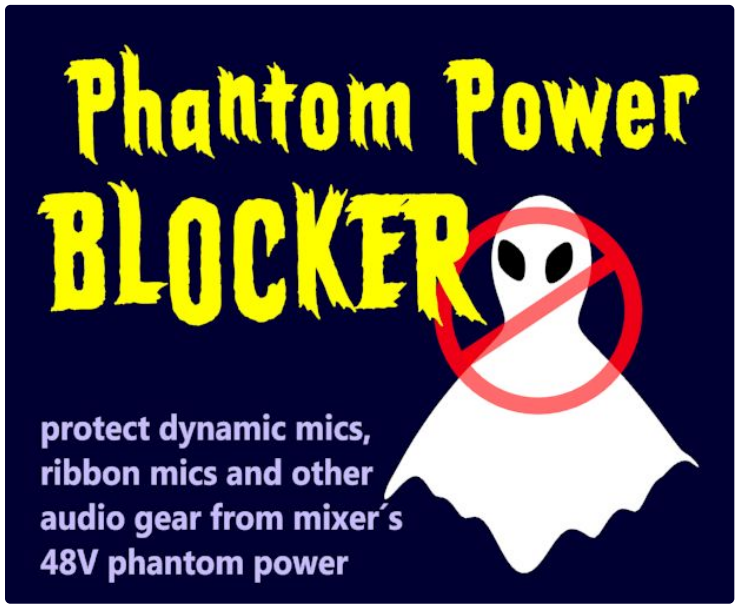
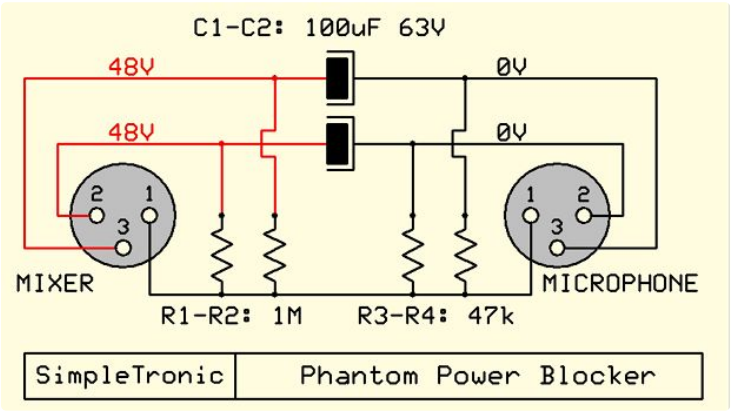
Phantom Power Blocker (protect Your Dynamic Microphones)

by simpletronic

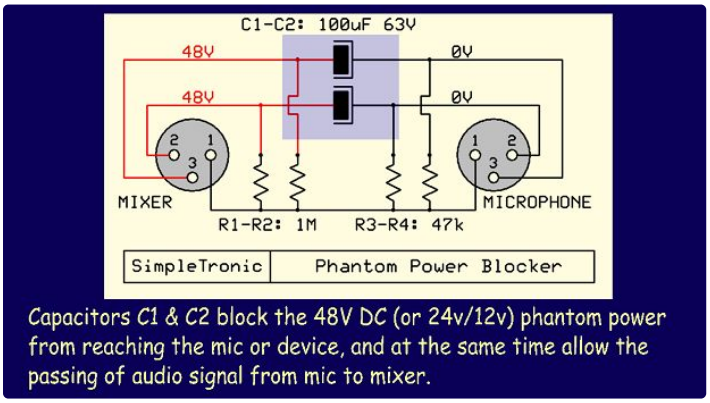
Condenser microphones contain internal circuitry and capsule which require a power supply. **Phantom power** uses the same wires of the mic balanced output signal to carry that energy from the **mixer console** to the **microphone**. Phantom power is required by condenser mics but not by dynamic *(moving coil)*. Professional mixers give you the option to switch the the **phantom power** on or off for each input channel. Semi-pro and consumer mixers enable or disable the phantom voltage globally or in groups of input channels. In general, connecting a dynamic mic to a phantom powered input is not a problem as both ends of the coil *(or transformer)* will be at the **same voltage** and no current will flow through them. This holds true as long as the connection is a correctly wired **balanced cable**. There are many other situations under which phantom power can cause damage to connected devices. This simple circuit **blocks** the phantom voltage to safely connect any device to a **48v** powered input channel.

