Subject: Loud "BANG" From Speakers
Posted by AudioFred on Fri, 23 Dec 2011 14:24:45 GMT
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There's a reliability problem with my electricity supplier's system, and about once or twice a week we experience a momentary outage. It lasts less than a second, and I'm sure it's hard on any motorized appliances that are running, especially the refrigerators and the AC units, but it's especially unnerving with the audio system.

I believe the culprit in the system is my Parasound Halo preamplifier. It incorporated a relay-protected, direct-coupled class A circuit. Everything shuts down during the outage and must be restarted, but before that happens there's a very loud "BANG", like a cannon shot from the speakers, scaring me and freaking out the cat.

Does anybody have an opinion whether replacing the Parasound preamp with a capacitor coupled preamp would cure this problem? I'm concerned that this will blow out a tweeter. Or should I just take the cat to the SPCA and learn to live with the big bang?

Subject: Re: Loud "BANG" From Speakers
Posted by AudioFred on Fri, 23 Dec 2011 14:46:18 GMT
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Silly me! After I posted this message I realized I could do some homework on my own to isolate the source of the bang, so I disconnected my main speakers with their expensive and delicate ribbon tweeters, and substituted unmounted Parts Express 69 cent buyout woofers. Unplugging each component revealed that the Parasound preamp is the culprit. It is the only component whose unplugging results in a BANG. But the question I asked is still valid: Could I solve the problem by replacing the preamp with a capacitor coupled preamp, or should I just leave the cat out overnight to feed the local coyote population.

Subject: Re: Loud "BANG" From Speakers
Posted by Wayne Parham on Fri, 23 Dec 2011 15:46:28 GMT
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I've had amps that did that too. The relay is there to prevent this, but perhaps the designer didn't take power outages into consideration. It could be that the circuit relies on power to be applied for a controlled startup/shutdown. I think the timed relay idea is reasonable, but if the designer depends on the power switch to be set "off" to de-energize the relay, then it won't work when AC power is removed.

Many amps go through an unstable transition when power is applied or removed. I've seen some amps that output a rolling DC, others that have the loud sonic boom or chirp and others that sound scratchy. Usually it's capacitors charging/discharging and sometimes that's directly presented to the ouputs, other times it's a side-effect of active elements passing through a

transition phase of their operating ranges. But in any of these cases, timed relays are a great solution, in my opinion. It's just that the "switch off" case might act differently than the "lost power" case.

My guess is the relay's timer mechanism on your amp uses the power switch as a signal to shut off the relay instead of sensing power. It may be a digital device, or an analog timer like a 555. It may even be something as simple as an RC time constant. But the power switch probably has to be shut off to disharge the cap or send the signal to the logic that tells it to shut off the relay rapidly. Without this power switch signal, the relay probably doesn't shut off rapidly, and instead, just "relaxes" as the internal power supply discharges and fades. That's what I would change. I would modify it to use a mechanism that sensed power rather than depending on the power switch for the signal that says "shut down".

Subject: Re: Loud "BANG" From Speakers
Posted by AudioFred on Sat, 24 Dec 2011 19:45:14 GMT
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The problem is in the preamp. I noticed it draws twelve watts from the wall outlet regardless whether the power switch is on or off. This leads me to believe it is always powered up, and the on/off switch merely trips the input selector relay, shutting off all inputs and the led display. When there is a power interruption I get the loud BANG, which probably means there's an instantaneous DC surge at shutoff, which occurs before the amplifier output relay has time to trip.

I'm afraid the only way around this is to replace the preamp with one that doesn't produce a DC surge at shutoff. Too bad, the Parasound is a good preamp, and I especially like the fact that it has balanced inputs and outputs.

Subject: Re: Loud "BANG" From Speakers
Posted by Wayne Parham on Sat, 24 Dec 2011 22:24:29 GMT
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I have no doubt it's in the preamp. I remembered that you had narrowed it down to the preamp when I made my reply. I was just using the term "amp" generically. I've had lots of amps that did the same thing you're describing, both power amps and preamps, integrated and stand-alones. I've had prosound amps do it too, and when they do it with a few thousand watts, it makes a really good stress test for speakers.

My point was really that I think the designer did not take the power loss situation into account when designing the delayed relay circuit. It probably uses a time constant to energize the relay which is shorted (to immediately de-energize the relay) when the power button is used to shut off the unit. If the switch isn't used, there is no shorting mechanism to kill the relay immediately, so it takes a while to de-energize, leaving the decaying power supply on the preamp circuits and

making them unstable.

Lots of words just to say, yeah, probably gotta replace the preamp or get in there and redesign/rebuild the delayed relay circuit.

Subject: Re: Loud "BANG" From Speakers
Posted by Shane on Sun, 25 Dec 2011 21:16:42 GMT
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Have you contacted Parasound? They might have a "fix" you can implement?
