

LIGHT DIMMER 500 WATT
CODE 415

LEVEL 1

This circuit is a dimmer circuit with triac that is considered as the easiest circuit. It has only few components and is applied for adjusting light bulb, electrical stove or pan. It can control those electrical equipments for maximum 500 watts.

Technical specifications:

- voltage supply: 220-240VAC.
- maximum load: 500 watts @ 220VAC
- dimming adj. by potentiometer
- PCB dimensions : 1.01 x 1.46 inches.

How to works:

R, VR, C, DIAC are connected as series order and having LED as display. Connecting DIAC with TRIAC which acts as switch controlled by the gate. DIAC starts current at the gate of TRIAC. When connecting AC 220V to the circuit. C1 will charging to about 30-32V (equal breakdown voltage of DIAC). DIAC is start working and C1 will discharge. At the same time, TRIAC is start working. Figure 3 shows VR1 position adjustment to center. C1 has to be charged for 1/2 cycle, so TRIAC will conduct current only half cycle. So than electrical power reduced to a half. Figure 4 shows VR1 position adjustment to have high resistance, C1 takes charging long time, DIAC can conduct lesser current, and electrical power will reduced too. If we adjust VR1 to maximum resistance position, C1 takes charging longer time. So than TRIAC no conduct current and there is no electrical power.

PCB assembly:

Shown in Figure 5 is the assembled PCB. Starting with the lowest height components first, taking care not to short any tracks or touch the edge connector with solder. Some tracks run under components, and care should be taken not to short out these tracks. All components with axial leads should be carefully bent to fit the position on the PCB and then soldered into place. Make sure that the electrolytic capacitors are inserted the correct way around. The LED has a flat spot on the body which lines

up with the line on the overlay. Now check that you really did mount them all the right way round!

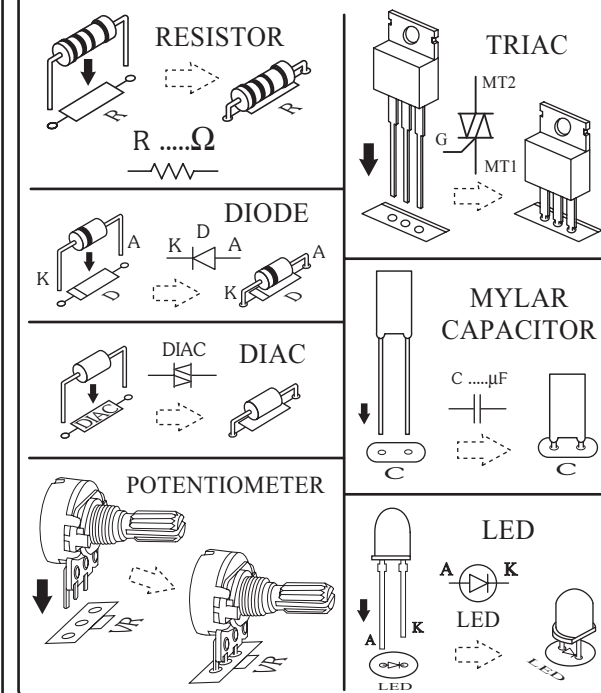
Testing:

Following figure 5. Connecting lesser than 300 watts light bulb at "OUT". Turning VR1 max. counter-clockwise, light bulb will shut down. Turning VR1 max. clockwise, light bulb will be lighted respectively to maximum. LED will display according to VR1 adjustment.

Application:

Connecting IN with male plug and OUT with female plug. Using plastic doorknob for VR1 and plastic box. If apply for over 300 watts, TRIAC should have heat sink. It requires at least 0.5 mm. electrical wire.

Figure 1. Installing the components



Troubleshooting:

The most problem like the fault soldering. Check all the soldering joint suspicious. If you discover the short track or the short soldering joint, re-solder at that point and check other the soldering joint. Check the position of all component on the PCB. See that there are no components missing or inserted in the wrong places. Make sure that all the polarised components have been soldered the right way round.