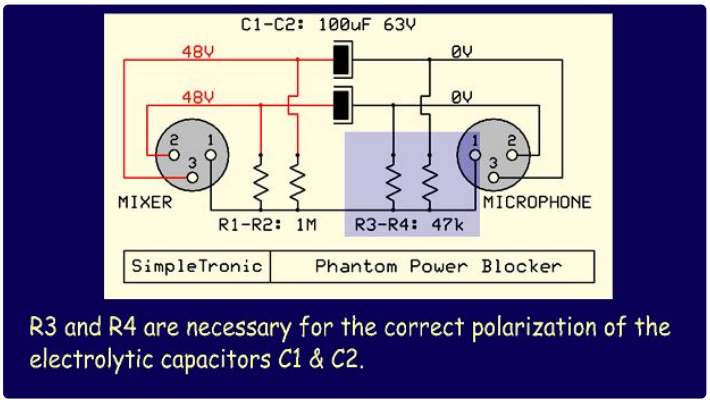


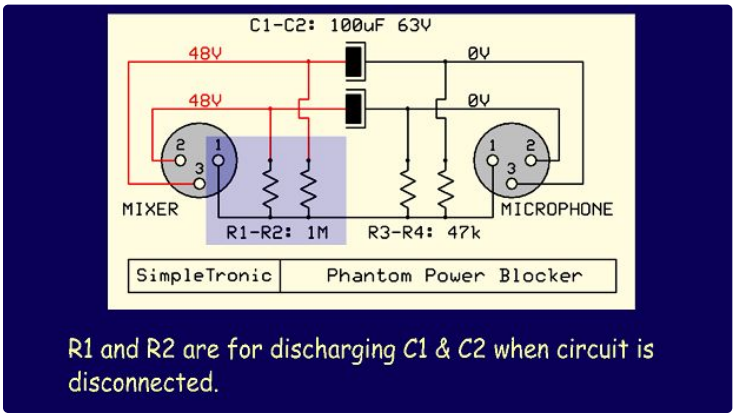
Step 1: Circuit Diagram



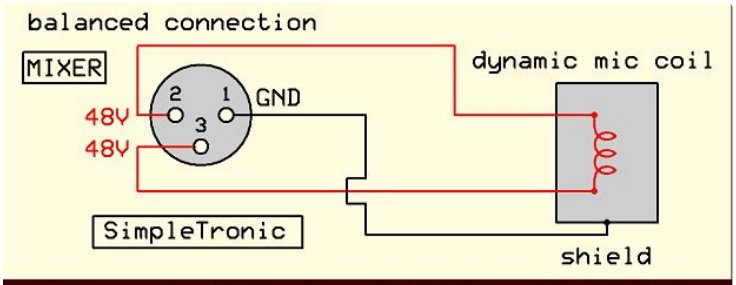
Step 2: How It Works





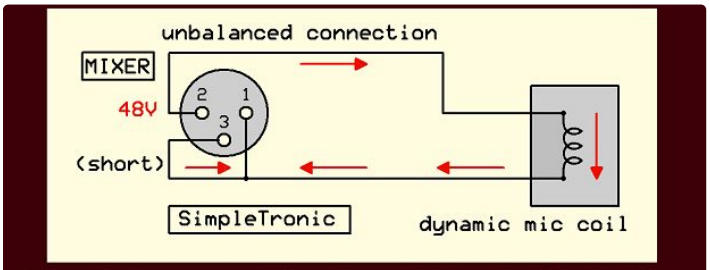


Step 3: Connecting With Balanced Cable Is Safe

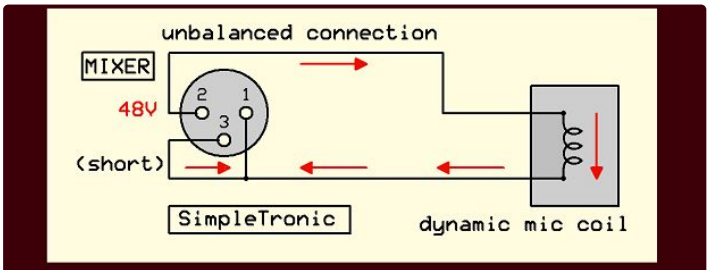


Phantom power is ignored by the dynamic microphone when connected through a balanced cable. Both ends of the coil (or transformer) are at the same potential and there is no DC current flowing through it.

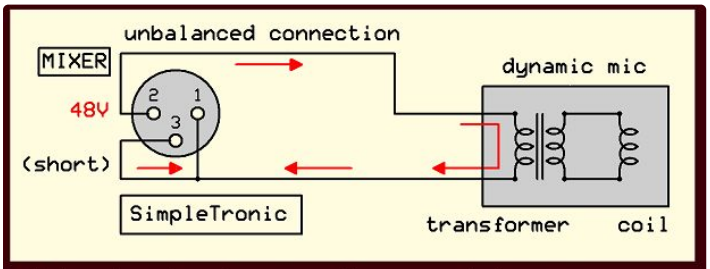
Step 4: These Configurations Are Not Safe for Dynamic / Ribbon Mics and Other Devices.



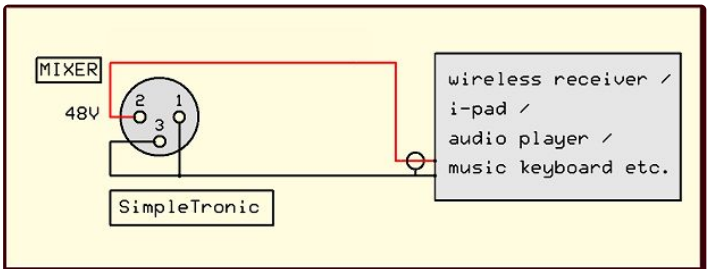
When mic is connected through an unbalanced cable, the 48v phantom power will cause a current to flow through the coil. Current is small (<10mA) but is enough do deflect the coil from its center position, seriously compromising dynamic range.



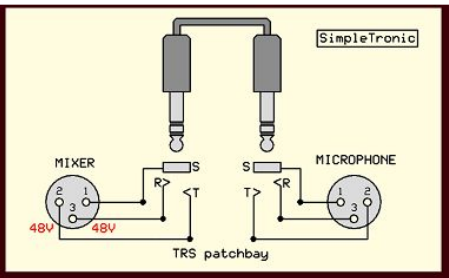
10mA current may not be enough to damage a dynamic mike coil but could be fatal for ribbon microphones.



If the microphone has a transformer coupled output, an unbalanced connection will cause a DC current to flow through the secondary winding. This current may magnetize the core permanently, causing audio distortion.



Other electronic devices may be damaged by phantom power. Wireless receivers, i-pads, mp3 players, music keyboards etc. Use the line inputs when possible.



Routing the balanced mic-mixer connection through a TSR patchbay presents an additional risk. The moment you insert the plug into the jack, pins carrying the phantom voltage are momentarily shorted to the sleeve (gnd) creating an unbalaced connection, and current may flow through the dynamic mic coil or ribbon.

Step 5: Watch the Video! Thank You

https://youtu.be/ufZs-9WAIDk

Thanks for the information. I also need to add a muting feature to this circuit.