

**DIGITAL AC VOLTMETER**  
CODE 925

LEVEL 2

This circuit is used to measure the AC voltage. Maximum input voltage : 500VAC.

**Technical specifications:**

- power supply : 7 to 15VDC.
- consumption : 120mA max. @ 12VDC.
- PCB dimensions : 2.61 x 2.70 inches. (big board)  
2.61 x 1.01 inches. (display board)

**How to works:**

At the heart of the circuit is IC1 at PC-board. IC1 are configured as measure and change the signal. At pin 36 is used for adjust the exact measurement of the voltage. That voltage at "IN" point is then half-wave rectified by D1 and filtered by electrolytic capacitors C1 and C2. The signal of IC1 at pin 38 is fed to the base of TR1 and TR2, causing TR1 and TR2 to producing the negative voltage. After the negative voltage is fed to IC1 at the pin 26. IC 7805 is configured as a steps down the input voltage to +5V for the circuit to operate from.

**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 and setting:**

Testing and setting the circuit, follow these steps.

1. Connect the power supply 7 to 15 volts through "+" point and "G" point on PC-board. Display is indicated the operating.
2. A multimeter set to range 250VAC or 1000VAC full scale is connected to the AC line voltage.
3. Connect to "IN" point and "G" point to the AC line

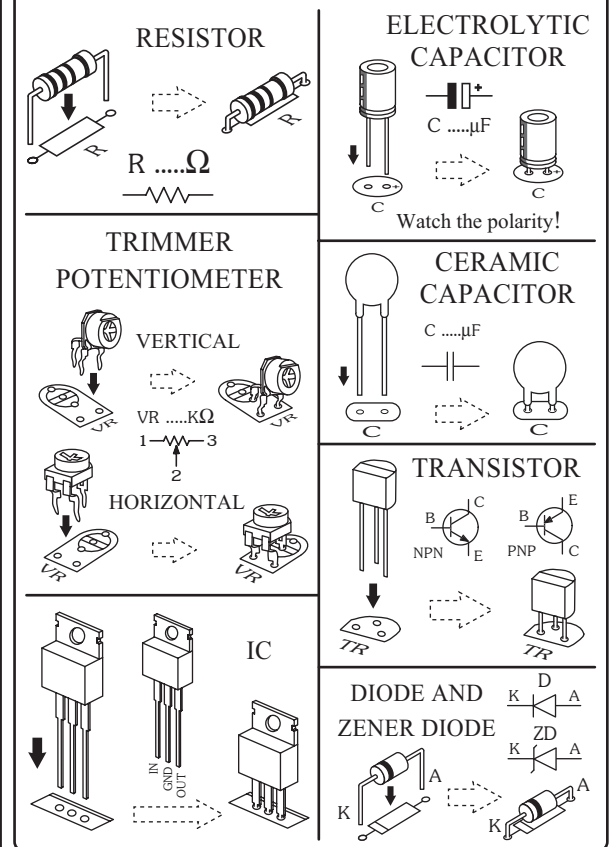
voltage. Adjust VR1K and VR100 until read the voltage to the same between multimeter and the circuit.

**NOTE:**

- For "DP" point, jumping 2 points between "DP" point of the display board and "DP" point of the circuit board.
- For "A" point and "B" point at the display board and the circuit board, mounting PC-board to see figure.
- If you want to measure over 1,000 volts, altering the value of capacitor 1/100V to 1/250V.

