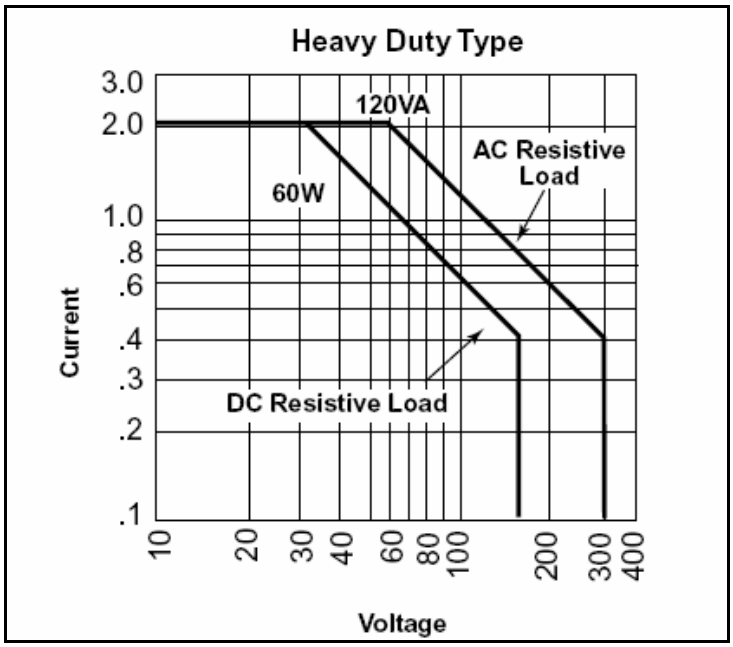
Terranova 9XX Set Point Relays
Application Notes

Rated Voltage vs. Current – Protective Circuits for Non-Resistive Loads

1. Rated Voltage vs. Current – Resistive Loads

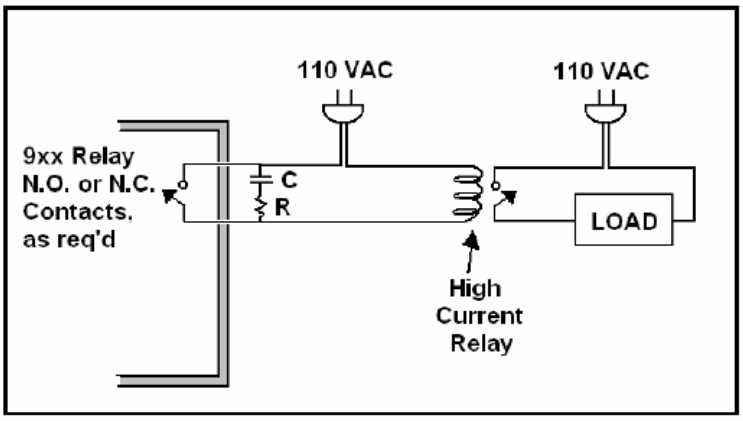
The graph below shows the relationship between the maximum voltage and current ratings specified for Heavy Duty Type AZ5 relays. These relays are used as Set Point Relays in the Terranova 9XX 1/8 DIN Vacuum Gauge Control Display products.



For resistive loads maximum current varies from 2 amps at 30 VDC (60 VAC) downward to 0.4 amps at 150 VDC (300VAC).

2. Protective Circuits for Non-Resistive Loads

For application of the Set Point relays for switching inductive or capacitive loads, it is advisable to use so-called "snubber" circuits, consisting of capacitors and resistors across the load. Such a circuit is shown in the diagram below. This circuit quenches any surges or arcs that might occur when switching such non-resistive loads.



To calculate the values of C and R for the "snubber' circuits, the equations below give some guidance.

Snubber equations from CDE Quencharc paper:

$$C = \frac{I^2}{10} \qquad R = \frac{E_o}{10\,I\,(1 + \frac{50}{E_o})}$$

where C = capacitance in uF
I = load current in amperes prior to contact opening
R = resistance in ohms in series with capacitor
Eo = source voltage

For 1 amp load and 110 VAC, C and R calculate approx to:
C=0.1 uF and R=6 ohm (use 10 ohm)

For 0.1 amp and 110...
C=0.001 uF and R=60 ohm (use 100 ohm)

For additional information on protective circuits for set point relays, please see the Potter and Brumfield publication on the following link:

http://www.pandbrelays.com/app_pdfs/13c3311.pdf

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