Subject: Length of Speaker Wiring
Posted by Reggie on Mon, 12 Nov 2018 00:15:29 GMT
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My title is my inquiry. I have two speakers mounted at the back corners of my living room. The main control is in front, so the wiring is quite lengthy. I have a feeling that the sound quality will be better if the cables were shorter.

Subject: Re: Length of Speaker Wiring
Posted by Wayne Parham on Mon, 12 Nov 2018 15:28:38 GMT
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If you must run long cables, make sure they are large diameter wire gauge.

Subject: Re: Length of Speaker Wiring
Posted by Reggie on Tue, 13 Nov 2018 00:09:58 GMT
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Hello Wayne. Do you have a rough estimate on the ratio between the cable diameter to the length between the speakers and the main control? Correct me if I'm wrong, but how I understand it is that the bigger the diameter, the better the sound quality.

Subject: Re: Length of Speaker Wiring
Posted by Wayne Parham on Tue, 13 Nov 2018 15:52:19 GMT
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No need to estimate - You can calculate:

Wire gauge - Resistance per 100 feet (both conductors, e.g. 200 feet total path length)
24 - 5.134
22 - 3.228
20 - 2.030
18 - 1.277
16 - 0.803
14 - 0.505
12 - 0.318
10 - 0.200

to be 16 gauge or larger to meet this goal.

For acceptable results, you can double the cable resistance to 20%. That increases insertion loss to 17% which is approximately 1dB.

Subject: Re: Length of Speaker Wiring
Posted by Reggie on Sun, 18 Nov 2018 16:04:37 GMT
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Thanks for those inputs. How do we double the cable resistance? What happens if we exceed the

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Subject: Re: Length of Speaker Wiring
Posted by Wayne Parham on Sun, 18 Nov 2018 18:09:52 GMT
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When speaker wire resistance increases, the sound output begins to drop. It also will start to affect the response curve, creating a bulge in response where loudspeaker impedance peaks and falling where loudspeaker impedance dips. This usually occurs in the bass and around the crossover frequencies.

The trend starts around the 10% value I mentioned, but it's slight and barely noticeable even with measurement equipment. As wire resistance increases past that point it becomes more and more noticeable, and by the time the wire resistance equals the load, it will have become very obvious.

Subject: Re: Length of Speaker Wiring
Posted by cwemoy on Sun, 16 Dec 2018 09:00:55 GMT
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Really important information in this thread since I had no idea that the length and the diameter of the wires go hand in hand. I guess there is still no harm in using thick wires for short runs

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Subject: Re: Length of Speaker Wiring
Posted by Reggie on Sat, 16 Mar 2019 12:47:45 GMT
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Hey there Wayne. Thanks for your help. I asked my friend at the electronics shop to explain to me what you just stated above, and he helped me set up my home theater speakers based on your

calculations.