



FUTURE KIT

HIGH QUALITY ELECTRONIC KITS

MULTI FUNCTION TIMER SWITCH

0-180 MIN. CODE 433 LEVEL 1

The multi function timer switch can be applied as an automatic turning on switch or automatic turning off switch.

Technical specifications:

- power supply : 12VDC. - consumption : 45mA max.
- relay output : 10A@110VAC, 5A@220VAC
- there is START switch and STOP switch.
- range : from ± 2 seconds to ± 180 minutes
- PCB dimensions : 3.69 x 1.81 inches.

How to works:

IC1 oscillates and divides a frequency. The timing of IC1 is set by the value R1, R2, VR1, C1 and C2 which can be set time from 2 sec. to 180 min. When J3 is connected, the output of pin13 is fed to control timing before pin3 so the time can be set at 2 sec. to 5.30 min. Choose the operation at J1 and J2.

**J1 is connected to let the circuit function as soon as it is connected with a power supply. C1 is a starter resulting TR2 to work. Therefore the circuit functions and LED lights. **J1 is disconnected so the circuit does not function because TR2 does not work. The start switch have to be pressed to result TR2 to function, the circuit works and LED1 lights. **J2 is connected to set the timer off. When the time is over, IC1 sends the voltage through "A" point to the base of TR1 through R6 resulting TR1 is shorted the base of TR3 stops distribution. TR2 and TR3 do not work so LED1 and LED2 are unlighted. The relay releases the contact face. **J2 is disconnected to set the timer on. The circuit functions resulting TR2 to work, LED1 to light, TR1 to function but LED2 to be unlighted because of disconnected J2. IC1 is time watcher. When the time is over, IC1 sends the voltage through "A" point to the base of TR1 through R5. TR1 to functions and the relay is working so LED2 lights. TR3 still works because it is transmitted the voltage from R9 through D7 to the base of TR1. TR1, TR2 and TR3 remain functioning, LED1 and LED2 still light and the relay hangs. Press the stop switch or remove the power supply to restart or stop the operation.

PCB assembly:

Shown in Figure 3 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. 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:

Before supply the power supply, connect J3 and adjust VR1 to MIN position. After that connect power supply 12VDC to circuit.

Make a test as followings:

1. J1 and J2 are connected, LED1 and LED2 light and then after 2-5 seconds they are automatic unlighted;
 2. J1 is connected but J2 is disconnected. LED1 lights but LED2 is unlighted. After 2-5 seconds LED1 remains lighted and LED2 lights;
 3. J1 is disconnected but J2 is connected. LED1 and LED2 are lighted. Press start switch resulting LED1 and LED2 light. After 2-5 seconds both LED are unlighted;
 4. J1 and J2 are connected. LED1 and LED2 are unlighted. Press start switch resulting LED1 lights and LED2 is unlighted. After 2-5 seconds both LED are lighted;
- If the circuit function in above mentioned fashion this indicates that it is practical. Set the operation as following:
- ** J1 is disconnected. The start switch must be pressed so the circuit will function; ** J1 is connected. The circuit start function as soon as it is connected with the power supply; ** J2 is disconnected. The appliance will work out when it is on the setting time; ** J2 is connected. The appliance stops working when the set time is over; ** If J1 is disconnected, press the start switch to let the circuit function; ** If the circuit functions and LED1 lights, press the stop switch to result LED1 to be unlighted and the circuit to stop working.

