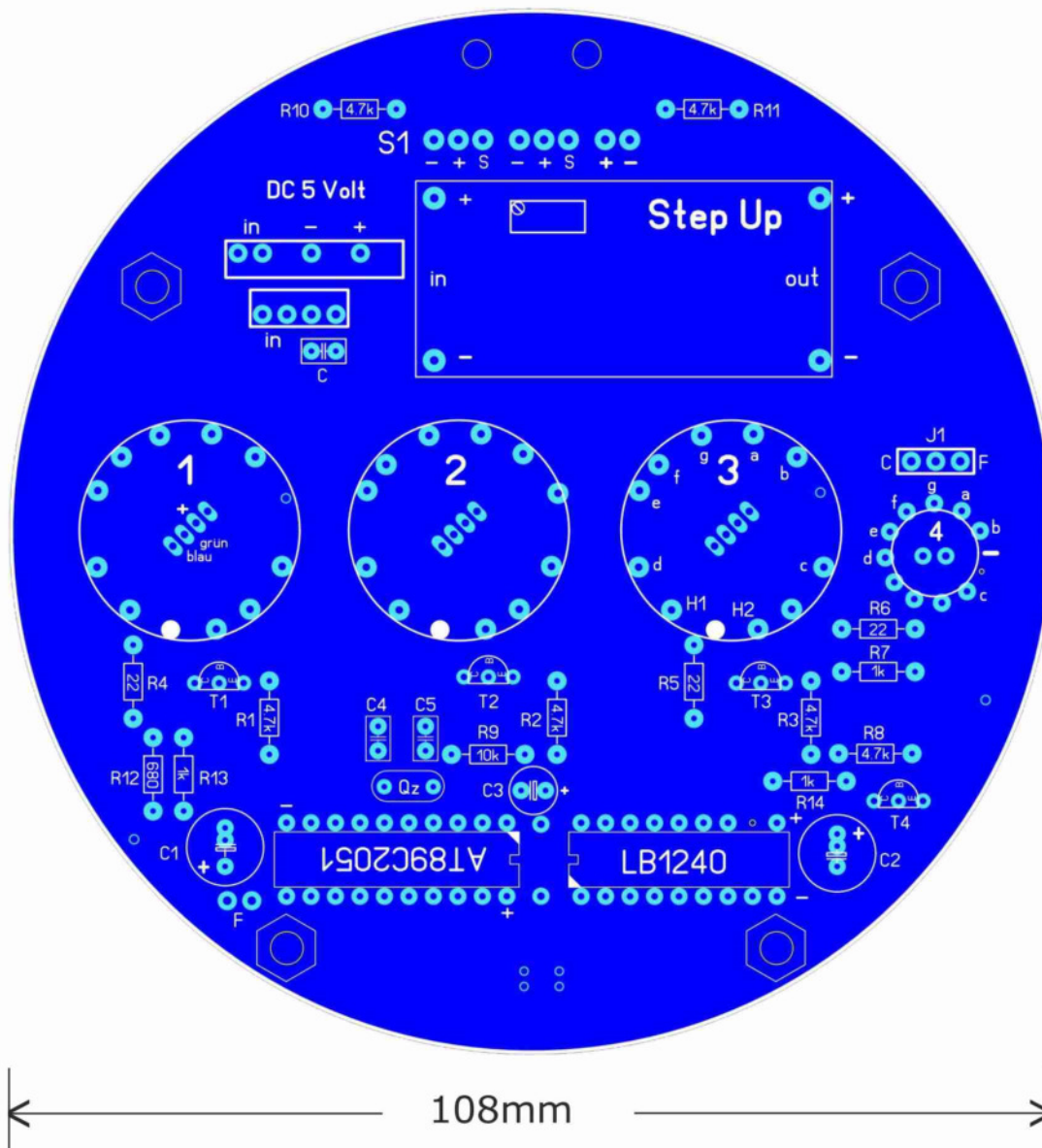


# Assembly instructions IV-11 Thermometer Glass Dome

This DIY kit is also for beginners, schools and training establishments.



The PCB, double-sided, lead-free solder mask and lettering on top.

For a better overview, the photos are in high resolution.

If you increased the PDF, you can for example see the colors of the resistors.

