Universal Relay Buffer and Bias Mod   
(URB200BMK)

While the URB is readily adapted to the Heathkit SB200, we suggest the following easy fast changes to make SB200 operation better. Amplifier gain will increase, there will be less damage from tube arcs, and IMD (splatter) will decrease.   
  
This kit will result in slightly more gain, better stability, less IMD, and less damage from bad tubes. This kit will protect your radio and the amplifier substantially more than the initial installation.  
  
The resulting relay keying line voltage will be 5-volts positive open circuit, 2.5 volts relay activation threshold, and ~2000 ohms keying loop impedance. The closed-circuit relay loop current is about 5mA. These voltages and currents are almost perfect for reliable safe local relay control by any exciter.   
  
This kit:   
  
1.) Removes the 2000-ohm power resistor across the relay coil

2.) Uses a Zener for bias. This stabilizes bias with grid current variations

3.) Adds GDT’s from grids to ground. This reduces tube arc damage

4.) Adds .001 disk caps in place of 200pF mica caps. This flattens gain across bands

5.) Adds two back-to-back diodes across the meter. This protects the difficult to replace meter  
  
We recommend practicing sweat soldering connections and laying the wires flat on the solder pads. The best way to sweat solder is to pre-tin and leave a little pile of fresh solder on the pads, plus fresh clean solder on tightly twisted hook up wire ends. By doing this, you can “sweat” and flow while holding the wire. The connection should look smooth, shiny, and rounded, and not pull loose.  
  
This board is held down by a high-quality reliable 3M tape in these photos. If you wish to mount it with hardware, the transistor flange is at ground potential in the SB200 and other negative keying line amplifiers. Any of the mounting holes can be used, just be careful to not connect to hot traces.









