MicroBackground:

Instrument MicroNoise was made as a DIY project by Ljudmila - Art & Science Laboratory and Trivia Records (and related workshops by both co-producers). It was further developed for special needs of Theremidi Orchestra.
The circuit was perfected/simplified and brought to our attention by Marc Dusseiller (dusjagr labs). Some were built later in the vicinity of Cirkulacija 2 collective and the positive results made it perfect to develope further.

The integrated circuit is fully optimized and used entirely to make a two channel system with some open options for additional hacking. The circuit is built around quadruple 2-input logic gates of the NAND type (not AND; inverted AND). AND logic means that the 1st and the 2nd inputs have to be one to output 1 (1 = true = HIGH). The circuit has simplified oscillator sections due to use of Schmitt triggering of gates. This means that some positive feedback is applied to every gate to make the transitions from one state to another more defined (also refer to hysteresis* action). *Hysteresis is the dependence of a system not only on its current environment but also on its past environment.

LINKS:
www.dusseiller.ch/labs/
www.cirkulacija2.org/
www.3via.org/records/
www.ljudmila.org
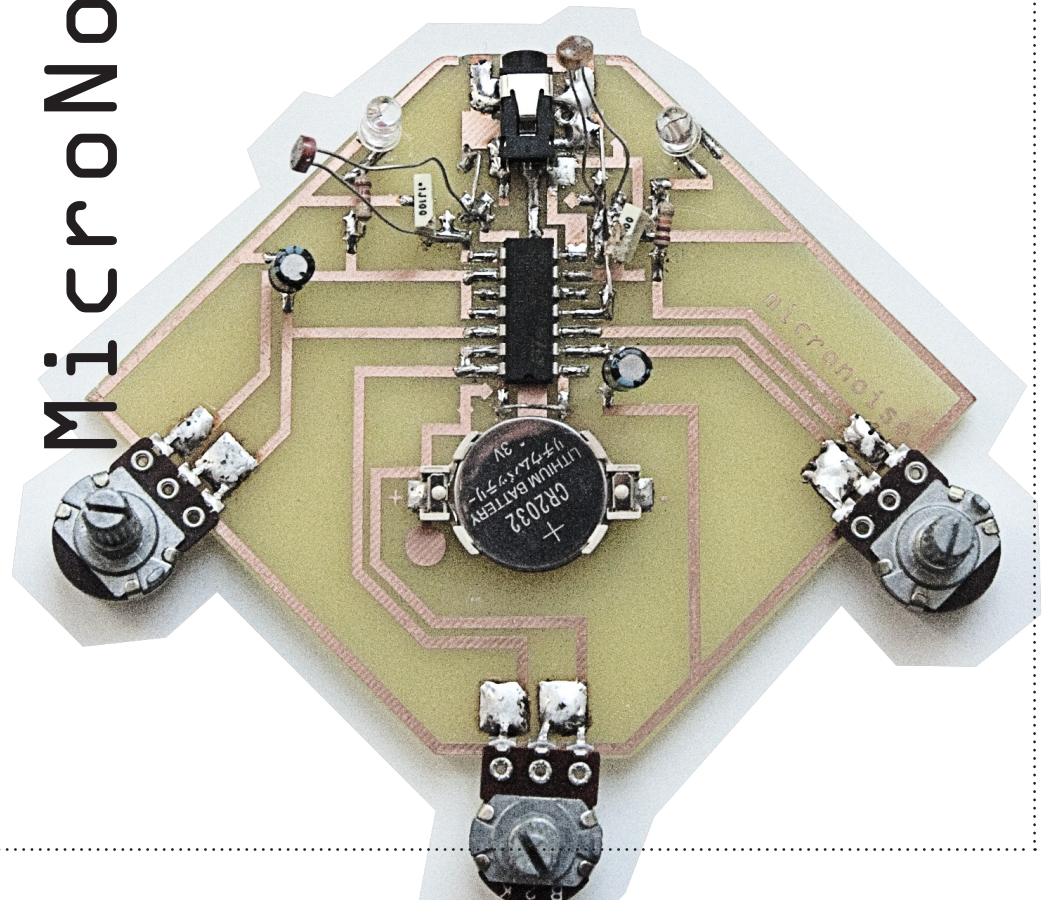wiki.ljudmila.org/Theremidi_Orchestra
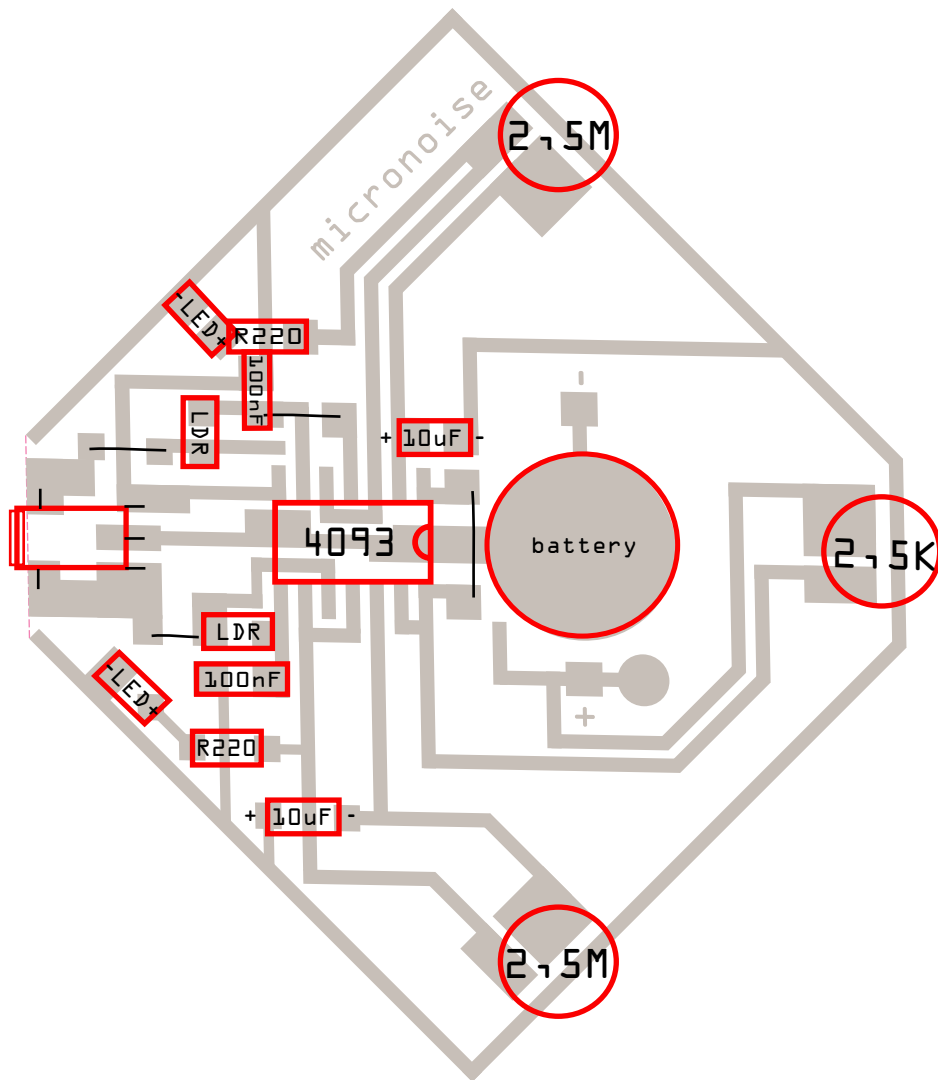
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MicroNoise 4093