You need:

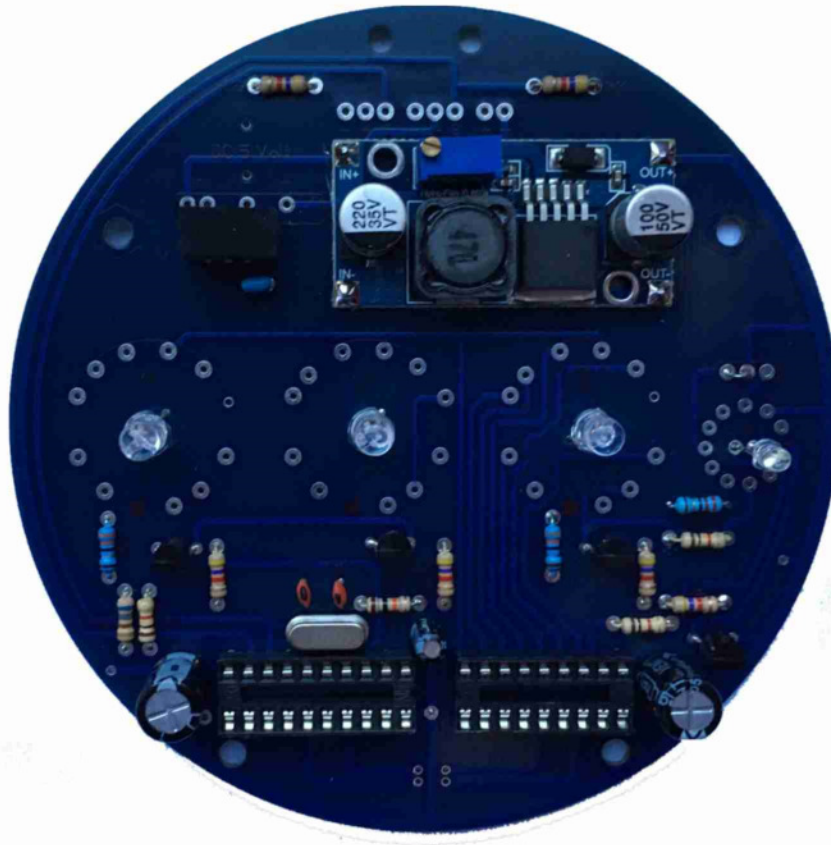
Grounded soldering irons 16-50 Watt ( 360 °C soldering station ) and wire cutter.

Some electronics knowledge and patience.

Now have fun and success!

# Assembly instructions IV-11 Thermometer Glass Dome

PCB without tubes and IC 's.



Zoom PDF and you will see details !!!

## 1.Solder bridge wire

- J1 right above the IV-6 tube

## 2.Solder resistors

- Resistors with the same values are together.

The resistors have color code, look on the PCB pictures and component list.

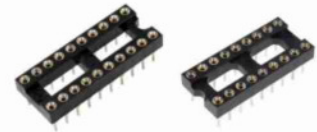


# Assembly instructions IV-11 Thermometer Glass Dome

## 3. IC-Socket

The socket 18 and 20 pin have a mark on one side.

Solder in right direction.



## 4. Quarz QZ .

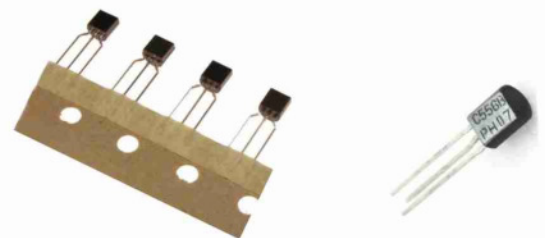
No mounting direction.



## 5. Transistores

Solder in right direction.

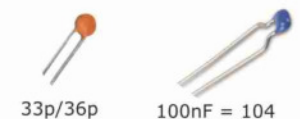
If necessary the wires must be adjusted.



## 6. Capacitors.

Capacitors C, C4 und C5 are bipolar, no mountig direction 100nF capacitor, if necessary the wires must be adjusted

C1, C2 and C3 look for polarity.  
The marl, strip is - minus.



