

# House Music?

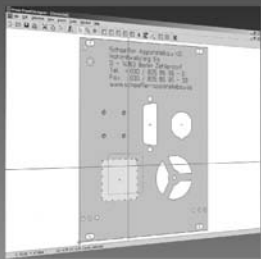
Music in every room? The author explores some easy options for DIY enthusiasts to wire their houses for sound.

By Simon Brown

**T**wenty years on, I only hope the neighbors of the house I lived in with a bunch of other engineering students liked Blue Öyster Cult as much as we did. They would have certainly heard enough of it played at startling levels of . . .

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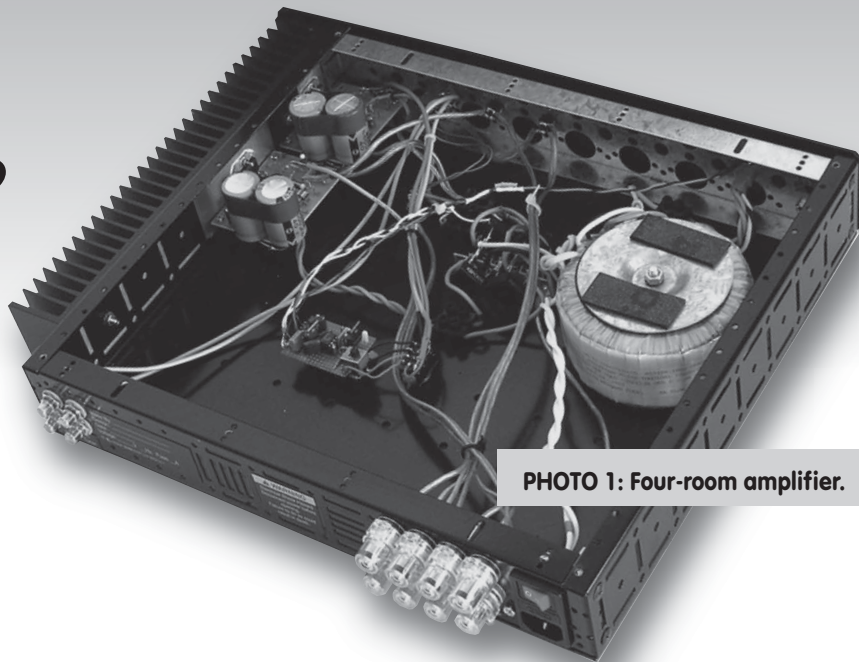


PHOTO 1: Four-room amplifier.

well, distortion.

In those Pre-Fi days, it wasn't that we were particularly inclined to audio animalism, rather we had combined all the best bits of gear we owned into one, nearly respectable system. To have music in our individual rooms, the upper reaches of volume knob were well explored.

I still enjoy having music throughout the house, but now the neighbors call less to "discuss" my music taste. This is because I now have music from my system wired into four other rooms beyond the main audio room. This was done simply, inexpensively, and provides good sound quality.

## MAY THE SOURCE BE WITH YOU!

There are many complex "home automation" systems now available, but most could not be defined as "HiFi" and the ones that are, are notable for their cost. If you have invested time, energy, and money in good source components, you may be reluctant to either replicate them or rely on an indifferent source. In my mind, feeding sound from a good source to other rooms is the best way to achieve quality sound in other rooms. There are many ways to implement such a system, but my suggestion (at least to start) is to simply put speakers in the appropriate rooms and drive them from a "spare" integrated amp in the main audio room. This keeps wiring simple and means you maintain the ability to walk by using your legs occasionally.

## MONOMANIA?

One concept that helps spread music round the house simply and inexpensively is a radical one—mono! Picture our kitchen/dining area for a moment: It's after work, my wife and I are making dinner, checking out some red wine as we go. Gradually we migrate to the table, eat dinner, then make coffee, talk, and read. All the time there is a nice wash of music present. But it's not "stereo"; if it was, we would almost never be in the right place to hear it "correctly."

For this context it's better to do mono and do it well. A friend has bought several mono Tivoli radios for different rooms rather than commit money to stereo. You can have more than one mono speaker for a more diffuse sound field. By going mono, you suddenly can cover twice as many rooms with your available amplification and you greatly simplify the wiring.

