theremini 4011

thereBackground:

THEREMICRO/ TEREMINI is the nickname for the simplest type of capacitive sensor, that in the past has been given the name “theremin” (originally “termenvox” - by his inventor Lev Sergeyevich Termen). The invention goes hand in hand with the pioneering years of radio - electronic amplification - the 1920s. In fact, it is a cast-away of the development in the field of radio - namely: the heterodyne (frequency mixing) principle and the observation of the capacitive properties of human body. With termenvox, this usually undesirable effects were put to good use.

Termenvox is in essence a capacitive sensor that functions by comparing the frequencies of two oscillators. One of the oscillators is fixed and the other is coupled with the antenna to its surroundings. A human moving their hand acts as a capacitor to ground and adds themself to the oscillating system. The closer the hand (or any part of the body) - the higher the total capacitance and thus the lower the oscillating frequency. The free-running frequency (no hand near the antenna) of this variable oscillator should ideally be the same as that of the fixed frequency oscillator - making the difference of these two frequencies equal to zero.

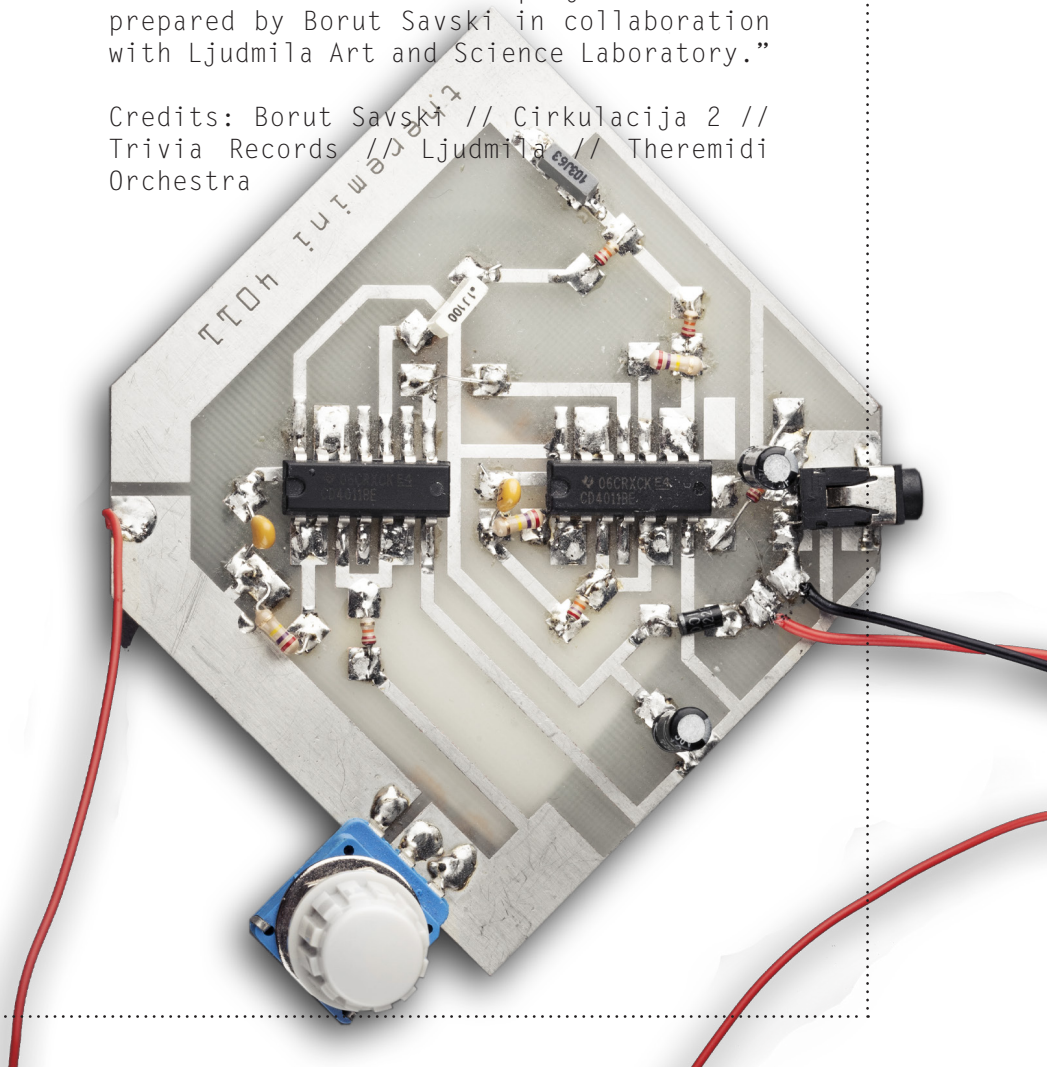
LINKS:
www.cirkulacija2.org/
www.3via.org/records/
www.ljudmila.org
wiki.ljudmila.org/Theremidi_Orchestra