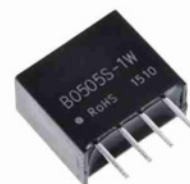
## 7. Solder DC - DC Step up.

For soldering use the cutted wires from the resistors.



## 8. DC - DC 5 Volt B0505S-1W.

There are 2 different typs.  
The small one comes forward.  
The rear solder points then remain free.  
Note, the labeling in the installation position is to the front.



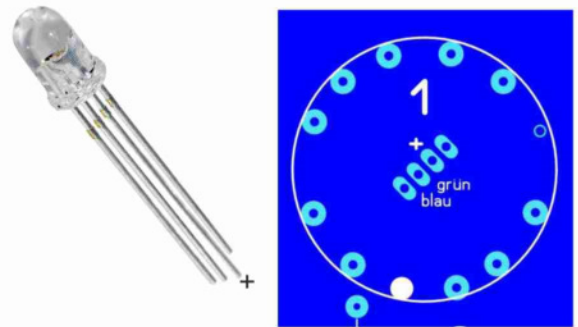
# Assembly instructions IV-11 Thermometer Glass Dome

## 9. Solder Led´s

The 4 pin 5mm LEDs have on position 2 a long wire. This one is + and the 2nd hole above.

Solder in distance 5 - 8mm to PCB.

Check the solder joints.



The 3mm Led has a long wire. This is +. Solder this to the right site.



## 10. Voltage check.

Solder USB cabel. + red - black or gray  
Connect USB power supply

● 4,7 - 5,2 Volt USB Voltage

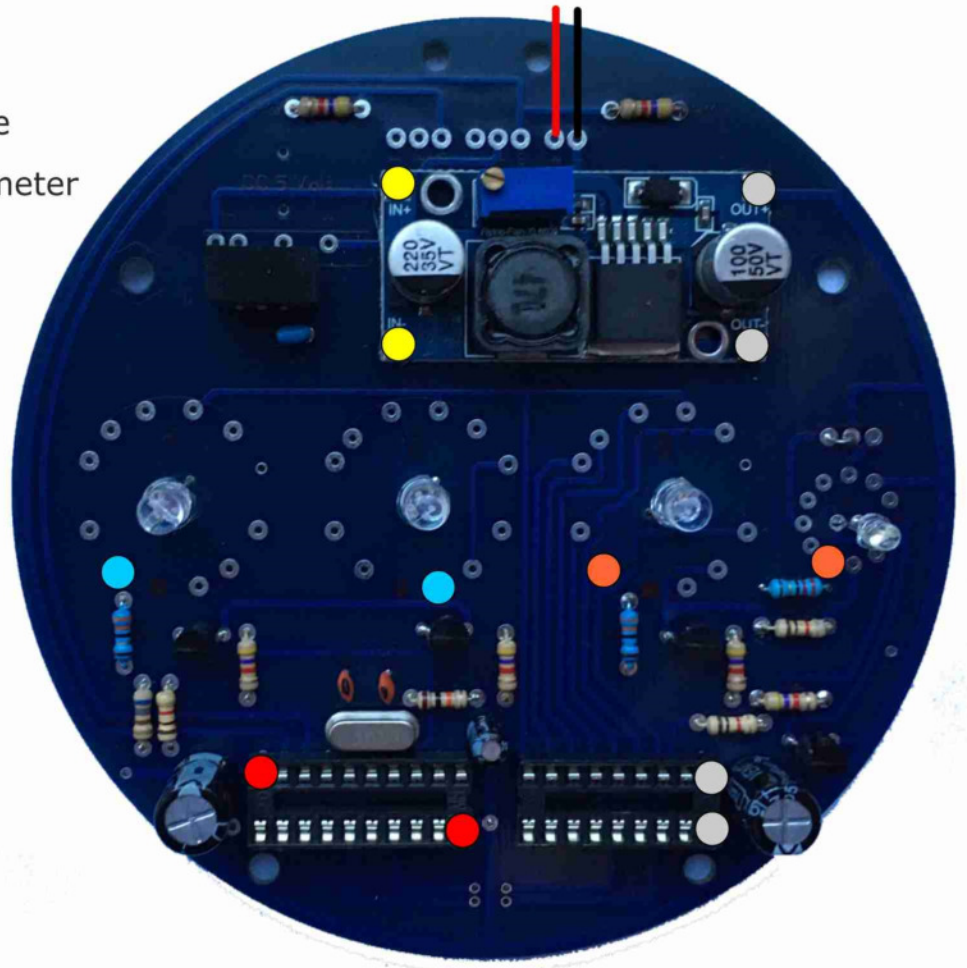
Adjust 36-40V blue potentiometer  
DC DC Step Up.  
( left turn, more voltage )

