always had a few Microtech amps around for high SPL use. They're kind of old-school these days, kind of large and heavy. But they're built like tanks and sound good too. They're arc-welders!

As for a suggestion for tube amps, let me mention these two options:

1. Audio Note Kit 1
2. OddWatt Audio Oddblock

There are plenty of other good tube amp kits out there, but those are my two favorites.

---

Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Thu, 20 Mar 2014 04:26:51 GMT  
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For those who haven't been following the thread:

- 2x Pi 4 mains w/ B&C DE250 + JBL 2226H
- 2x Pi 3 subs
- 1x Yamaha RX-A830

- 1x Crown XLS-1500 (mains)
- 1x Crown XLS-2500 (subs)
- 2x Art CleanBox Pro (one for each amp)
- 1x Sansui XR-Q7 turntable w/ Denon DL-110 cart
- 1x Hagerman Bugle 2 w/ 1k loading & 50db gain

Veneered cabinets, matching TT plinth, and 2x Phase Linear D-500 amps possibly coming in the near future!

### File Attachments

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- 1) [IMG0319231853.jpg](#), downloaded 6689 times
  - 2) [IMG0319231828.jpg](#), downloaded 6794 times
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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Wayne Parham](#) on Thu, 20 Mar 2014 14:09:40 GMT  
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Love that system! Love your turntable! Nice!

How do you keep the feedback from killing you though? In between the mains, maybe I guess if you keep the power down. But your Crown's are made for SPL.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Thu, 20 Mar 2014 14:40:08 GMT  
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Wayne Parham wrote on Thu, 20 March 2014 09:09  
Love that system! Love your turntable! Nice!

How do you keep the feedback from killing you though? In between the mains, maybe I guess if you keep the power down. But your Crown's are made for SPL.

Thanks!

The turntable plinth is made of at least 3/4" wood and has 2+" diameter rubber feet that go at least an inch into the chassis. It does a very good job of damping vibrations from the speakers.

It does become a problem, but not until you reach absurd listening levels.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Wayne Parham](#) on Thu, 20 Mar 2014 20:25:48 GMT  
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Well there you go! Excellent!

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Sun, 23 Mar 2014 22:42:36 GMT  
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It's about time for my review.

I've spent the last couple of months with my upgraded 4Pi mains (DE250, 2226H) and 3Pi subs, and am still in awe of what these speakers can do.

My initial configuration used the integrated amp in my Yamaha RX-A830 receiver, while the subs were powered by a Crown XLS-2500 running wide open with +10dB gain on the receiver just to smoothly transition. The setup sounded good, but was lacking something, and I was not happy with having to run the Crown the way I did just to get things to match. Last week I ordered an additional Crown XLS-1500 and two ART CleanBox Pro's to apply gain to the low output voltage on the receiver to meet the expected input level on each Crown.

I'm going to break the next section of the review into two portions, starting with the 4Pi mains.

When I first powered the system with the Yamaha AVR, the 4Pi's sounded a little cold and unmusical. I attributed this to the drivers needing to be broken in and possibly the amp not being all that great. I also questioned whether I had done something wrong in my build, to the degree of even emailing Wayne to ask about the bass response which seemed absurdly lacking. After a few days of listening, my ears mostly adjusted but I didn't feel that the situation had actually improved. I temporarily moved the mains to the Crown XLS-2500 I had for the subs and they seemed to warm up, open up, and sound much more musical, even at low volumes. Unfortunately I needed the Crown for my subs, so I reverted to the old configuration with the intent to augment the system with some vintage amps I was working on.

Once I started working on the amps, I found that they needed more work than I thought, and I didn't want to wait any longer to get the anticipated sound from these speakers. I went ahead and pulled the trigger on a new XLS-1500 and waited anxiously for it to come in.

With the gain fixed and the new amp, the speakers sing beautifully! They are open, musical, smooth, and don't seem to strain at all with anything I've found to throw at them. They sound great at low levels with tiny levels of amplification and are phenomenal at over 90dB. I listen to a lot of live recordings, and these reproduce the recordings in such a way that you can close your eyes and actually think you're there. The sound stage is as wide as the room, and every detail is reproduced. On a couple Coltrane tracks, I was even able to hear him inhale while playing the

sax! Little details like that are long lost on other speakers. They make the recordings sound all that much more real.

The sound effects in Pink Floyd's Dark Side of the Moon and Billy Thorpe's Children of the Sun are astonishing. The cannons in 1812 Overture sound like real cannons, not muffled or muted at all, though I wish the LP I had played them louder! These have had the wallet-emptying side effect of causing me to collect vinyl, because they do such a great job of picking up everything on them! That being said, they can completely ruin certain albums for you if the mastering is bad (I'm looking at you, Red Hot Chili Peppers!) because they bring out everything -- good and bad.

