

PASSIVE INFRARED SENSOR
CODE 509 **LEVEL 3**

This circuit detects infrared radiation from human or animal body with PIR (pyroelectric infrared sensor) and has the fresnel lens (circular and flat) for increase efficiency of detect. Ideal for alarm system, automatic light system, etc.

Technical specifications:

- power supply : 5-15VDC.
- consumption : 35mA.@ 12VDC.
- detection range : 5m.(circular len) or 8m.(flat len)
- PCB dimensions : 3.62 x 1.95 inches.

How to works:

When have human or animal body to pass PIR sensor, the signal at pin S of PIR is fed to the input of IC1/1 at pin10. IC1/1 is configured as 1st preamplifier with can be adjust the gain control (VR1) ranging from 10 to 100. The output of IC1/1 at pin8 is fed to the input of IC1/2 (2nd preamplifier) at pin6. IC1/3 and IC1/4 are comparator circuit. IC1/3 is compare to ranging the signal swingdown and IC1/4 is compare to ranging the signal swing up.

When the signal over or under swing to setting, the voltage of IC1/3 or IC1/4 is fed to the base of TR3. With if the signal is over swing setting, TR3 is work causing TR4 is work together and than at "H" point has the voltage. But if the signal is under swing setting, TR3 is not work causing TR4 is not work together and than at "L" point has the voltage. Regulate section is built around TR1, ZD5V1, C1, C2 and R1 provides a regulated 6 volts for the circuit.

PCB assembly:

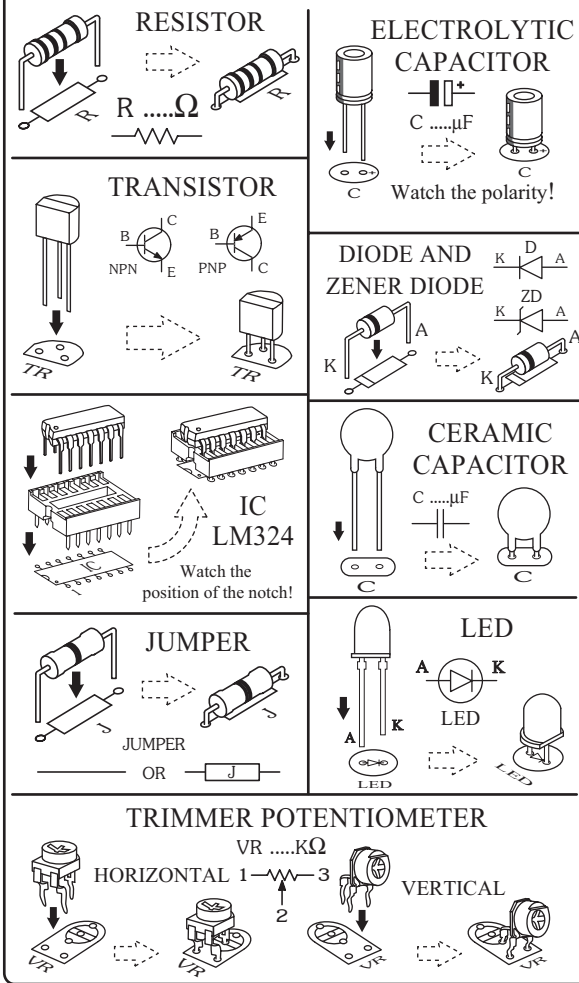
Shown in Figure 3 is the assembled PCB. Starting with the lowest height components first, taking care not to short any tracks or touch the edge connector with solder. Some tracks run under components, and care should be taken not to short out these tracks. All components with axial leads should be carefully 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:

Rotate VR1 max. counterclockwise. Turn PIR to not human or animal body pass. Connect the power supply 12VDC

to "9-15V" point, LED1 is light-on. After wave the hand to pass PIR sensor, LED2 is light-on. To pull the hand from face PIR sensor, wait 4 seconds. LED2 is light-off. Rotate VR1 max. clockwise, the circuit has high the sensitivity. If you want to part between PIR board and circuit board, to cutting PCB and connect the sheated cable not more then 1 meter between PIR board and circuit board.

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.

