

SOLAR NIGHT 5 LED
CODE 1004

LEVEL 1

An automatic guided light circuit to be installed at places where light are required before getting dark.

Technical specifications:

- Power supply from rechargeable battery size AAx3.(not included).
- Consumption : 2.5mA. (standby in sensor mode), 80mA. (working in sensor mode).
- Built-in recharging circuit from solar panel.
- Power of solar panel : 4VDC. 60mA.
- Adjust sensitivity with potentiometer.
- PCB dimensions : 2.39 x 1.70 in.

How to work:

The circuit is divided into two parts, charger and sensor.

The charger consists of solar panel, TR1 and TR3. When solar panel is facing sunlight, it will convert sunlight energy to 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 does not work either. Meanwhile, all LEDs will be off. But when the photo-transistor gets no light, its internal resistance will be higher and TR5 will get voltage for bias and light up all LEDs. TR2 and VR1 will act as the light speed controller detecting.

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, electrolyte capacitors and transistors etc. Be careful while assembling and check for the 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.

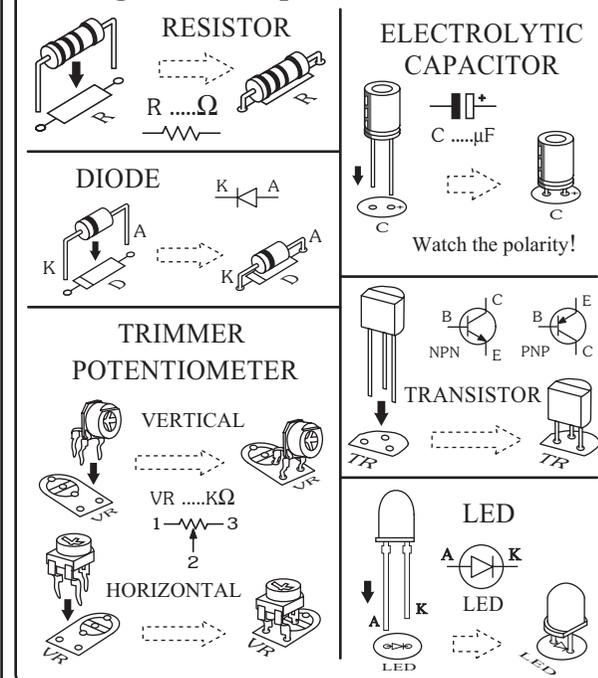
Testing:

Turn the solar panel facing sunlight. The circuit will start detecting light through the photo-transistor. When the photo-transistor detects light, LED will be off. But when it gets no light, LED will be lit up. The lightness of LEDs is depended upon the light volume received and VR1 will act as the speed controller light detecting.

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

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

Figure 1. Components installation



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.

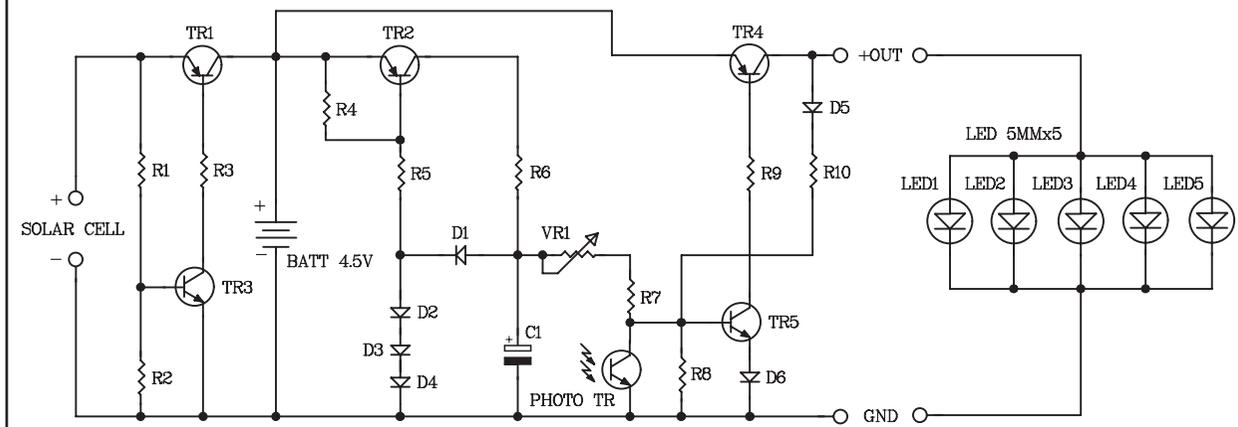


Figure 2. SOLAR NIGHT 5 LED circuit

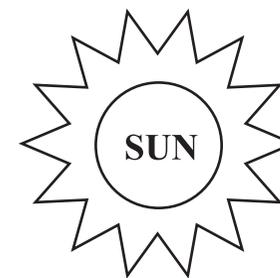
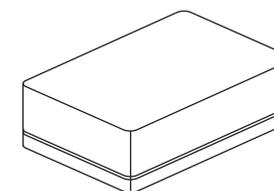
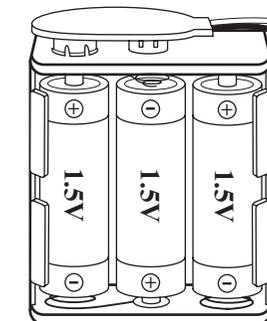
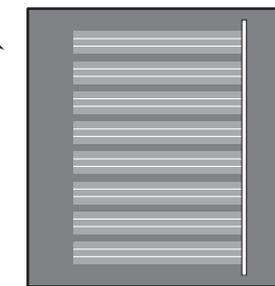


Figure 3. Circuit connecting

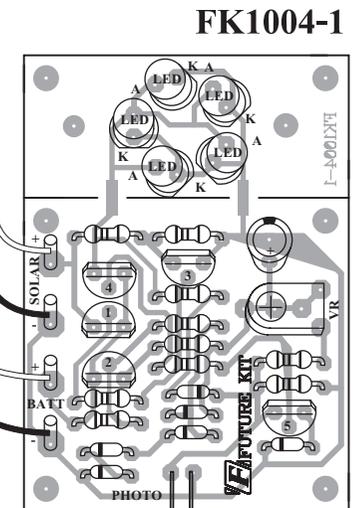
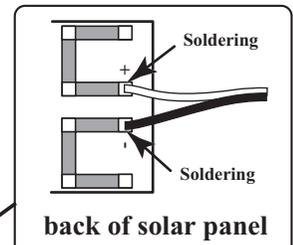


NOTE:
FUTURE BOX FB03
is suitable for this kit.

SOLAR PANEL



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



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