

**BODY TEMPERATURE  
CODE 935**

LEVEL 2

This circuit is measurement for measuring temperature of your body. It have 3 LEDs for showing status of your temperature. There is alarm sound when you have a rise in temperature more then 38°C.

**Technical specifications:**

- power supply : 9VDC.
- consumption : 38mA max.
- PCB dimensions : 3.01 x 1.28 inches.

**How to works:**

The circuit can be divided into three parts. The first part is regulator when supply the voltage 9VDC to this part, this voltage fed to pin IN of IC1 through D1 for down voltage to 5VDC. And then LED POWER is lighted on.

The second part is comparator circuit which consists IC2/1, IC2/2 and IC2/3. At pin negative of IC2/1 to IC2/3 are connected to resistor for set the comparator voltage. For pin positive of IC2/1 to IC2/3 are connected to IC3 when temperature is changed, IC3 will up or down voltage at pin positive. If pin positive of IC3 has the voltage less than 3.100 volts, LED1 GREEN is lighted on. But if there is the voltage from 3.101 to 3.106 volts, LED2 YELLOW is lighted on. In case of pin positive of IC3 has the voltage more than 3.106 volts, LED3 RED is lighted on and control the frequency generator.

The rest part is the frequency generator which consists IC2/4. When LED3 is lighted on, IC2/4 will start created the frequency and send the frequency to the base of TR1 for amplifying the frequency before send to loudspeaker.

**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. If the pins will not enter the holes with ease, use a small drill to slightly enlarge the opening. 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. Some components are particularly sensitive to heat ( ie: Transistors, IC's, diodes etc.) extra care must be taken to only apply the iron for as little time as possible, using a pair of pliers to grip the leads will help conduct heat away. Trim components leads with wire cutters to prevent excess lengths causing a short circuit. Now check that you really did mount them all the right way round!

**Testing:**

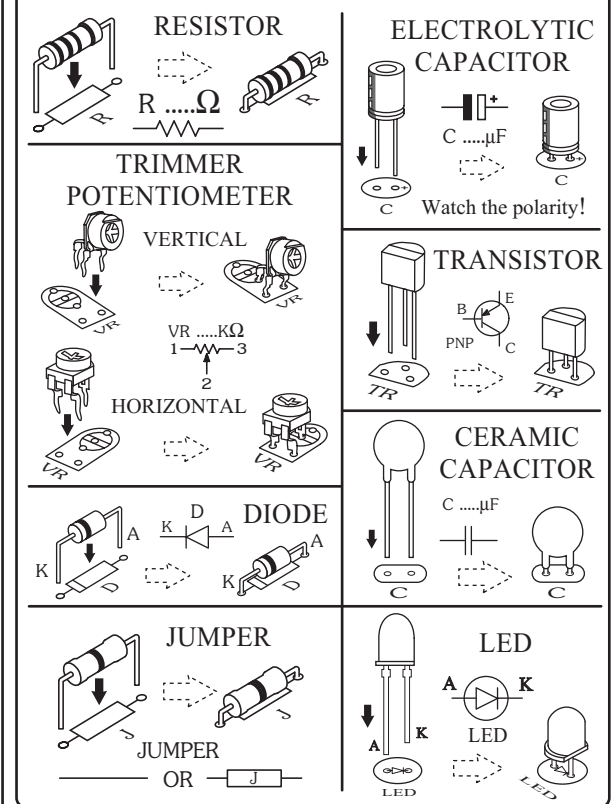
Connect the power supply 9VDC to the circuit. LED POWER is lighted on. Set the digital multimeter (it can be measuring the voltage to be millivoltage unit (X.XXX)) to a DC range. Measuring at "3.1" point

and adjust the vottage at VR1 untill reading the voltage to 3.100VDC. Measuring at "3.106" point and adjust the voltage at VR2 untill reading the voltage to 3.106VDC.

When you adjust the both voltage is completed, LED GREEN will be lighted on in normal temperature. Measuring the temperature sensor at your body suck as, armpits etc. If your body temperature is less than 37.5°C, LED GREEN is lighted on (normal body temperature = 36-37.5°C). But if your body temperature have from 37.5 to 38°C, LED YELLOW is lighted on (feeling very uncomfortable). In case of your body temperature is more than 38°C, LED RED is lighted on and there is alarm sound (sickness).

