

TIMER SWITCH 0-10HR.
CODE 407

LEVEL 2

The timer switch circuit is used for turning off an appliance as its time is set, from 15 minutes up to 10 hours.

Technical specifications:

- power supply: 12VDC.
- consumption: 50mA. max.
- adj. timer: selector switch
- maximum load: 10A@125VAC and 5A@220VAC
- PCB dimensions : 2.76 x 3.13 inches.

How to works:

The circuit functions when the start switch is pressed. Then the switch is released resulting TR1 and TR2 to remain working so do TR2, the relay, IC1 and IC2. LED lights to show operation state. IC1 oscillates and divides a frequency passed on pin 3 through the collector of R4 to pin 14 of IC2. IC1 and IC2 function as frequency dividers in order to set time. The selector is available for adjustment of turning off time with 12 choice that are 15 minutes, 30 minutes, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 hours accordingly. When the set time is over, the voltage is distributed through the middle of the selector to the base of TR3. TR3 is therefore shorted the base of TR2 to the ground. Then TR2 and TR3 do not function resulting the collector of TR1 is present with any voltage so the relay and whole circuit do not work out. In addition, LED is unlighted showing time is over. If the start switch is pressed again the turned off time will be reset. Besides, the stop switch is available for cancelation of time setting.

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. 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!

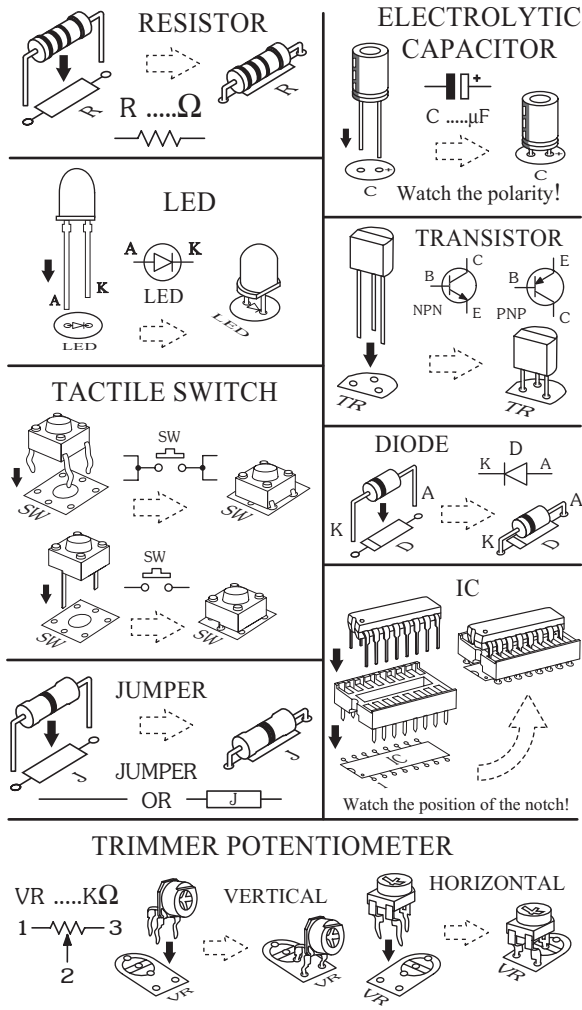
Testing:

Connect jumper J to PC-board. Then connect the timer switch circuit at "IN 220V" point and connect the unit at "OUT 220V" point. Connect the power supply 12VDC to the PC-board. Therefore, LED is unlighted and the appliance does not function. Turn the selector in order to let its contact face to contact the terminal at 1H. After that press the start switch. At this stage LED1 lights as well as the appliance works out for 7 seconds and automatically stop. If the appliance does not function in this

fashion, adjust VR10K and press the start switch again. Make a test many times until the result is that the appliance works for 7 seconds. Adjust the selector to point, the circuit will automatically turn off follow setting (jumping J1), 1H=7 sec., 2H=14 sec., 3H=21 sec., 4H=28 sec., 5H=35 sec., 6H=42 sec., 7H= 49 sec., 8H= 56 sec., 9H=63 sec., 10H=70 sec., 15H=15 min., 30H=30 min.

If remove jumper J1 from the PC-board, the circuit will set time at 15 min., 30 min., an hour to 10 hours as the selector contact to which spot, 1H=1 hour and 10H=10 hours. If a counter is provided to count resolving time at "T" point that should be 0.219, the time will be more accurate.

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.