I use a two-channel amp, in which each output is switched between two rooms, giving me music in four rooms. This is built into an ezChassis cabinet, which has four sets of speaker terminal holes (Photo 1). It can be adapted for 0–6 sets.

Philosophically I would avoid switch contacts at the amplifier output, but the real world wins here. (Upset readers will be glad to know I'm intending another couple of directly connected channels when I start using this as a test bed for developing a LM3875 kit.)

Two cautionary comments: the first is that depending on what you are using as

your power amp, going mono might not be quite as simple as wiring L & R wires together. With power amps with no accessible "stages," you might need to add an op amp "adder" stage to avoid having mono throughout your system. The second caution is to think about the extra loading an extra amp places on the source components. This should not be a problem for most components, but some valve preamps may struggle.

## AMPLE AMPS

Modifying an "old" integrated amp for this application is the easy option, but many audio builders may choose to build that little single-ended valve amp, which they know will never quite be up to driving the "main" speakers. There are also many other modest but good options to be drawn from *audioXpress* or cheaper kits such as the AKSA, Hypex, or Hagerman. My own "house" amp uses two LM3876 (50W) "amp on a chip" modules.

I discovered accidentally that these sound embarrassingly good despite having few pretensions. I have subsequently learned that there is a large distant corner of the Internet devoted to these "Gain-clone" amps. This has the usual mix of sensible and silly, but you could start with a cheap kit from an electronics supply house such as Jaycar and upgrade the component quality later (Jaycar Kit KC5150 costs approximately \$25 + power supply).

## FRAMED?

Many houses in North America and Australasia are timber-framed, which can make the job of wiring audio surprisingly easy, especially for internal walls where there is less likelihood of encountering insulation. Because many walls have a horizontal joist or blocking (often about 3' up), running wiring up inside the wall cavity may not be possible unless you have access to a drill extender and a lot of patience or are re-facing a wall (Fig. 1). One way around this is to bring wiring up through built-in cupboards, allowing you to sit speakers on top of them, while wiring from below. Generally you will need to make the choice between going "under" or "over."

Canny audio enthusiasts trying to keep runs of expensive cable to a minimum may not infrequently be found crawling around the floor space under their houses. The



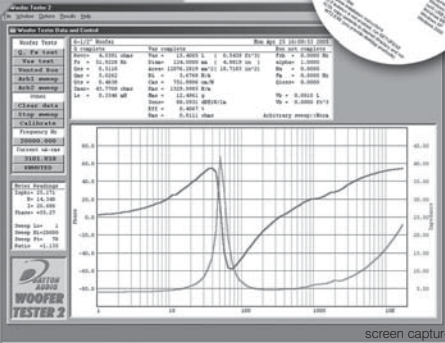
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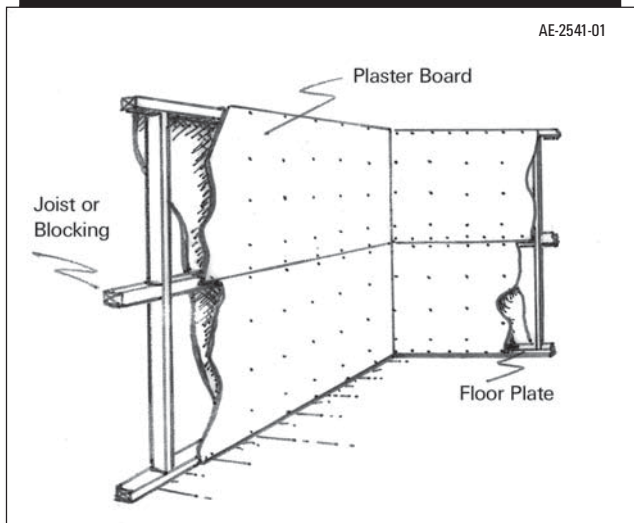
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FIGURE 1: Timber-framed wall construction.



same principles can be applied to running wiring between rooms. I've found drilling a cable hole between the carpet and the base molding (skirting board) is almost invisible. I suggest using a small drill bit, and crawling under the house to locate it first before using a "cable"-sized drill.

Standard warnings apply: Make sure there isn't household wiring in the area of

or ceiling is the most appropriate option. Our bathroom has a small plastic-coned driver installed in the wall cavity. OK, a 4" full-range speaker isn't going to have you punching the air while miming "Don't Fear the Reaper," but it's fine for Handel's Water Music while reclining in the bath. It's also resistant to steam and is discreetly covered with a white plastic grille. (I

the wall you are about to drill into and check that you are not going to infringe on any local wiring regulations.