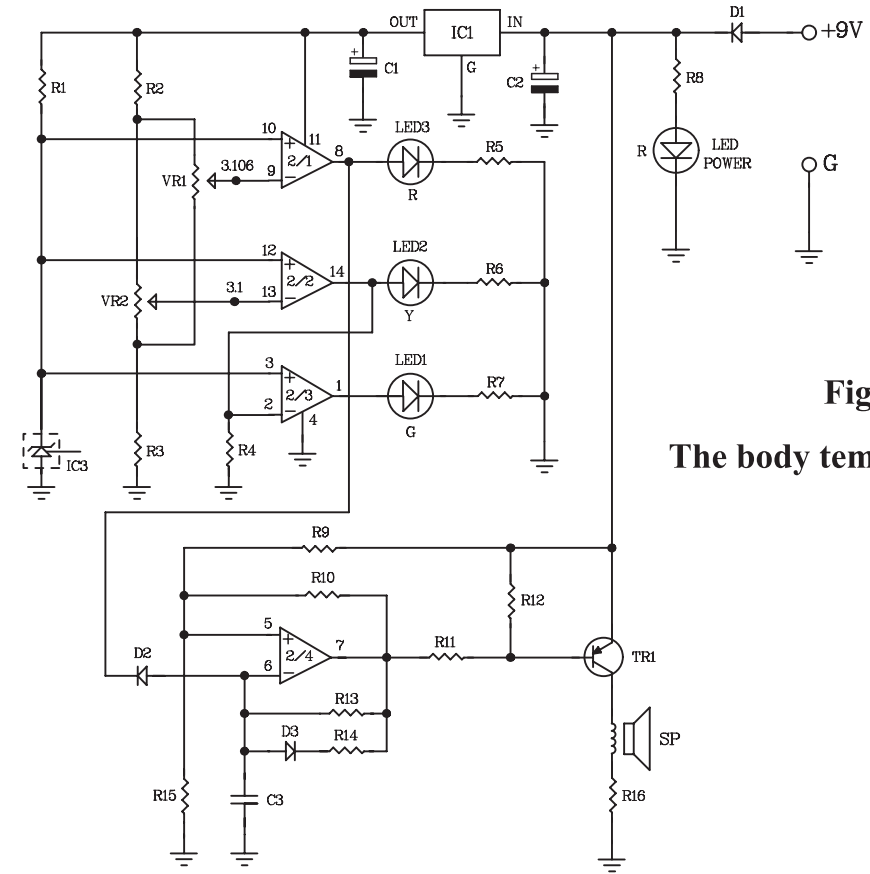
If you want to increase the long wire of temperature sensor, you can use the single-core lapped screen between PC-board and sensor not more then 30 cm.

**Figure 1. Installing the componants**

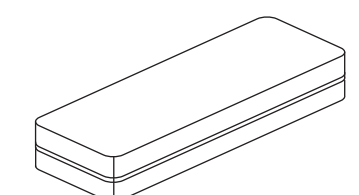
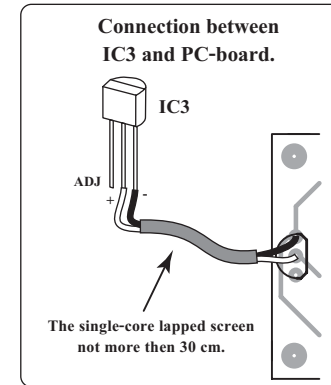
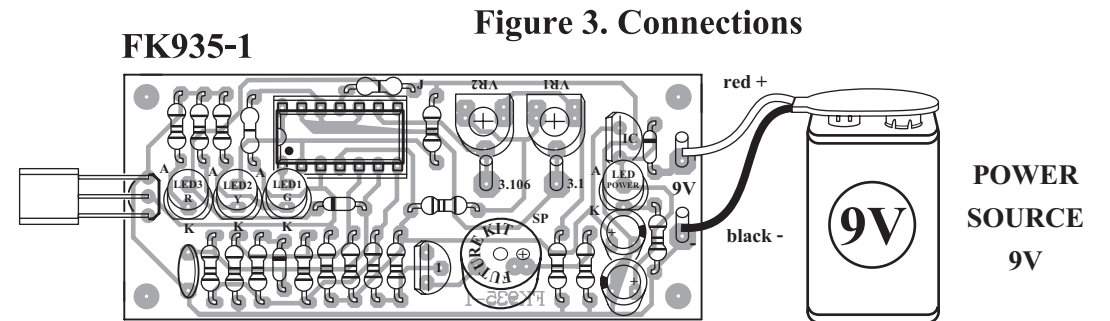


**Troubleshooting:**

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 body temperature circuit**



**NOTE:**  
FUTURE BOX FB02 is suitable for this kit.