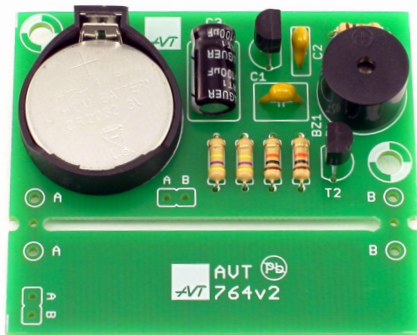


The basic application of the module is to work as a humidity sensor: rain or water indicator. For this purpose, electrodes in the form of a comb were made on a part of the PCB. This piece of printed circuit board can easily be broken off and attached with wires. Other electrodes may also be used, e.g. two pieces of wire or two plaques.

Specifications

- a signaling device reacting to shorting the electrodes of the sensor
- short-circuit indication - sound signal
- low power consumption in standby mode - less than $1\mu\text{A}$
- power supply 3V DC (CR2032 battery)

Functional description

The scheme of the humidity indicator module is shown in Figure 1. The device is a generator built using two transistors, with a positive feedback loop with a capacitor C1. A resistive sensor is included in the resistor R2 circuit. When the sensor is open, the generator does not work. Even low current in the sensor circuit will trigger the generator.

The generator load is the piezo buzzer. The operating frequency of the generator is determined mainly by the R2 resistor and the C1 capacitor and it is approximately 1 Hz.

The operating frequency depends on the resistance switched between the sensor electrodes. Therefore, the duration of the sound pulse depends on the value of R3, and the repetition time of pulses from the total resistance of R3 and the resistance switched between the electrodes of the sensor. Resistors R3 and R4 are also used to limit the current bases and transistor collectors.



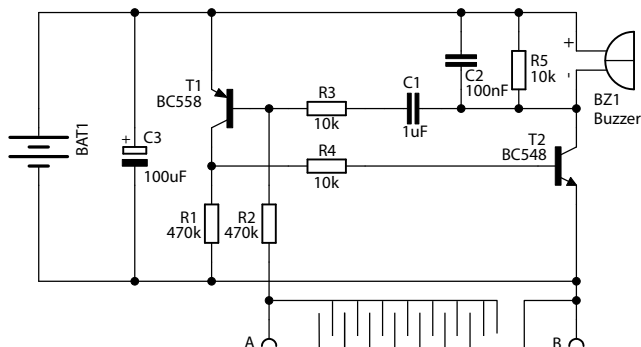


Figure 1. Schematic diagram

Assembly and test

The assembly should start with the smallest elements. At the end, the piezo siren and the battery basket should be mounted. After assembly, check the polarity of the components and the shortcut. The sensor module assembled correctly does not need to be adjusted and works after switching on the power supply.

When working in the function of a water detector, connecting the sensor to the PCB may not be beneficial, especially when there is a risk of flooding with water.



To avoid problems, the fragment of the sensor PCB can be easily broken off and connected via wires.

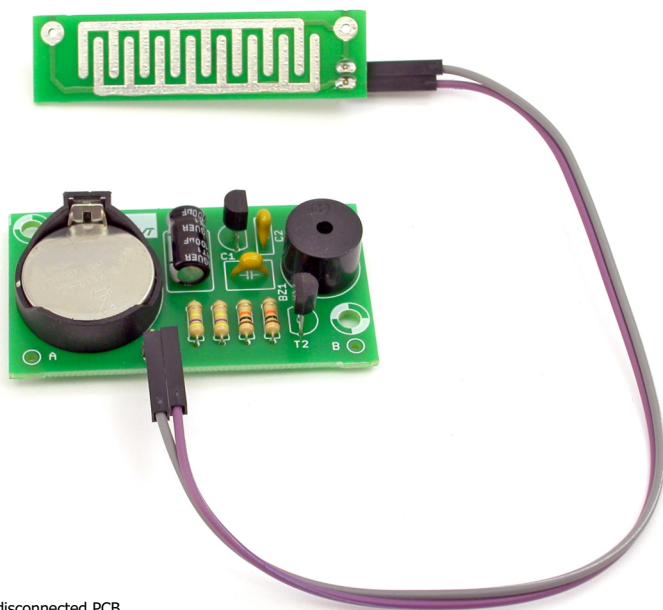


Figure 2. View of disconnected PCB



Start off by soldering the printed circuit elements in order from smallest to largest. The unit assembled flawlessly, using the supplied components will operate immediately after switching on the power supply.

