Juke Application Note – Using a Subwoofer as an Output
Revision 1.3

1. Summary

Juke provides zone outputs that power speakers in each zone. This application note explains how to add an active subwoofer to a zone. This is done by connecting an adapter in parallel with either the left or right speaker in the room where a subwoofer will be used. The adapter converts the speaker voltage to line-level so that it can be connected to the input of an active subwoofer.

2. Passive vs Active subwoofers

The main difference between a passive and active subwoofer is that active subwoofers come with a built-in amplifier which helps bring audio inputs to a level supported by the speaker. Subwoofers tend to require more power since they must push more air to get that rich bass we enjoy.

3. Installation on Passive Subwoofers

Since Juke is intended for playing to architectural speakers, it is not designed to power passive subwoofers. Instead, we recommend purchasing a third-party amplifier intended for powering subwoofers and having Juke provide the input for that third-party amplifier. See our app note on connecting to a third-party amplifier on our app notes page.

4. Installation on Active Subwoofers

Some active subwoofers take input as line-level or speaker-level. Line-level is a weaker signal compared to speaker-level and is intended to communicate audio from one device to another – not to power a speaker. Juke outputs at speaker-level.

Instructions here will vary depending on if you have a speaker that takes line-level input and if you have a speaker wired to the same output as the subwoofer.

4.1. Line-Level Inputs

To bring Juke's outputs down from speaker-level to line-level for the active subwoofer you will need the following component:

Part Description	Amazon ASIN Number	Amazon Link	Approximate Price
PAC SNI-35 Variable LOC Line Out Converter	B001EAWS3W	Speaker-level to line-level converter	$9.77

Connect the 4 wires of the PAC in parallel with the speaker wires connected to Juke's green connector (the correct order from left to right is: white, white with a black stripe, gray, gray with a black stripe) for that zone and connect the RCA jacks to the line-inputs on the third-party device. You can adjust the volume of the PAC with the rotary dials on the end, but most likely the default setting will work well and there is no need to make an adjustment. That's it!

4.1. Speaker-Level Outputs

If your active subwoofer already supports speaker-level output, you're in luck! You don't need any extra components to convert the speaker-level output of the Juke.

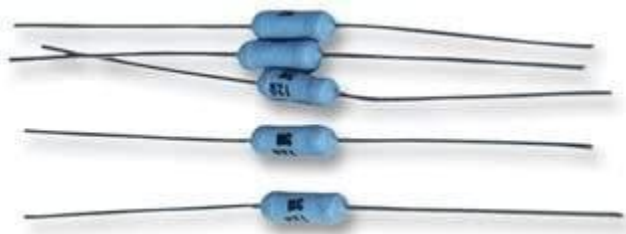## 4.2 Without Speakers in Parallel

If you wish to stream via Juke to the subwoofer but do not want any architectural speakers on the same output, you will need to add a resistor across the positive and negative terminals of Juke's left and right outputs for that zone. (This makes Juke think that speakers are connected to that zone, otherwise it won't play.) This requires the following part:

Part Description	Amazon ASIN Number	Amazon Link	Approximate Price
MULTICOMP MC14709 RESISTOR, WIREWOUND, 50 OHM, 5W, 1%	B005T86UNY	Resistors	$9.88

To do this, insert the wires for a resistor to the positive (+) and negative (-) terminals for Juke's left output terminal (i.e. in parallel with the wires going to the PAC part). Do the same for the right output terminals using a second resistor. Tighten the 4 screws to secure the wires and resistors.

Note: Make sure the metallic parts of the resistors are not in contact with each other, otherwise your system will not be able to output audio properly!

Here is what the resistors looks like:

And here is what they look like applied to the terminal block in parallel with the PAC device (mentioned in Section 4.1). The brown wires are for grounding and can be ignored, so just apply electricians tape to the ends:

4.3 With Speakers in Parallel

If you are connecting speakers in parallel to the subwoofer, there's no need to add any resistors to get the system to play.