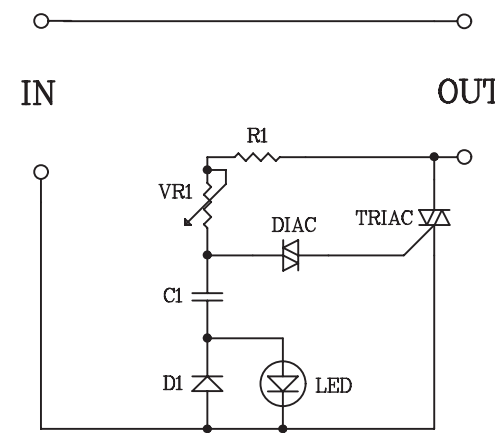


Figure 2. The light dimmer 500 watt circuit

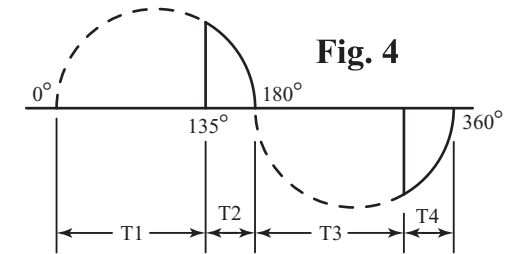
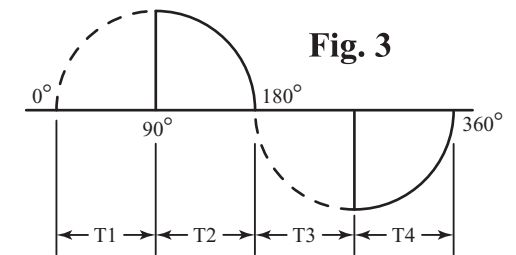
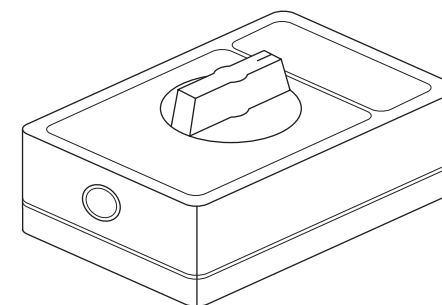
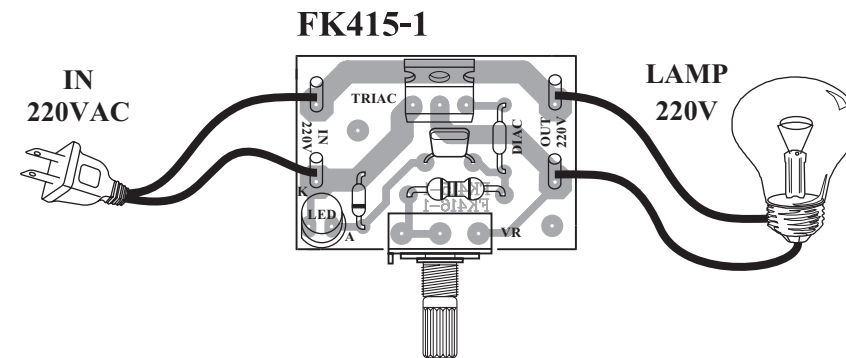


Figure 5. Connections



NOTE:
FUTURE BOX FB14 is suitable for this kit.

NEW KIT SET

CODE FK	DESCRIPTION	POWER
161	FEELING FLASHER 14 LED	9-12VDC
162	SATURN'S RING FLASHER 31 LED	9-12VDC
163	UNIVERSAL FLASHER 10 LED	9VDC
164	XENON TUBE FLASHER (STRAIGHT TYPE)	220VAC
165	SOUND ACTIVATED XENON FLASHER (STRAIGHT TYPE)	220VAC
166	LIGHT ACTIVATED XENON FLASHER (STRAIGHT TYPE)	220VAC