

## Powered Speaker Cabinet Users: Phantom Power

Device – GQX-3102

### Intent:

This document is meant to be a **warning** about integrating an Ashly cross-over with powered speaker cabinets that have an integrated mixer element including phantom power.

### Explanation:

Many of the powered speaker cabinets common on today's market are designed for maximum flexibility. They can be used as a small piece of a large system, or a self contained "all in one system."

The issue which most people may not be aware of is related to this required flexibility, where the speaker manufacturer has chosen to add a microphone pre-amp to the cabinet input. In this application there is a likelihood that phantom power will accompany that mic pre-amp. Typically phantom power is specified to be +48Vdc on pins 2 & 3 of the XLR input, with respect to pin 1 ground. (Phantom can range anywhere from +12Vdc to +48Vdc, but +48Vdc is the standard).

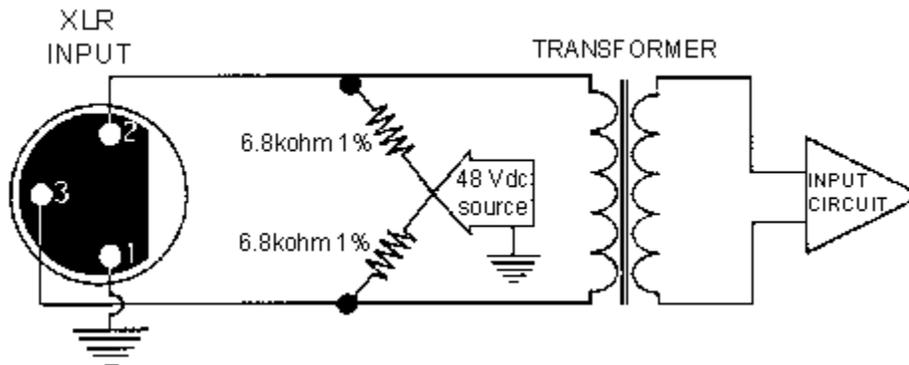


Figure 1: Phantom Power Schematic<sup>1</sup>

Although phantom power presents no danger to microphones and other devices designed for the purpose of connecting to the front end of a mixing console, other gear designed to serve further down the signal path can easily be damaged by this high voltage DC power source.

***The 48Vdc phantom power will greatly exceed the maximum voltage rating of the DC blocking capacitors designed into the output drive circuitry, and as such the capacitors will fail, and cease to pass signal from product to product.***

This would pertain to any mixing board, equalizer, cross-over, digital processor, or compressor limiter type of device in the signal chain directly connected to the speaker cabinet.

It is crucial anyone using powered speaker cabinets as part of a larger system be cognoscente of whether or not their particular choice of powered cabinet have phantom power as a feature. The user needs to be aware of how to test whether or not phantom power is enabled and double check to insure that it is disabled before connecting anything to the XLR inputs.

<sup>1</sup> "What is Phantom Power?" Shure Customer Help Answer ID 760. , 12 March 2001. Web. 01 October 2015.

### Testing Phantom Power –

To test for phantom power on the input of a powered cabinet follow the instructions below:

- [1] Connect an XLR cable to the input of the powered cabinet.
- [2] Set a multimeter to read 0-50 Vdc.
- [3] Measure the voltage from pin 2 to pin 1 of the XLR.
- [4] Measure the voltage from pin 3 to pin 1 of the XLR.
- [5] Measure the voltage from pin 2 to pin3.

The results from steps [3] and [4] should effectively be the same. If phantom power is enabled, your results should be somewhere between 12 and 48Vdc. The measurement from step [5] should be effectively zero.

If there is no voltage on the pins then it can be assumed phantom power is disabled. Always be sure to double check the mixer module to verify.