**CAUTION:** Be careful about shorting circuit and using plastic screw handle.

**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.

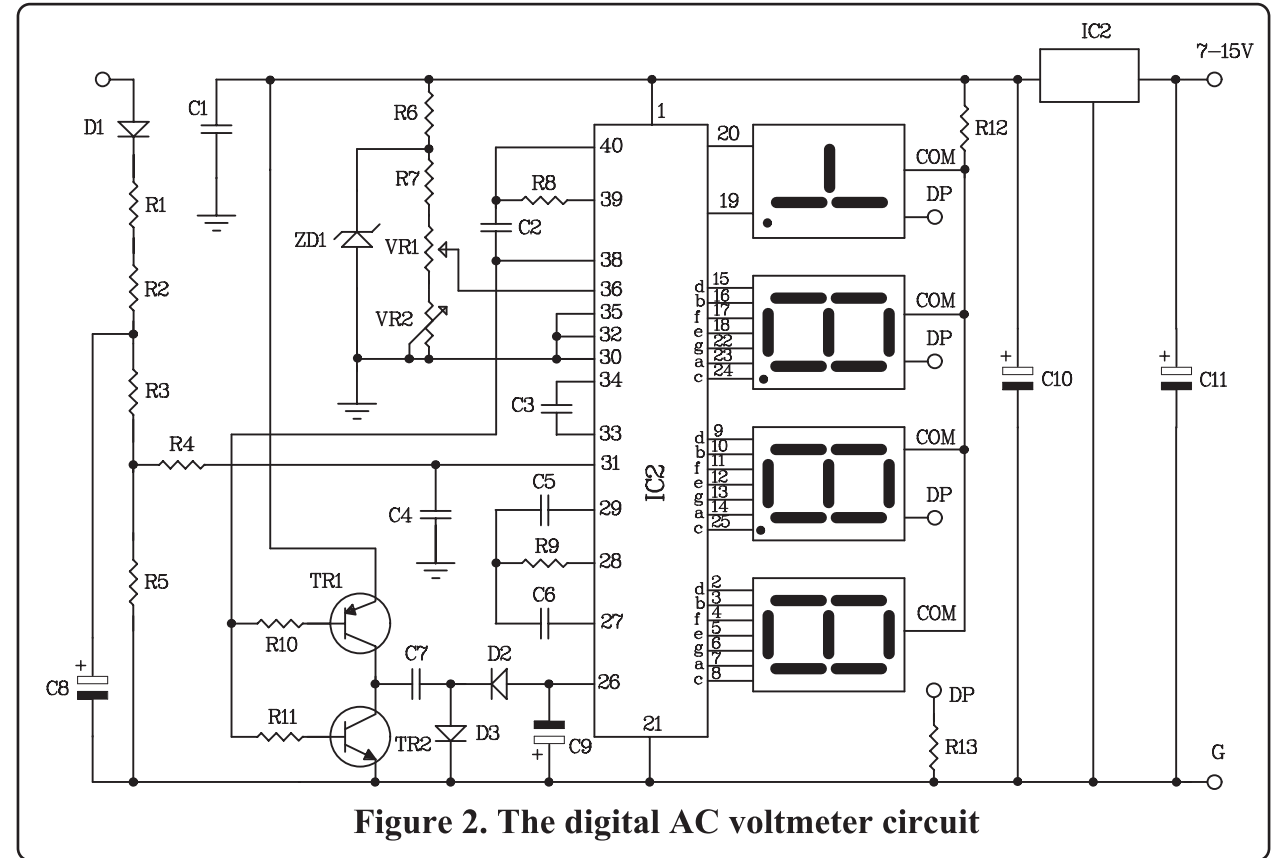


Figure 2. The digital AC voltmeter circuit

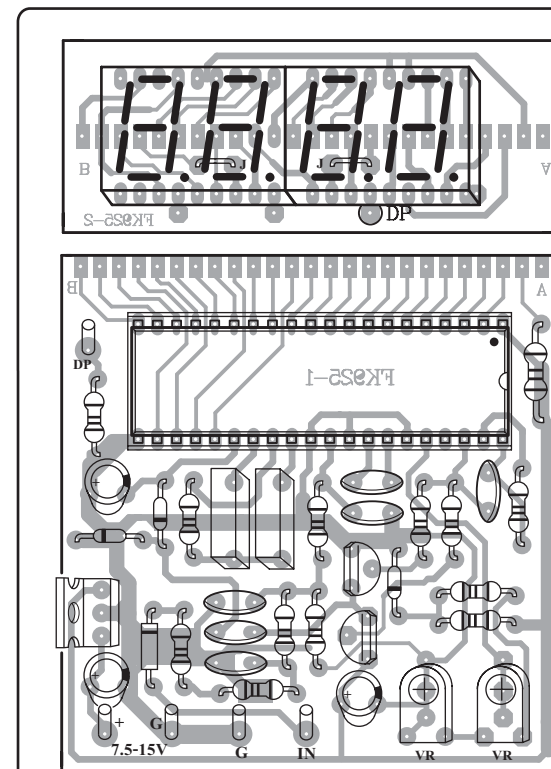
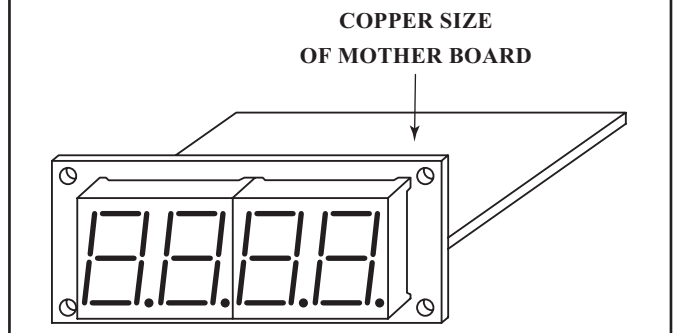
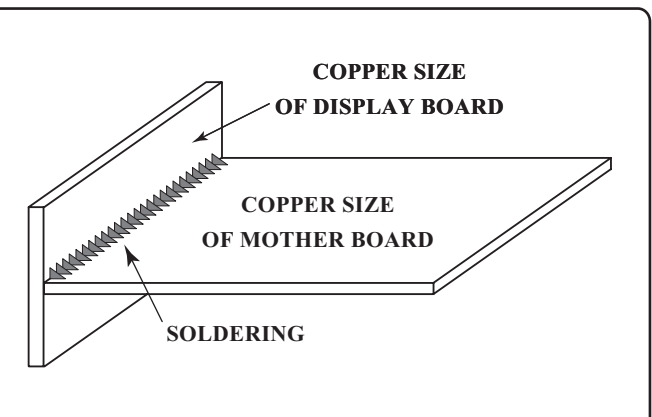


Figure 3. Connections FK925-1



**NOTE:** FUTURE BOX FB06 is suitable for this kit.