Theremidi Orchestra:

"MicroNoise 4093 // Light Sensitive Para-Synth

MICRONOISE is the nickname for a simple type of double channel LFO (Low Frequency Oscillator) and light dependent audio frequency oscillator (OSC), whereby the latter is modulated by the former. That means that OSC is modulated by the LFO. It produces a two-channel audio output. And it's sensitive to light!"

Credits: dusjagr labs // Cirkulacija 2 // Trivia Records // Ljudmila // Theremidi Orchestra

micronoise

2,5M

LED+

R220

100nF

LDR

+ 10uF -

4093

battery

2,5K

LDR

100nF

LED+

R220

+ 10uF -

2,5M

MicroNoise 4093

List of components:

2 x resistor 220 Ω (can be anything from 100 Ω to 470 Ω) // Lines: red-red-orange-gold
1 x 2,5 KΩ linear potentiometer (can be 5KΩ / logarithmic) marking: 2K5...
2 x 2,5MΩ linear potentiometer (can be 1MΩ / logarithmic) marking: 2M5...
2 x 100 nF plastic capacitor (from 47 nF to 2 20 nF should be all right)
2 x 10 uF electrolytic capacitor (anything from 1uF to 10 uF should be ok)
2 x LED (Light Emitting Diode)
2 x LDR (light dependent resistors)
1 x HEF(CD) 4093 - NAND gate with Schmitt trigger for 3V up to 18V power supply (can be 74HC4093 up to 5V power supply voltage 3V battery)
1 x Battery holder
1 x Female Audio Jack 3,6mm

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

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You will also need soldering iron, some tools, soldering station and 3V (cr2032) battery.

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.