

SOLAR WARNING LIGHT 5 LED
CODE 1003 **LEVEL 1**

An automatic warning flashing light circuit, to be installed at places where there are barriers such as along the road, back of motorcycle, etc. As having a built in recharging circuit, therefore, no need to charge batteries frequently.

Technical specifications:

- Power supply from rechargeable battery size AAx3 pcs. (not included).
- Consumption : 4mA. (standby), 45mA. (working).
- Built-in recharging circuit from solar panel.
- Power of solar panel : 4VDC. 60mA.
- Adjust sensitivity of photo-transistor and speed of flashing with potentiometer.
- PCB dimensions : 2.99 x 1.70 in.

How to work:

The circuit is divided into three parts; charger, sensor and flashing light.

The charger consists of solar panel, TR1 and TR3. When solar panel is facing sunlight, it will convert sunlight energy into DC voltage and then run through TR1 and TR3 for charging the rechargeable batteries.

For the sensor, when the photo-transistor gets light its internal resistance will be less and causing TR5 being unable to work. Then TR4 will not work either. Meanwhile, LED1 will be off and flashing light will not work.

The flashing light will work when the photo-transistor gets no light, its internal resistance will be higher and TR5 will get voltage for bias. Then TR4 will work and light up LED1. The flashing light (TR6 and TR7) will also work and then LED2 to LED5 is blinking. TR2 and VR1 will act as the speed controller for detecting light.

Circuit connecting:

External connecting and fitting of components are shown in figure 3. It is recommended to assemble the circuit starting with a less height component i.e. diodes, resistor, electrolite capacitors and transistors etc. Be careful while assembling and check for the right matching of PCB poles and components before soldering as shown in Figure 1. Use a max. 40W. solder and soldering lead

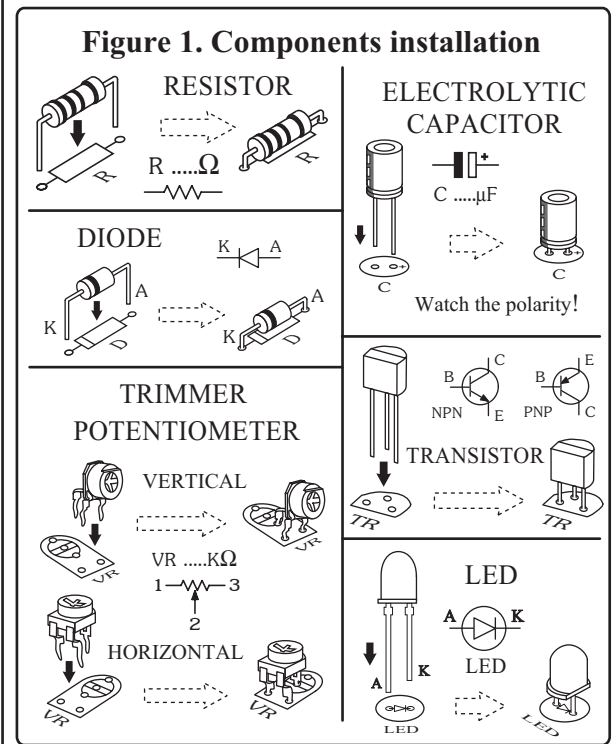
with a tin and lead ratio of 60/40 together with a joint solution inside. Recheck the assembled circuit for your own confidence. Better using a lead sucker or a lead wire absorber in case of misplacing component to protect PCB damage.

Testing:

Turn the solar panel facing sunlight. The circuit will start detecting light through the photo-transistor. When the photo-transistor detects light, LED will not blink. But when it gets no light, LED will blink. VR1 will act as the speed controller light detecting and VR2 will control the flashing speed.

NOTE: The solar panel can not convert fluorescent light to DC voltage.

CAUTION: Whenever using solar panel, be careful for not to short circuit the positive and negative poles. The short circuit will damage the solar panel.



Troubleshooting:

As the circuit has only a few components, the main cause of troubles will come from misplacing component and defaulted soldering. When found out that the circuit does not work, check the placing component and various soldering points.

