

My dew heaters are powered off 12VDC

Commercial dew heaters are sized so that with full 12V they would be way too hot, and thus require a controller, the idea being that by controlling the power down you preserve your battery (and heat). I saved the money on the controller (or the time building one) and sized the resistors to provide a nice low level of warmth at full 12V. I figure a car battery could power a 3 watt eyepiece heater about 200 hours, or three such for 66 hours. If you choose to follow this route, plan to use 10 1/2 watt resistors for the eyepiece heater and 5 for the Telrad....makes the math easy and they sell 'em at Radio Shack in packages of 5 for about a buck. Wire them in parallel, and wrap them in cloth tape.

What I'm using is 470 ohm x 10 for the eyepiece heater and 680 ohm x 5 for the Telrad. There's plenty of info online, but here's the basic math so you don't have to go searching:

Total resistance of resistors in parallel is one resistor / # of resistors

$$\text{Watts} = (\text{volts} \times \text{volts}) / \text{Ohms}$$

$$\text{Ohms} = (\text{volts} \times \text{volts}) / \text{Watts}$$

Battery drain:

$$\text{Amps} = \text{Watts} / \text{Volts}$$

@12V

$$560 \text{ ohm} \times 10 \text{ for eyepiece heater} = 2.57 \text{ watts } 6.44 \text{ watts } 18\text{V} (.2 \text{ amps})$$

$$470 \text{ ohm} \times 10 = 3 \text{ watts } (.25 \text{ amps}) \text{ } 7.68 \text{ watts}$$

$$350 \text{ ohm} \times 10 = 4 \text{ watts } (.3 \text{ amps}) \text{ (Might be a tad too much power, but in extreme conditions it'll warm a big eyepiece quickly)}$$

$$680 \text{ ohm} \times 5 \text{ for Telrad and secondary mirror} = 1.05 \text{ watt } (.08 \text{ amps})$$

If I run the 3 watt eyepiece heater, and 1.05 watt secondary and Telrad heaters continually (and frankly it would be a rare condition to run the secondary heater...I don't know that I've ever had

a secondary dew up, I just installed it 'cause I could), my 50 AH battery should last 122 hours. That oughta make it through the night :-)