The 3Pi subs sounded great from the start. I didn't like that the Crown was running at the maximum gain level for both it and the AVR, but then again I knew from the start that wasn't a problem with them, but the gain structure in my system. They are absolutely necessary, in my opinion, to augment the 4Pis if you listen to a lot of different types of music, and especially live recordings. I don't have much to say about them other than they provide extremely clean, solid bass that can be subtle, or shake the house apart, or anywhere in-between. They blend well enough that if I didn't know they were separate boxes, I'd have no idea. In my experience that's the hardest part to get right with a subwoofer.

I've been listening to the following albums, most of them on vinyl:

Atmosphere - When Life Gives You Lemons  
Billy Joel - 52nd Street  
Billy Thorpe - Children of the Sun (1979 version)  
Bruce Springsteen - Live/1975-85  
Daft Punk - Random Access Memories  
John Coltrane - My Favorite Things  
Lightnin' Hopkins - Lightnin'!  
Michael Jackson - Thriller  
Pink Floyd - Dark Side of the Moon  
Shinyribs - Gulf Coast Museum  
Shinyribs - Well After Awhile  
Sonata Arctica - Live in Finland  
Tchaikovsky - 1812 Overture (Dorati)  
The Gators - Live in Concert  
Tool - Lateralus (2 LP)  
Valerie June - Pushin' Against a Stone

... and several extended sessions of listening to the "Top 1000 Live Classic Rock Songs" playlist on Spotify.

These are in my living room. My house has an open floorplan where the dining room, kitchen, hallway, and entry way are all directly adjoined to the living room without doorways. We're talking at least 800 sq ft that these speakers have to fill, in addition to varying ceiling heights for my vaulted ceilings that range from 8-15ft. The room is the extreme opposite of ideal, but these speakers handle it gracefully.

I personally think they're better than anything I listened to when seeking an off the shelf solution at



local HiFi shops. My dad came in for the weekend and we spent 20+ hours listening to them. He has a better trained ear and sold high end audio gear from the late 70s to early 90s, and confirms my appreciation for these. They're a definite win and I'd recommend them to anyone, regardless of budget, with one warning: don't skimp on the sources or the amps!

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [tom-m](#) on Mon, 24 Mar 2014 00:36:51 GMT  
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Billy Thorpe's Children of the Sun  
Now there's a blast from the past. That is one to play loud.

I have a pair of speakers, close to the Pi4. I already had some drivers, but not what Wayne uses. But I needed to save cost, so I used what I had. The crossover I use is from Wayne. I ordered it built, with upgraded coils and resistors. The amp I use is a 35 watt Dynaco 70 clone. One of my favorite upgrades on the amp is the VTA Octal driver board using Octal input tubes. I use new old stock GE input 6SN7 and new phase splitter 6SN7 tung sol reissues.

I agree with most all the decriptions of the speakers. They sound great. Dynamics and power like no other. Now I am trying figure out what type of subwoofer to use.

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#### File Attachments

1) [dynaco-09.jpg](#), downloaded 6466 times

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [jshupe](#) on Mon, 24 Mar 2014 00:43:01 GMT  
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tom-m wrote on Sun, 23 March 2014 19:36Billy Thorpe's Children of the Sun  
Now there's a blast from the past. That is one to play loud.

It's one of the ones where we drove the system up to a higher volume. ~90+dB at minimum, for that song. Probably closer to 100dB (don't want to annoy the neighbors!) You're right: it's meant to play loud. I think it's great for showing off the sound stage of these, because of all the effects that transition rapidly between channels. Those can easily sound rough on lesser systems.

Quote:I have a pair of speakers, close to the Pi4. I already had some drivers, but not what Wayne uses. But I needed to save cost, so I used what I had. The crossover I use is from Wayne. I ordered it built, with upgraded coils and resistors. The amp I use is a 35 watt Dynaco 70 clone. One of my favorite upgrades on the amp is the VTA Octal driver board using Octal input tubes. I

use new old stock GE input 6SN7 and new phase splitter 6SN7 tung sol reissues.

I agree with most all the descriptions of the speakers. They sound great. Dynamics and power like no other. Now I am trying figure out what type of subwoofer to use.

What driver did you use? Your amp sounds neat; I'm going to build a tube kit of some sort in the near future. I don't think you can go wrong with the 3 Pi subs. Get two!

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [tom-m](#) on Mon, 24 Mar 2014 17:57:09 GMT  
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My speakers use a Radian compression driver and an AE TD15M woofer. These sound good, but not as dialed in as exactly following Wayne's build. He has the 3 and 4 PI dialed in. Mine is ok, but I enjoy it.

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Subject: Re: New Pi 4 + Pi 3 Sub buildout  
Posted by [Bill Epstein](#) on Tue, 25 Mar 2014 19:26:10 GMT  
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The best sound to show off on the Mercury 1812 isn't the Cannon shots but rather the ringing of the water tank on the Deems Taylor track, excited by the cannon.

If you get that right, that's a great sounding system.