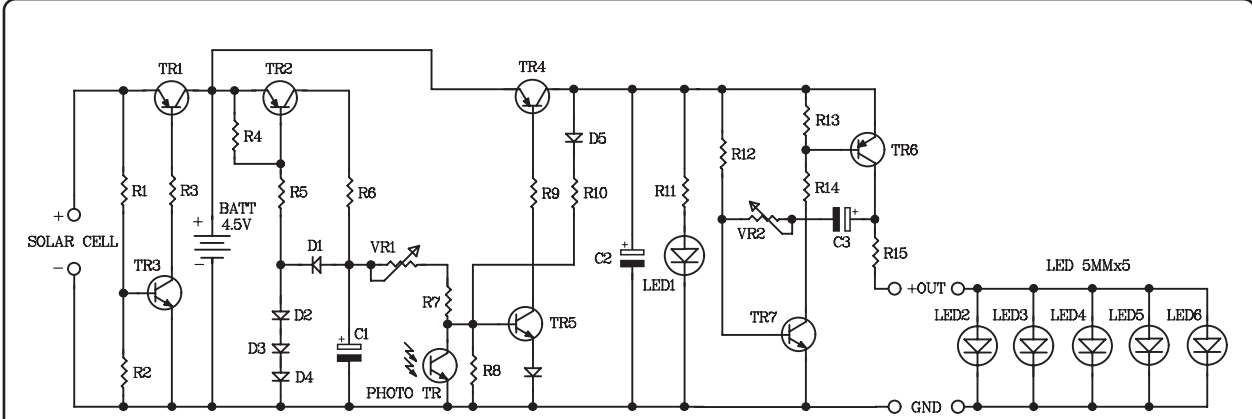


Figure 2. SOLAR WARNING LIGHT 5 LED circuit

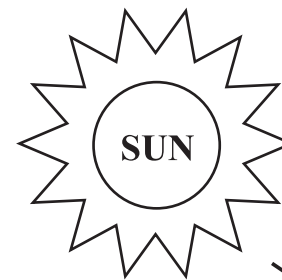
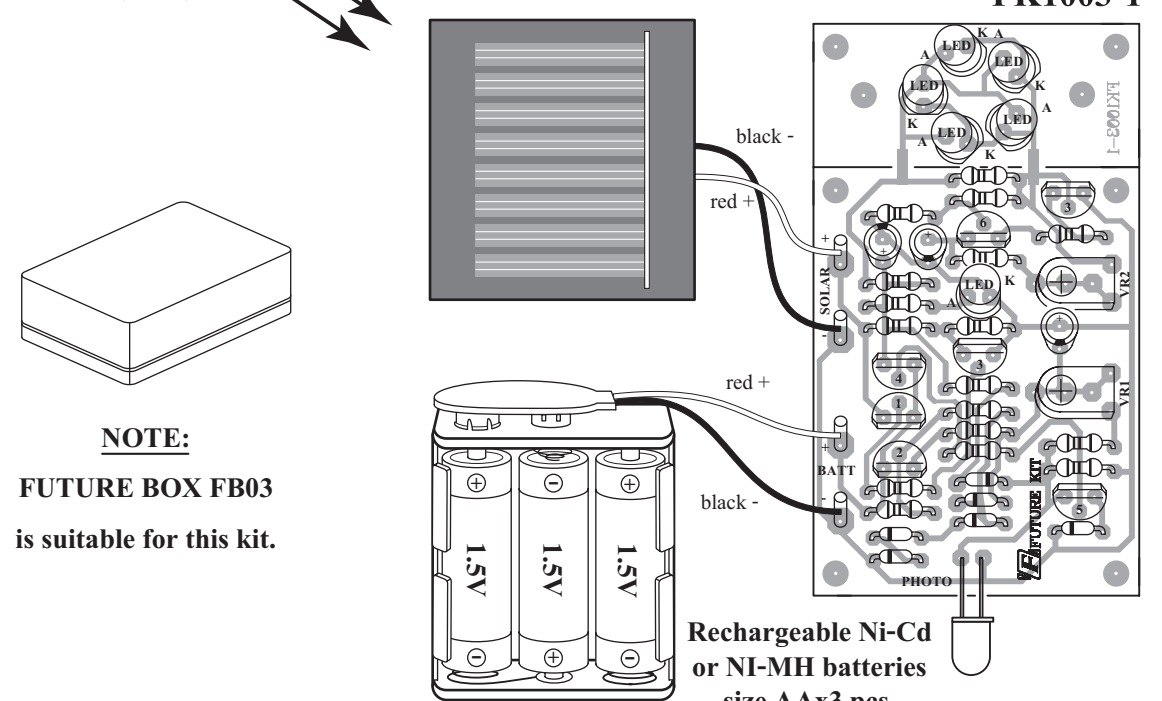


Figure 3. Circuit connecting



NOTE:
FUTURE BOX FB03
is suitable for this kit.

Rechargeable Ni-Cd
or NI-MH batteries
size AAx3 pcs.

*** Remark *** When you see from top, photo-transistor is black and LED is yellow.