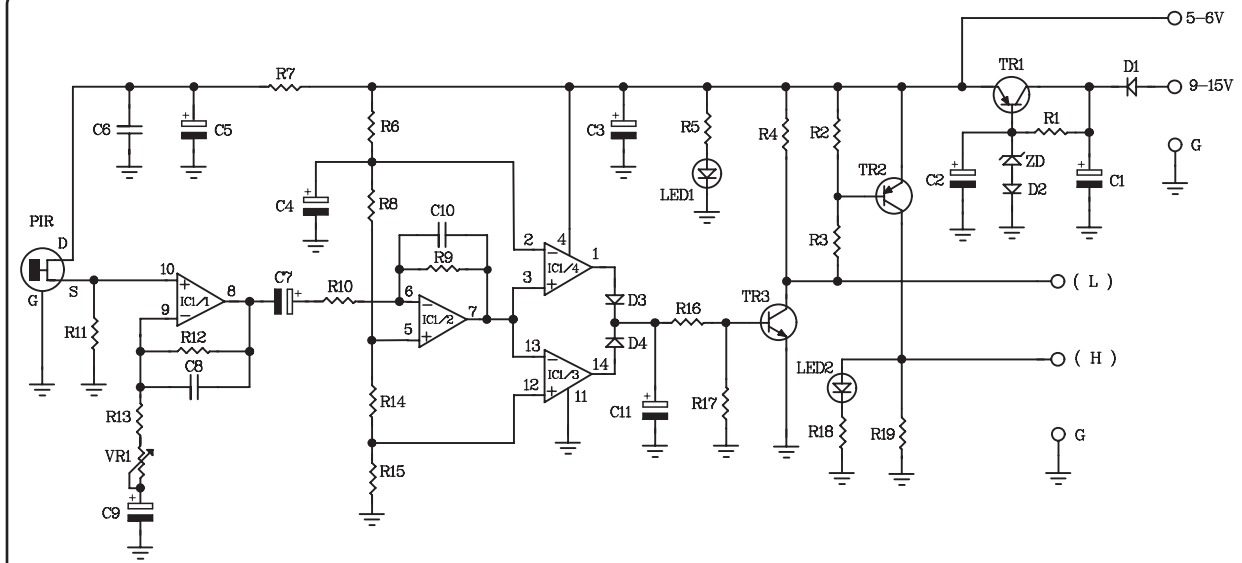
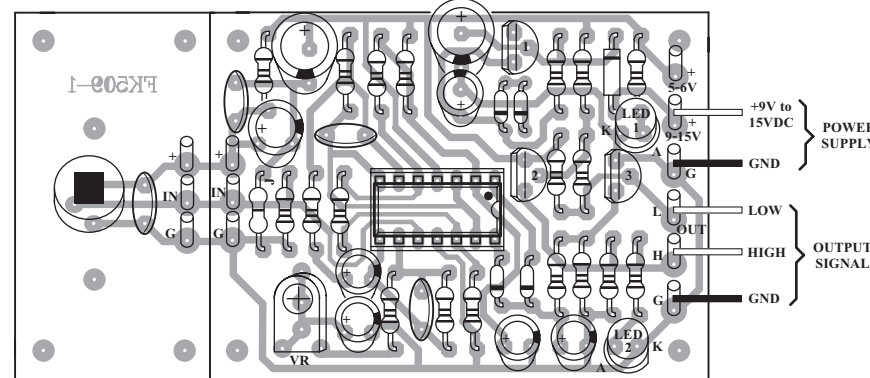


Figure 2. The passive infrared sensor circuit

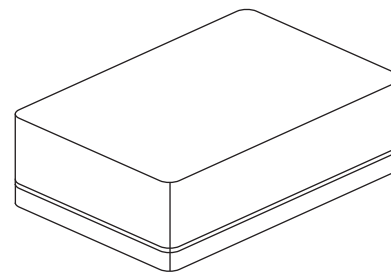
Figure 3. Connections

FK509-1



Remark:

- "H" point will has the voltage about 5 volts when the object passes the face of PIR.
- "L" point has the voltage about 5 volts but when the object passes the face of PIR, the voltage at this point is equal to 0 volt.



NOTE:

FUTURE BOX FB04 is suitable for this kit.

NEW KIT SET

CODE FK	DESCRIPTION	POWER
167	FIREFLY LIGHT (NIGHT ACTIVATE)	3VDC.
275	THREE TRAIN SOUNDS (IC DIGITAL)	3VDC.
276	OWL VOICE (IC DIGITAL)	3VDC.
326	DUAL STATION INTERCOM&DOOR BELL (WITH 2 SPEAKER)	6-12VDC.
436	UHF REMOTE CONTROL 1 CH.	TX. 9VDC. RX. 12VDC.
673	MINI POWER AMP 1+1W. STEREO	3-12VDC.