## WALLS OF SOUND

Many HiFi enthusiasts have "spare" loudspeakers around. If small, these units can sit on top of wardrobes or kitchen cupboards. Otherwise it can be a fun excuse to try out a mini audio project.

Sometimes building a speaker into the wall

used a Jaycar CW2104 driver, but this was a matter of convenience rather than the best available.)

A timber-framed house makes installation easy, but watch that the magnet to mounting face is less than wall cavity depth (usually 4"). Look for speakers with Qts ~ 0.7, as you are mounting them in a large but indeterminate cavity. I was fortunate that the bathroom had a tongue-and-groove timber lining, which was strong enough to mount a driver.

If the wall covering is only plaster board, you need to provide something more substantial. The simplest option is to bond 1/4" ply onto the board over an area somewhat greater than the driver, ideally to the nearest stud. Ceiling-mounted speakers have the advantage that you can install an already sealed box and screw it firmly to a joist above the ceiling panel, which may otherwise not be firm enough.

## FINISHING DETAILS

If your chosen speaker cable looks capable of supplying a small city with electricity, you might not wish to bore such big holes

**new!**



By William  
Fitzmaurice



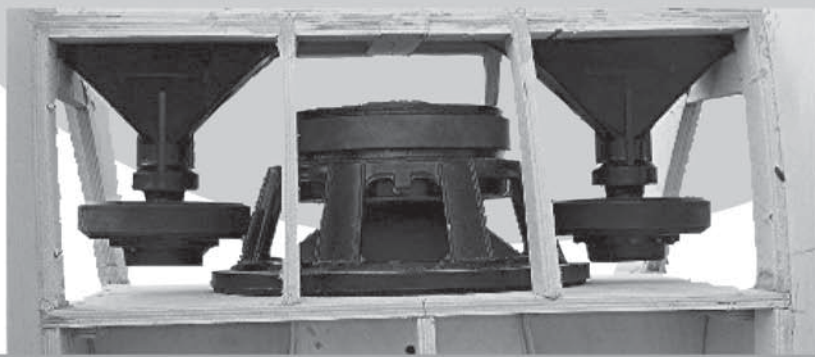
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in your floor. One tidy option is to use a wall plate with speaker terminals. These are available to visually match electricity outlets. Keep these low down on the wall to make it easy to "find" the wire you're poking up from below. Again you can use the "pilot drill from above" technique to show where you are under the floor.

I've described an uncomplicated system here. There are many other options possible, especially if you want to vary the volume while in the other room. "L-Pad" volume controls are a very simple option, but I can't confirm whether their

bad audio reputation is justified or not. Built-in power amps, and associated potentiometer, are a more complex option, but the availability of Class D amps (such as Hypex) may encourage this as they generate minimal heat.

Though I still occasionally play Blue Öyster Cult at high levels of distortion, it's more the result of a 20-year old LP that was once played with a "student stylus." Meanwhile, however, I am also now able to enjoy high-quality sound throughout the house, by extending my hi-fi system to other rooms via simple arrangements which neither compromise the sound of my main system nor the structure of my house! *ax*

*Simon Brown is a professional engineer and has worked in Product Design in New Zealand and England. He has long been interested in DIY HiFi, having built speakers, amplifiers, and turntables over the years. This led him to set up Design Build Listen Ltd. to supply DIY HiFi components. Simon has had over a dozen articles published in HiFi magazines. Contact him via [www.designbuildlisten.com](http://www.designbuildlisten.com).*

## SOURCES

**Jaycar** (Australasian component supplier) [www.jaycar.com.au](http://www.jaycar.com.au)

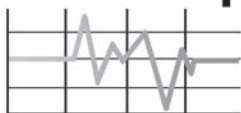
**ezChassis** (pre-punched DIY amplifier chassis) [www.designbuildlisten.com](http://www.designbuildlisten.com)

**Hypex** (~100W Class D amplifier modules) [www.hypex.nl](http://www.hypex.nl)

**AKSA** (55W and 100W transistor amp kits) [www.printedelectronics.com](http://www.printedelectronics.com)

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