AUTOMATIC STREETLIGHT

PRODUCT CODE: M00270019

DESCRIPTION: This is just to simulate the streetlight in the street that the light is on after evening and off when morning.

READ BEFORE INSTALLATION:

- Put the component on the side of screen printing and solder on the back of PCB without printing.
- Placing direction of component.

1. On component, longer leg is "+".
2. On PCB marking, square pad as Figure 1 is always "+".
3. For diode, please install as Figure 2.

- Do not put the LED to very bottom, just install as Figure 3.
- For any IC, finding out which leg is first leg (FIGURE 4) is important. Also, solder the socket (chair) to the PCB and the IC sit on the top.
- For 9V Battery Adaptor, Red is B+ and Black is B-. Also, please tie a knot after the red and black wire has passed the neighbors hole before soldering. This is similar to Figure 6.

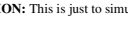

FIGURE 1

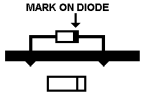

FIGURE 2

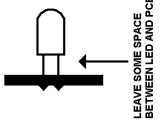

FIGURE 3

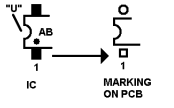

FIGURE 4

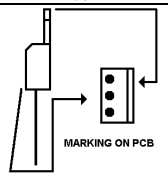

FIGURE 5

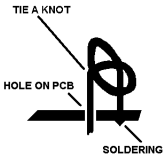

FIGURE 6

FIGURE 7

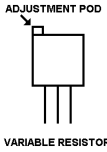

FIGURE 8

FIGURE 9

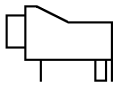

FIGURE 10

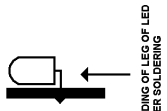

FIGURE 11

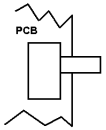

FIGURE 12

CIRCUIT EXPLANATION:

Please read the below together with the circuit diagram in Figure 13.

- The function of D1 is to prevent reverse power supply.
- Part 2 is the brain of the whole circuit. PR is a Light Dependent Resistor (LDR), the resistance decreases with increasing light intensity. R3 and PR work as potential divider circuit. VR is a variable resistor and these three legs also work as potential divider circuit inside the VR with middle leg as output. U1B work as comparator. The output of Leg 7 of U1B becomes high when the voltage at Leg 5 is higher than Leg 6. The output of Leg 7 of U1B becomes low when the voltage at Leg 5 is lower than Leg 6. By using this logic, this part work as light detecting circuit.
- Part 3 is only two LED that you can think this is similar to Streetlight. This give out the result coming from part 2. When Leg 7 of U1B is high, both LED is on.
- Part 1 is the voltage regulation circuit so as to make sure the whole circuit is working at 5V. This is important because part 2 use the potential divider as working logic. If the voltage floats due to any reason, the final result may be not expected.
- This is better connects all the unused pin of comparator to ground. As a result, all the pin of U1A is connected to ground.

CIRCUIT DIAGRAM:

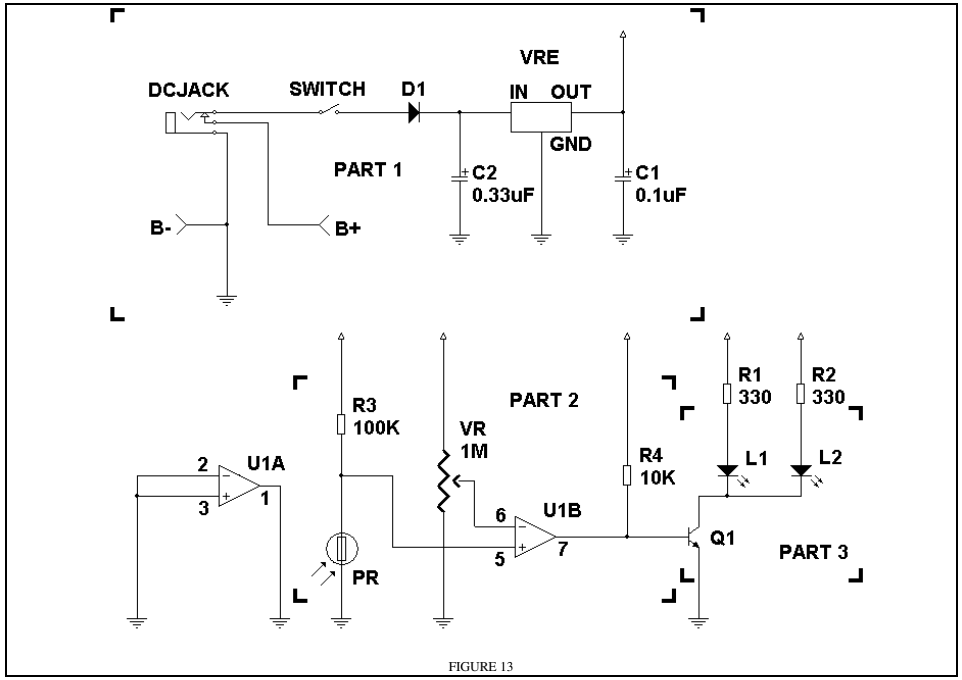

FIGURE 13

INSTALLATION:

Just install the component to the PCB M00260035 according to below table.

ITEM	SYMBOL ON PCB	DESCRIPTION	OUTLOOK	DIRECTION IS IMPORTANT?
1	R1	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
2	R2	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
3	R3	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
4	R4	RESISTOR, 10K ohms	BROWN, BLACK, ORANGE	NO
5	D1	DIODE, IN4001	FIGURE 2	FIGURE 2
6	PR	LDR	FIGURE 7	NO
7	U1	DIP 8 SOCKET	8 LEGS	NO
8	L1	LED	ONE LONG LEG AND ONE SHORT LEG	YES
9	L2	LED	ONE LONG LEG AND ONE SHORT LEG	YES
10	VR	VARIABLE RESISTOR, 1M ohms	FIGURE 8	NO
11	VRE	VOLTAGE REGULATOR, LM7805	FIGURE 5	FIGURE 5
12	C1	CAPACITOR, 0.1uF	MARK WITH 0.1uF OR SAME MEANING OF VALUE	YES
13	C2	CAPACITOR, 0.33uF	MARK WITH 0.33uF OR SAME MEANING OF VALUE	YES
14	Q1	TRANSISTOR, NPN	FIGURE 9	YES
15	SWITCH	SLIDE SWITCH	SIX LEGS	FIGURE 12
16	DCJACK	3.5mm MONO JACK SOCKET	FIGURE 10	YES
17	B+, B-	9V BATTERY ADAPTOR	RED WIRE, BLACK WIRE	YES
18	ON THE TOP OF ITEM 7	IC, LM393	8 LEGS	FIGURE 4

- Bend the legs of LED as Figure 11 so that the LED is pointing to front when light on. Just like a real Streetlight.
- After the installation, we now need to adjust this equipment to working conditions; I use the "ON" condition of fluorescent lamp as daytime and "OFF" condition as nighttime.

1. Turn on the fluorescent lamp.
2. Turn the adjustment pod of item 10, VR, until the two LED is just "OFF".
3. Now turn off the fluorescent lamp and check if the two LED turn on automatically. If yes, you finished.

- After installation, you can use external DC adaptor as power sources. You can use our product M00270013 or other similar adaptor.