○ 36-40V on LB1240

● 4,8-5,5V on AT89C2051

● 4,7-5,2V  
Filament tube 1+2

● 4,7-5,2V  
Filament tube 3+4



# Assembly instructions IV-11 Thermometer Glass Dome

## 10. Led check.

Insert a wire bridge, gray left socket. Pin 2 and Pin 10

Strip approx. 6 cm from the wire. (for a bridge)

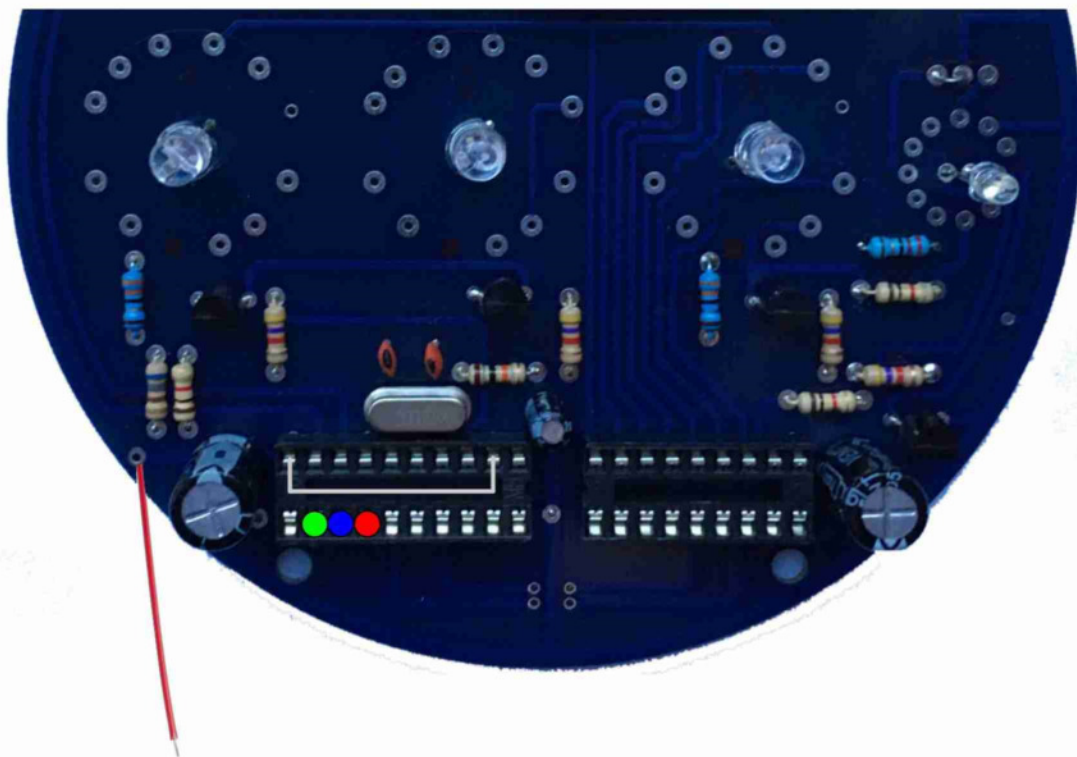
Solder wire for testing, to the left site capacitor.

Tap the pins on the left socket with the wire.

Pin 12, green dot = green Led

Pin 13, blue dot = blue Led

Pin 14, red dot = 3mm blue Led

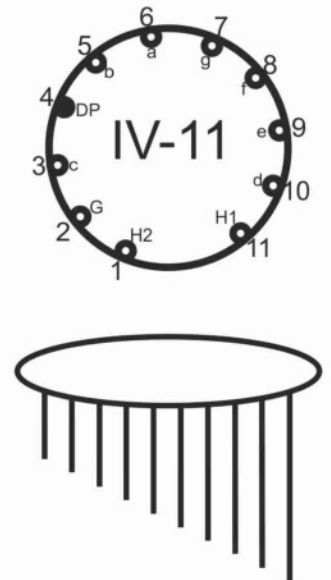


After testing remove the wire and bridge.