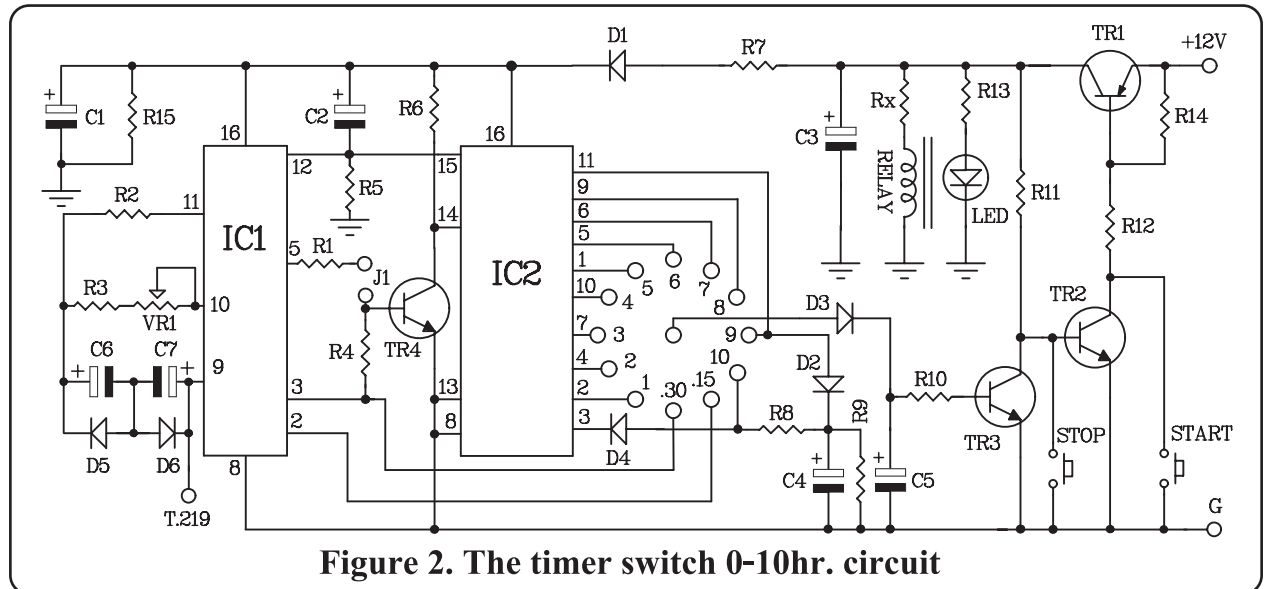
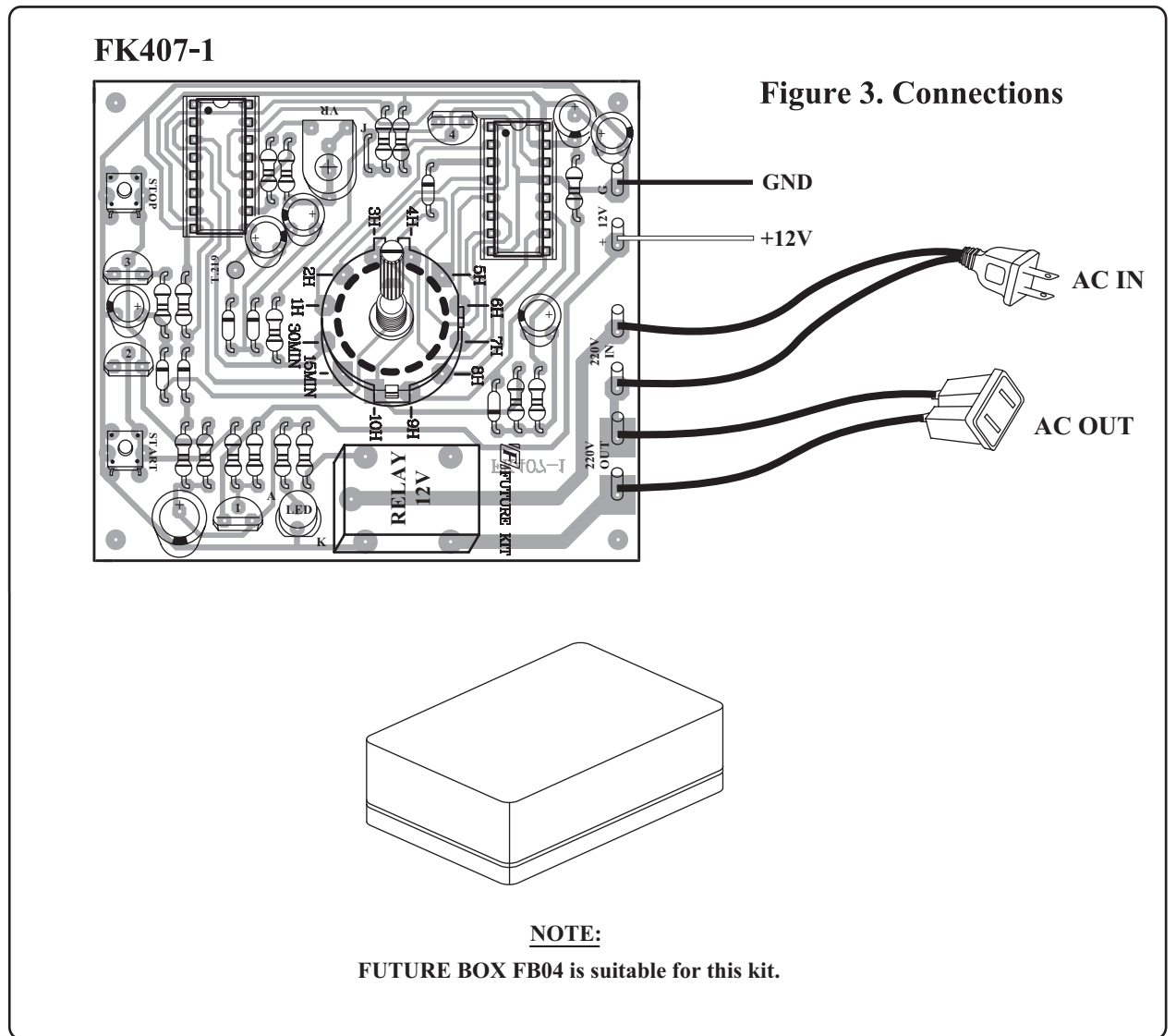


Figure 2. The timer switch 0-10hr. circuit



NOTE:

FUTURE BOX FB04 is suitable for this kit.