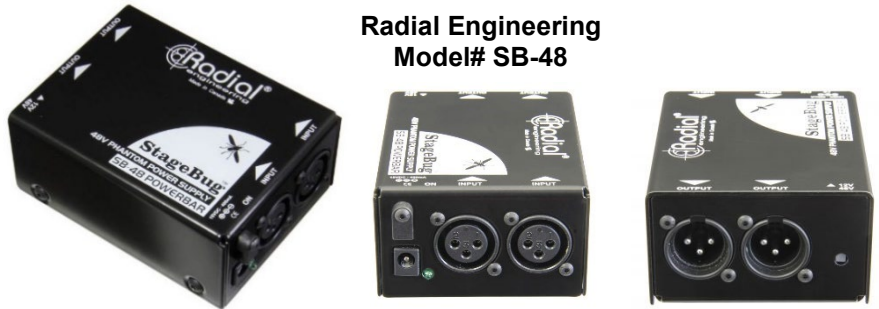


Phantom Power - Basics

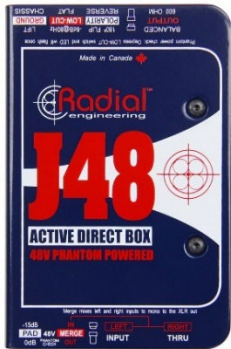
What is Phantom Power? Phantom power (usually designated as +48V) delivers DC (Direct Current) to “Active” Condenser microphones that require power to drive their internal circuitry. Most mixing boards (large or small) will have built-in phantom power. It’s as simple as pressing the +48V button on a mixing board’s channel – or a single button could supply phantom power to all the channels. Phantom power is then delivered to the microphone (or microphones) via “Balanced” XLR microphone cables. An alternative way to supply phantom power is to utilize “external” phantom power supplies like the Radial SB-48 Stage Bug or the Radial J48 Active Direct Box / 48V Phantom Powered (shown below).



Radial Engineering
Model# SB-48

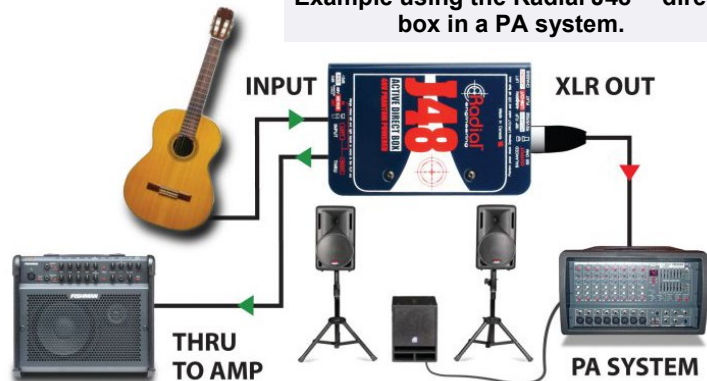
Typical Phantom Power switches found on analog mixers (above). Digital mixing boards have “touch screens” to select phantom power. Plenty of “external” alternatives exist if a mixer’s built-in phantom power doesn’t suit your needs. Take a look at some examples.

The Radial SB-48 (shown above) utilizes a non-radiating charge pump circuit to create a stable, ripple-free 48-volt supply for active direct boxes and condenser microphones. A single 15VDC 400 mA supply powers it and includes XLR inputs and outputs for each channel. Very simple to use – connect your microphones or direct boxes to the XLR inputs, and feed the outputs to a set of preamps, instrument amplifiers, or mixing board inputs. (Courtesy of Radial Engineering)



The Radial J48™ direct box is the world’s finest phantom-powered active DI. It has been optimized to handle extreme transients using only the 5 milliamps of available current from typical 48-Volt phantom-power.

Example using the Radial J48™ direct box in a PA system.



Technical Note: The Radial J48 (shown above) features a unique digital switch-mode power supply that steps up the internal rail voltage to an amazing 9 Volts. Most battery-powered guitars and basses are active and will produce as much as 7 Volts when played at maximum volume. Since typical direct boxes are only able to handle about 3 volts, they choke. Trouble is created when the input signal is greater than the internal rail voltage. This generates all types of distortion, bass sounding thin/lacking punch, guitars sounding scratchy, and tends to have sporadic peaks, and they lose their natural body resonance. Because the J48 has more ‘horse-power’ (current to work with), it is able to handle these transients without choking. This extra headroom significantly reduces harmonic, phase, and inter-modulation distortion. And when you fix all of these issues, a funny thing occurs – you sound great!
Courtesy of Radial Engineering

Notes Related to Phantom Power:

1. Phantom power does not affect Dynamic microphones. But, sometimes the on/off switch on a Dynamic microphone can cause a “Pop” in the system. Use Caution – turn the channel down first.
2. Don’t confuse mic / line level or Hi-Z with phantom power. They are in no way related.
3. If you are using a lot of condenser microphones, you will need to make sure that the mixing board you are using can supply enough current to all the condenser mics you are utilizing. In cases like this you should read the mixing boards manual and calculate the condenser microphone power requirements (current). If more power is needed the alternative would be to add external phantom power supplies.