# Assembly instructions IV-11 Thermometer Glass Dome

## 11. Preparing the VFD tubes.

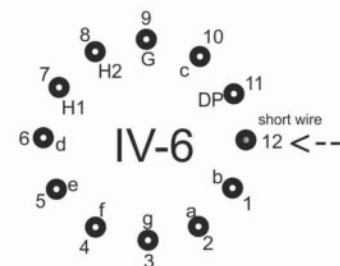
- Now the large IV-11 tubes, turn around and pull the wires straight using pliers. Keep the tube as in figure
- The distance between pin 1 and 11 is a greater distance than between other pins.
- From wire 2 trim about 1 mm, then wire 3 to 2mm, and wire 4 to 3mm ... and so on, the last wire does not need trimming (wire 11). (This makes it easier to install the tube in the holes of the PCB)
- Repeat above trimming to tubes 2,3 and 4.



## 12. Solder IV-6 and IV-1 tubes.

- same like IV-11 tubes

The short wire on the right side from the tube must not soldered. This is the mark and the position is the white mark on PCB.



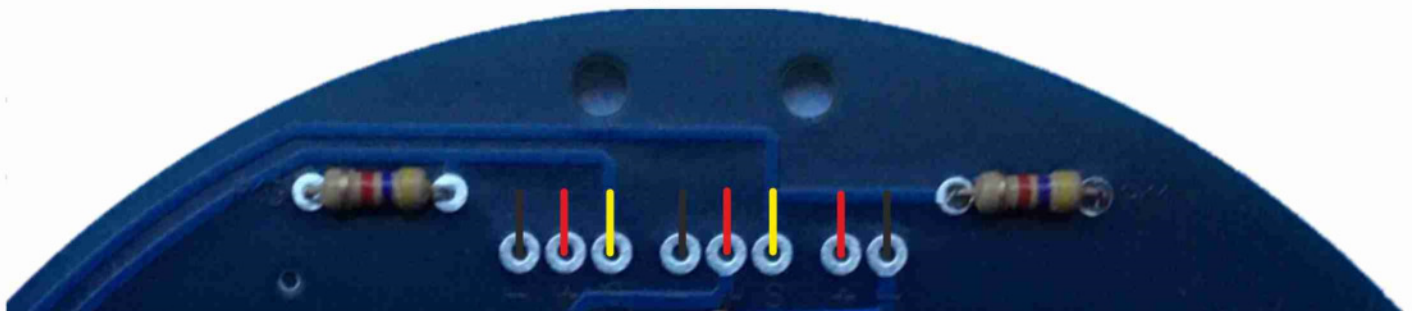
Bottom view, IV-6

# Assembly instructions IV-11 Thermometer Glass Dome

## 13. Cable, sensor and power supply

For the glas dome solder the wires from bottom.

Top view



Sensor 1    Sensor 2    USB cable

Sensor cable

+ = red

- = black

S = yellow

Extension cable sensor

+ = red

- = yellow

S = white

USB Cable

+ = red

- = black

Remove the cable jacket. The wires should be about 1.5 - 2.0 cm long.

Strip the wires to approx. 5mm, twist them together and solder.