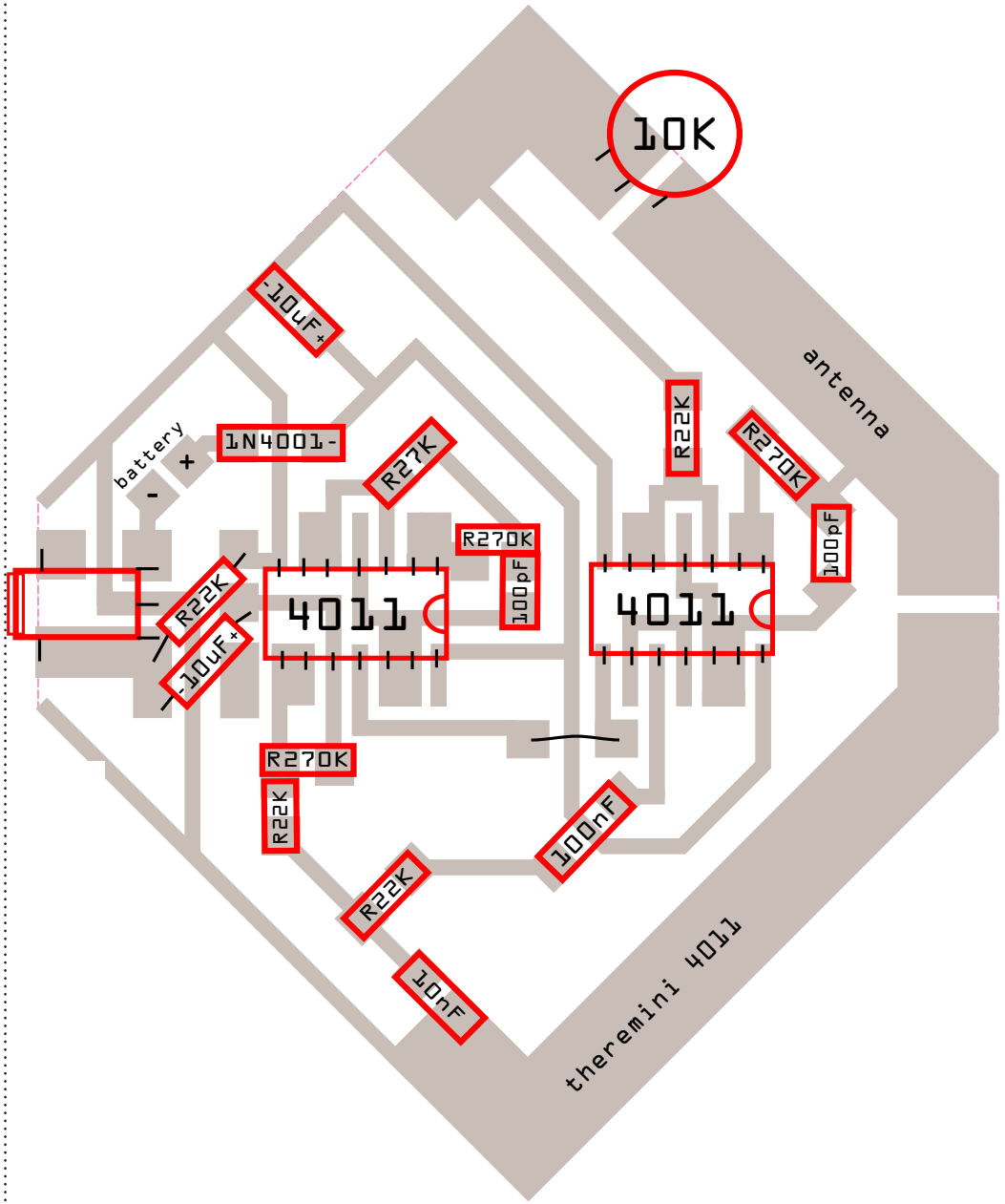
Theremidi Orchestra:

“theremini 4011 // Capacitive Proximity Sensor and Instrument

Teremini is the nickname for the simplest type of capacitive sensor that in the past has been given the name “theremin”, originally “termenvox”, by his inventor Lev Sergeyevich Termen. The kit you are holding in your hands is called Theremini 4011 is one of Trivia Records DIY projects and was prepared by Borut Savski in collaboration with Ljudmila Art and Science Laboratory.”

Credits: Borut Savski // Cirkulacija 2 // Trivia Records // Ljudmila // Theremidi Orchestra





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List of components:

4x 22 KΩ resistor // Lines: red-red-orange-gold
1x 27 KΩ resistor // Lines: red-violet-orange-gold
3x 270 KΩ resistor // Lines: red-violet-yellow-gold
2x 100 pF capacitor // Looks like little brown balls
1x 10 nF capacitor (15nF may be in kit)
1x 100 nF capacitor // has .1J100 written on it
2x 10 uF electrolytic capacitor // be careful you turn it the right way
1x 10 KΩ linear potentiometer // spining knob with 3 connectors
1x 1N4001 diode // black with silver line
2x 4011 - quad 2-input NAND gate integrated circuit // be careful you turn it the right way
1 x Female audio socket
1 x 9V Battery socket

1 x theremini 4011 PCB board - Made in Slovenia with love and poor man's SMD technology ♥

You will also need soldering iron, some tools, soldering station and 9vV battery. Use any kind of conductive material to make an unique antenna!

HINTS: Solder the chip first and be careful that you put it in the right position. Be aware of the half-circle on the chip - it marks the first leg. Some of the components are polarised (e.i. diode and electrolytic capacitor) - that means you need to solder them in a specific orientation - follow the pluses (+) and minuses (-) on the picture.