70-Volt Systems – Cable Size / Length Notes

Cable Size / Length vs Power and dB Loss

When deciding on which speaker cable type to use for your application you will need to consider the cables "gauge" and "distance" requirements. The chart below shows Cable sizes vs. Power and dB loss in the cable.

<u>Let's look at an example using the chart below</u>:

- ➔ **At 4-ohms / 18-gauge cable can be run 120 feet and will realize a 50% / 3dB loss on the line.**
- ➔ **At 8-ohms / 18-gauge cable can be run 235 feet and will realize a 50% / 3dB loss on the line.**
- ➔ **70 Volt Systems have very high impedances, so at 70-Volts an 18-gauge cable can be run 5600 feet in order to realize a 50% / 3dB loss on the line. This is one of the main advantages of using a 70V system – being able to run a cable a couple hundred feet away and not realizing any significant loss on the speaker line.**
- ➔ **Reminder: The calculations in the chart below are not exact (only approximated for demonstration).**

4-Ohm Speaker Lines		8-Ohm Speaker Lines		70-Volt Speaker Lines	
	Power Loss		Power Loss		Power Loss
	50%		50%		50%
Cable	dB Loss	Cable	dB Loss	Cable	dB Loss
Gauge	3	Gauge	3	Gauge	3
14	300 Feet	14	600 Feet	14	15000 Feet
16	180 Feet	16	365 Feet	16	9200 Feet
18	120 Feet	18	235 Feet	18	5600 Feet
22	50 Feet	22	85 Feet	22	2100 Feet
24	30 Feet	24	55 Feet	24	1400 Feet

*** All Calculations are approximated values**

Looking at the chart above you can see that 70 Volt speaker lines have very little Power / dB loss over longer distances than those of 4-ohm or 8-ohm speaker line distances. This is one of the advantages of Constant Voltage Systems. Using 14AWG size cable can function properly up to 15,000 feet (not sure how many systems run a cable this long but it's interesting to note.

In my experience, we mainly used 70V systems since our installations were mostly on Rides / Large outdoor spaces. Ex: We would install 70V speakers every 8-10 feet all the way up a 200-foot lift, and it worked great every time.

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