

Simple POWER ON Indicators

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I wonder how many of us remember replacing 6 V pilot lamps that burned out? And when we started building stuff, we wired in a pilot lamp to run off the 6 V heater winding on the transformer. That consumed nearly 2 W. Some of us used a neon lamp with a 100 k Ω series resistor to show when the power was on; that circuit consumed about a ¼ W. But eventually, the inside of the neon bulb blackened and needed to be replaced. Jim has provided a simple system to replace that dimming neon and be independent of any power transformer.

Here are a couple of circuits that you can retrofit to items such as DIY equipment and switch mode power supplies to indicate 'power on'. Such items will have no transformer secondary from which power can be safely derived.

Both circuits can be constructed in space and hung from the terminals at the rear of the mains switch. I recommend that you use 5 mm diameter LEDs because of their large amounts of insulation.

Because both circuits are current fed via two resistors, the

PIV rating of the diodes is very low (< 5 V) and so, you can use any old diode (I used 1N4148s). Two series resistors are used to limit the power dissipation in each resistor, and, VERY much more importantly, to limit the voltage drop across each resistor to a safe 120 VRMS. (The resistive film moves and thins in some places when high voltages are applied and the resistor goes open circuit). Note that both circuits can drive a series string of LEDs (dial lights??). LED current is about 2.5 mA for the bridge circuit, and

half this for the half-wave circuit.

These circuits are lethal; you have been warned!! Use only excellent 230 V mains practice, working on the project only when you are sure that the equipment is definitely unplugged and no mains power is present. [When you finish, you could encase the whole circuit in heat-shrink sleeving to improve safety. While you are at it, consider enclosing all wiring to the mains switch in heat shrink, too. – Ed]

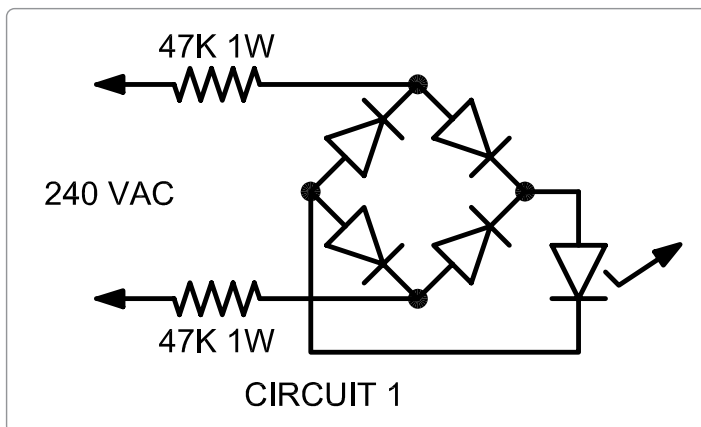


Figure 1: Full-wave bridge diode design.

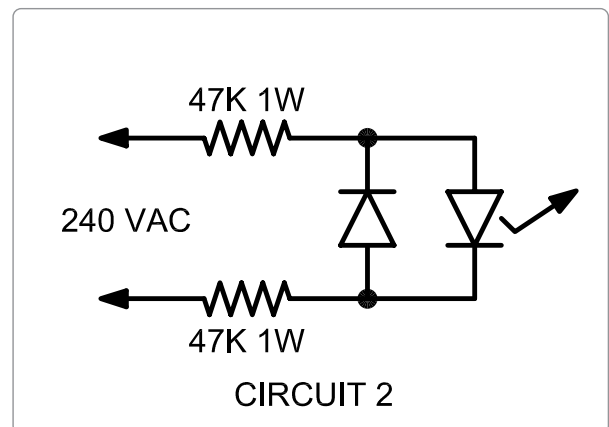


Figure 2: Half-wave diode design.

Due dates for publication



Dates for submission can be found at the bottom of the page:

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All articles, columns, hamads and advertising booking for the next issue by **16 June 2021**.