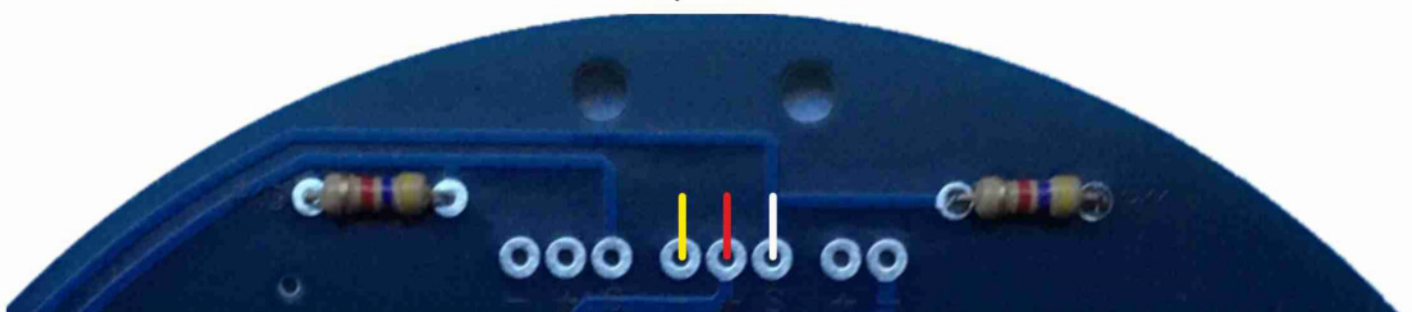
Now insert the wires, one after the other, in the correct order from below through the hole and solder.

Solder carefully and check for contact with a magnifying glass if necessary.

Now align the cables and use a cable tie, the closure of the cable tie should be below.

Sensor 2 with extension cable.

Top view



Sensor 1    Sensor 2    USB Kabel

The jack plug must be soldered to the sensor cable  
Don't forget the kap at first.