Component list

Resistors:

R1, R2:.....470kΩ (yellow-violet-yellow-gold)
R3-R5:.....10kΩ (brown-black-orange-gold)

Capacitors:

C1:.....1μF (marked as 105)
C2:.....100nF (marked as 104)
C3:.....100μF !

Semiconductors:

T1:.....BC556 (BC556, BC557) !
T2:.....BC548 (BC546, BC547) !

Others:

BAT1:.....coin cell battery holder - 20mm
BZ1:.....3V piezo buzzer

Assembly option:

Goldpin connector 1×2pin 2pcs
Connection cable

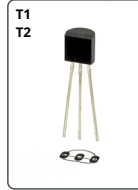


While assembling the components marked with an exclamation mark attention should be paid to their polarity. Symbols of the components on the PCB as well as photos of assembled sets may come in useful. To access high-resolution images, download the PDF file.

<http://bit.ly/2tLNF0R>

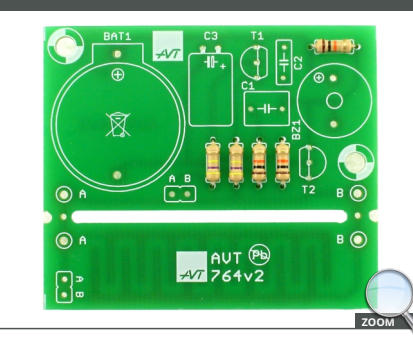


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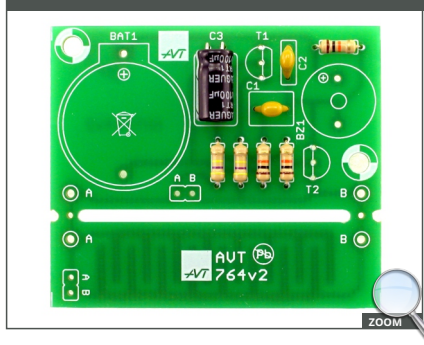


Assembly in 4 steps

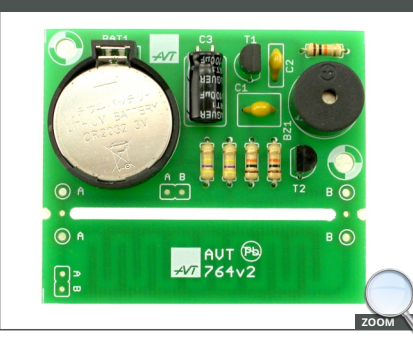
1 Solder resistors R1-R5



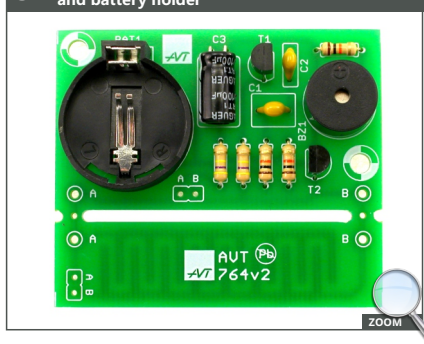
2 Solder capacitors C1-C3



4 Insert the battery into the holder



3 Solder transistors T1, T2, piezo BZ1 and battery holder



AVT 764

Humidity sensor, universal shortcut indicator

DIFFICULTY
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EDUCATIONAL
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Assembly and connection of the device not in accordance with the instructions, unauthorized modification of components and any structural modifications may cause damage to the device and endanger the person using it. In this case, the manufacturer and its authorized representatives shall not be liable for any damages arising directly or indirectly from the use or malfunction of the product.