Figure 1. Installing the components

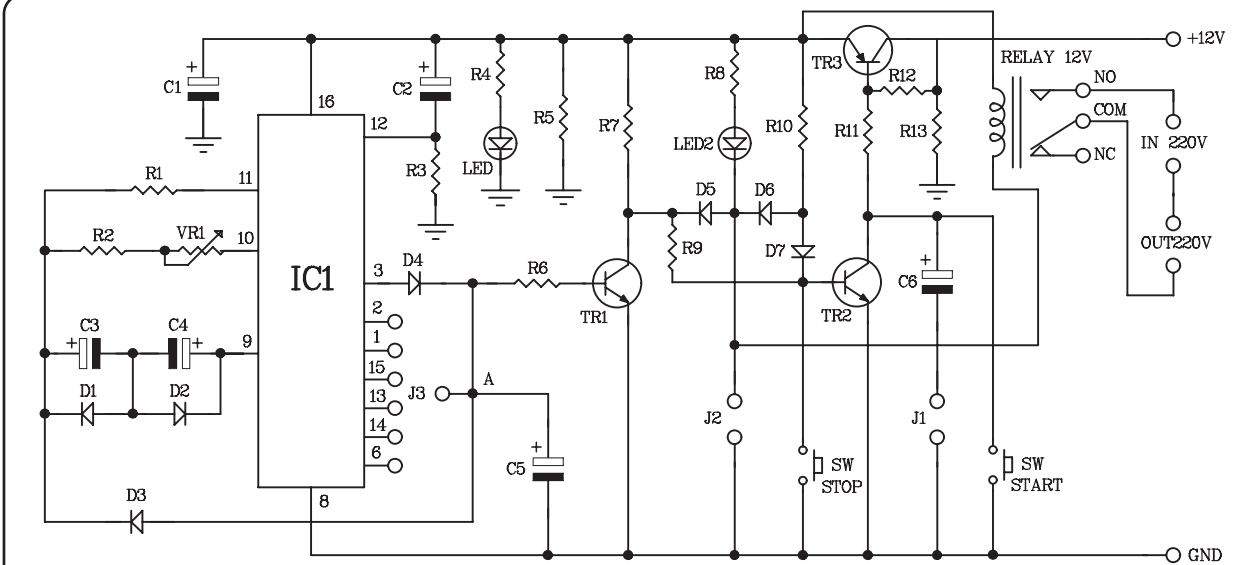
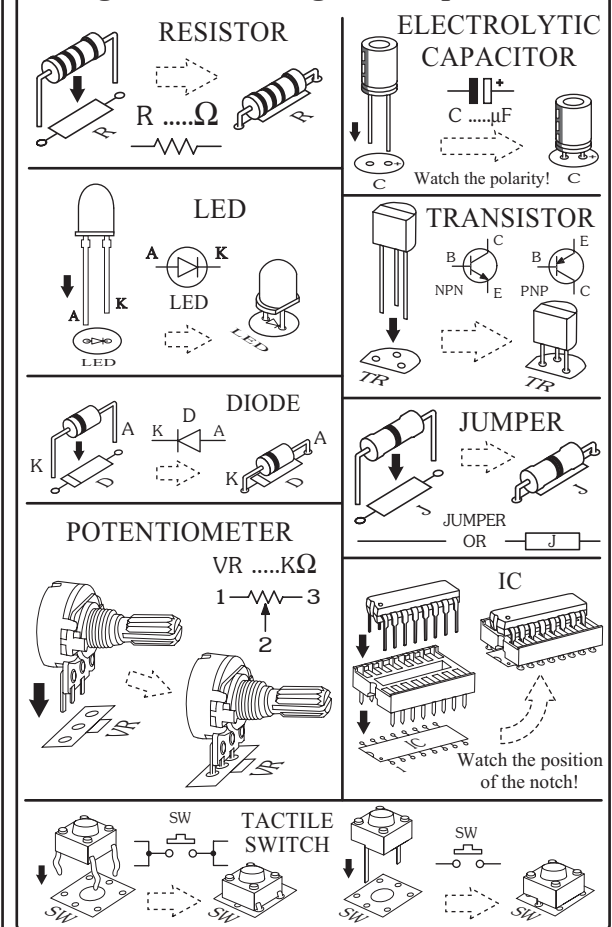
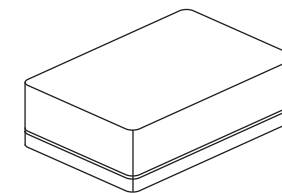
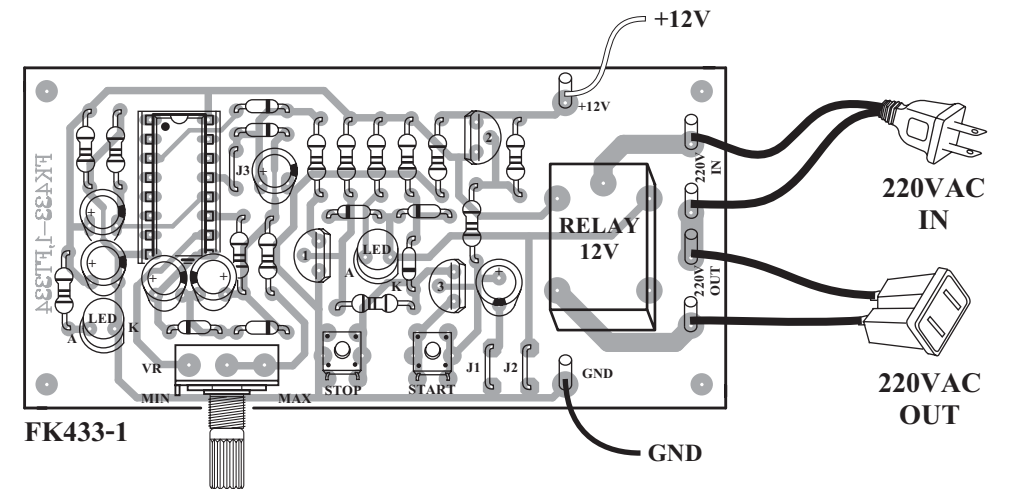


Figure 2. The multi function timer switch 0-180 min. circuit

Figure 3. Connections



NOTE:

FUTURE BOX FB04 is suitable for this kit.

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.