# Assembly instructions IV-11 Thermometer Glass Dome

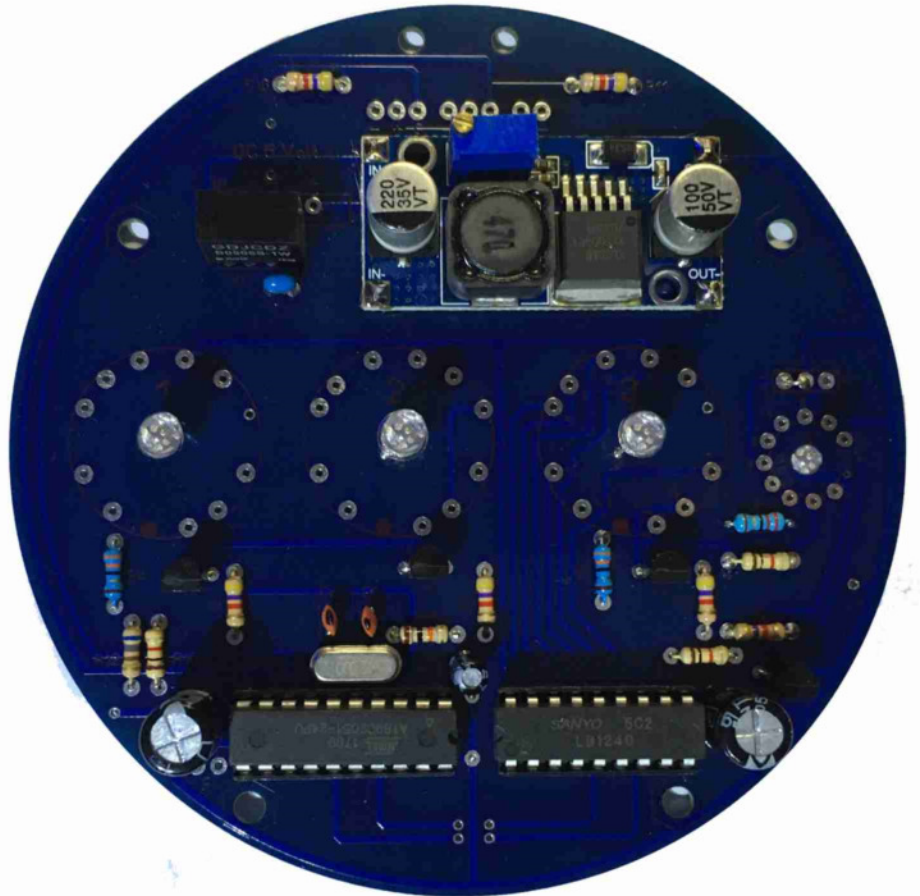
## 14. Insert Ic´s in the socket

Align the pins of the ICs

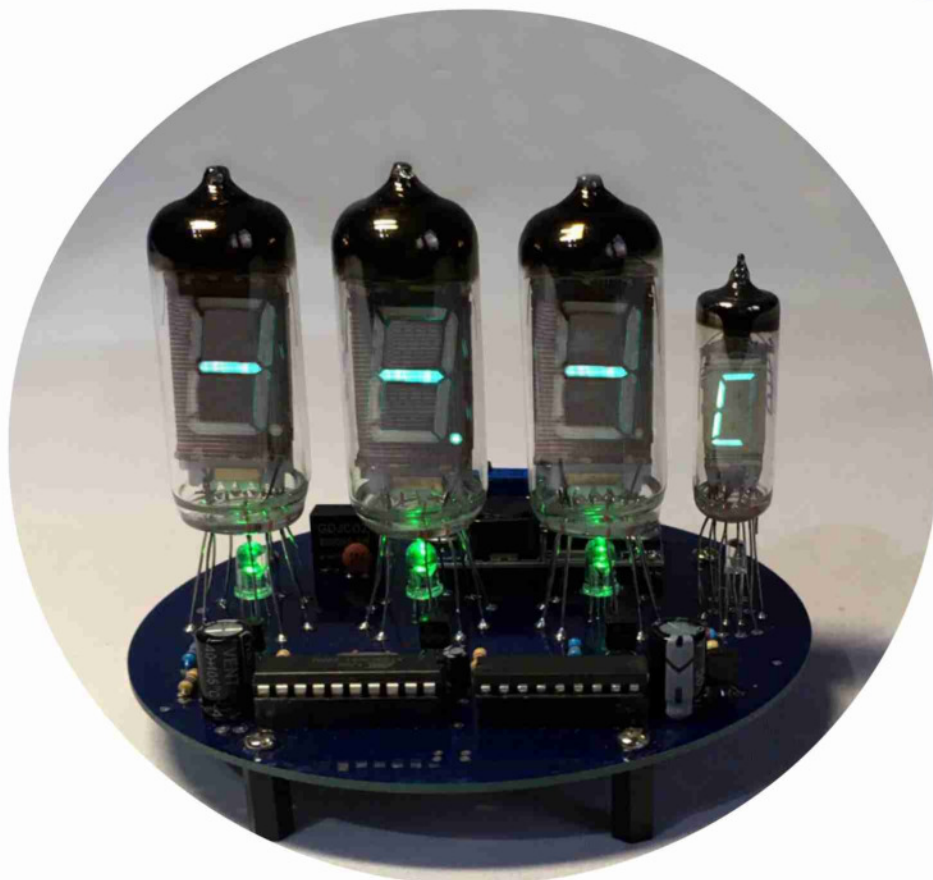
The LB1240 18 pin, mark to the left site.

The AT89C2051 20 pin, mark to the right site.

Incorrect installation will destroy the component



## 15. First start



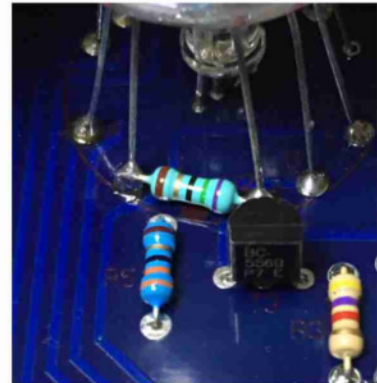


# Assembly instructions IV-11 Thermometer Glass Dome

After the power supply is plugged in, the initialization appears on the IV-11 tubes the middle line and the 3 leds light up. The letter C lights up on the smaller IV-6 tube. After a short time, the temperature is displayed. If the temperature is 0.0 or in the minus range the blue LED below the IV-6 tube lights up.

Annotation:  
The VFD tubes take a while to reach their full brightness. A few days.

If one or two IV-11 tubes shine brighter than the other, solder a resistor to these, heating, Filament 75 - 100 ohm. There are 2 resistors in the screw bag.



## 15. Housing glas dome.

The round PCB is designed for a 12 cm diameter glass dome.

Drill 4 holes for the board.  
Just put the PCB on the base plate align and drill 3.5mm - 4mm

For the cable drill 16 - 20mm.

It is easy to use a step drill

Use a saw for the long hole.

Who has the opportunity  
Mill out at the back and bottom.

