Subject: Re: What gauge wire?
Posted by Wayne Parham on Wed, 07 Mar 2012 01:11:37 GMT
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You're right that the relatively high-impedance, low-level unbalanced coax cable is more susceptible to noise than a low-impedance, high-level balanced speaker cable. The shield of the coax helps, but it can't complete with a low-impedance balanced pair for noise-immunity.

There are balanced preamps, and that is an improvement over unbalanced where noise immunity is an issue. But it still can't compete with a speaker level line for noise immunity simply because of the impedance issue.

Then again, you're probably not in an electrically noisy environment. The two biggest offenders for you are probably power and fluorescent lamps. Light dimmers, motor speed controllers and switching supplies can be killers too. And of course, cell phones can be annoying.

A few decades ago, ham radios from nearby operators were sometimes a problem. When they keyed up, their RF would be detected by rectification in the input circuits of nearby sound system equipment. The radio signal would so overdrive the inputs that they would rectify the RF and turn it into an audio signal, to be amplified and presented to the speakers.

So anyway, my point is, you might try running a long coax line and testing the waters, so to speak. If it picks up too much noise, you can always put the amps close to the source and run speaker cables for the distance. Or you could try a wireless distribution.

About speaker wire, a good rule is to keep speaker wire resistance under 1/10th the load impedance. You can use a resistance chart to calculate it, given length and gauge. But don't forget that the line is a conductor pair, so double the length when calculating resistance.
Wire CalculatorThere's no disadvantage using a wire that's too large, but there is if it's too small. Best to get the biggest stranded copper wire you can get, although there does come a point of diminishing returns. I tend to find the minimum wire size needed, then go up a size or two. So, for example, an 18 gauge wire will support about 50 feet runs, but I'd probably go with 14 gauge or 16 gauge anyway. If I had to buy a ton of it though, and the budget started dictating choices, then 18 gauge would suffice.