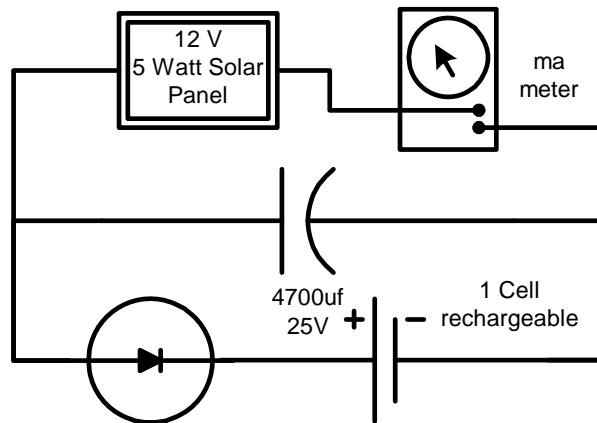


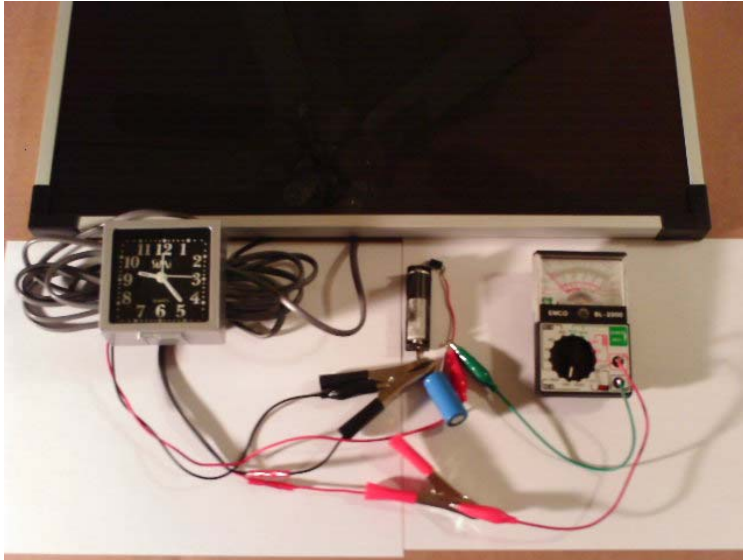
How to make a Twilight to Twilight timer that runs off its own light and charges a NiMH battery at the same time.

What will this circuit do for one in a primitive environment after the confusion of a pole shift? One will not know the latitude one is at. One will not know when the summer and winter solstices occur. How would one measure the longest and shortest days of the year, needed for planting and planning. One will not know how fast the sun light is returning to be able to grow.



This simple circuit that take less than an hour to build will provide:

- Charged cells at no cost.
- Measure daylight time.
- Determine winter and summer solstice.
- Determine latitude.
- Determine light intensity available for growing over time.
- Determine likely weather from latitude charts.



Notes on the results:

The clock will run between 1.26 and 2.4 volts DC. At 2.23 volts mine was about 1 min fast in 10 hours. The charging rate for a AA NiMH battery at this voltage was about 140 Ma. At 2.4 volts it is about 460 ma. This being a 5 watt solar cell it should go above this current in a normal use all the way up to when the sun light comes back. At that point one might want to put more cells in parallel. For this then becomes useful for charging cells. The clock takes less than .5 ma to run.

Use an old non-digital amp-meter. That way a battery is not needed to measure current.

The results need about 60 Lux of light to keep it running indefinitely. Normal sunlight is between 100k to 200k Lux. So this will measure down to 2500th of normal sunlight intensity.

You may or may not be able to use this right away after the pole shift. But as the cloud cover exponentially dissipates there will be a time soon that it will work.

List of parts:

5 watt solar cell array from Harbor Freight tools item 41144 cost about \$40 depending on sale or not.

One used or new one cell battery clock. Can be purchased at 99cent store.

Old type volt meter that doesn't need a battery to measure current.

One or more AA battery cell holder. If more than one use only one cell to start with other can be put in parallel when the light returns.

One diode with low leakage in reverse direction. If it is a good diode it will have in the micro amp range of leakage.

One capacitor big enough to run the clock. I used a 4700 uf 25 volt electrolytic. Use what ever you have. Electrolytes can leak and cause the amount of light needed to be excessive. But at this low a voltage I doubt you will have any problems with used

electrolytes. The purpose of this capacitor is to store enough current so that when the clock needs it for its pulses second movement it will have the energy available. So when testing use a volt meter and see if the voltage dips when the clock ticks. If it does then try to find a bigger capacitor.

Needless to say other things are possible: One could hook another clock across the charging cell and have it run all the time to keep time for the group.