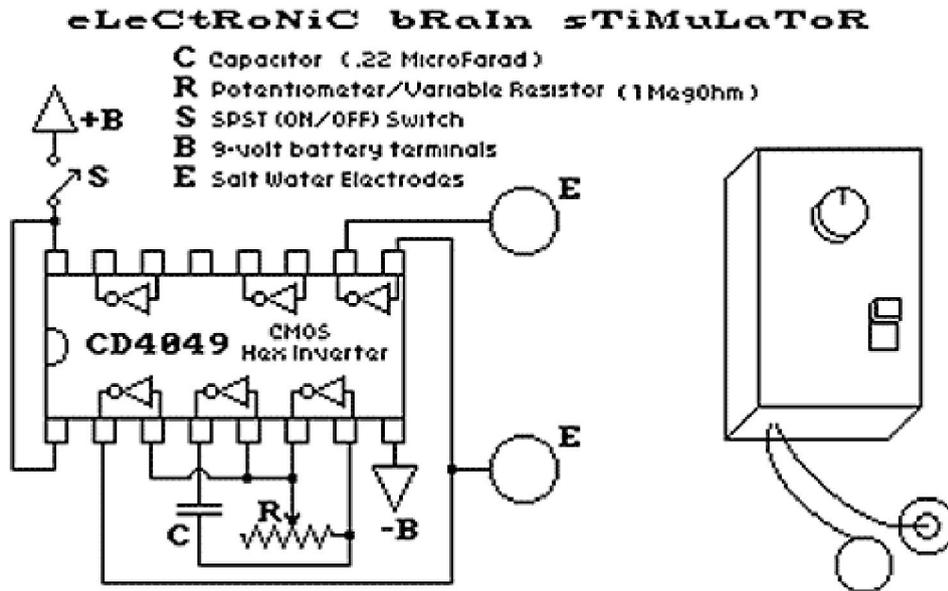


Electronic Brain Stimulator

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Designed by MK Ultra



Parts List

- | | |
|--------|---|
| C | 0.22 microfarad capacitor |
| R | 1 Megohm Potentiometer |
| CD4049 | CD4049 CMOS Hex Inverter Integrated Circuit |
| E | Salt Water Electrodes:
(these are made from insulated wire soldered to dimes. the dimes are then covered with foam earphone pads, the small "ear-bud" variety. Before use these are dipped in a salt-water solution to make them conductive, and fastened to the head with an elastic terrycloth tennis headband.) |
| B+,B- | 9-volt battery clip.
(positive & negative terminals, respectively) |
| S | SPST (single-pole single throw) on/off switch. |

Other Parts

- A circuit strip or printed circuit board
- solder and a soldering iron
- insulated thin-gauge copper wire
- 16-pin IC DIP socket (holds the integrated circuit)
- A Knob for the potentiometer
- A circuit or project box to house the unit.
- A 9-volt battery

This rudimentary unit produces biphasic square waves. The current reverses with each pulse cycle. This helps prevent an ion gradient from building up across the stimulated tissue. It is suggested that the unit NOT be used for longer than 20-40 minutes at a session. NEVER use bare metal electrodes against the skin - these can cause electrolysis burns.

Varying the electrode placement yields different effects. The "standard" electrode placement is at the mastoid process, the flat, bony area behind the ears. Alternative electrode sites include the temples near the outside corners of the eyes (this placement best for phosphene/visual pattern induction), or one electrode at the center of the forehead and another at the back of the head near the base of skull/top of neck. The electrodes may be placed anywhere on the body if one wishes to experiment with somatosensory stimulation.

Varying the operating frequency (by adjusting the tuning knob) produces the most striking variety of effects. The texture, brightness and kinetics of the visual patterns changes remarkably within the 1-50 cycles per second range. Somewhere above 30-60 cycles per second, visual effects cease. Brainwave entrainment also occurs at the appropriate settings:

Delta Waves:	.5-3	cycles per second	
Theta Waves:	3-7	cycles per second	(try 4.5)
Alpha Waves:	7-14	cycles per second	(try 9.5)
Beta Waves:	14+	cycles per second	(try 14)

The unit can be tuned and calibrated with a frequency meter, but frequency may drift with operating temperature and battery strength.

Results will vary based on operating conditions, battery strength, electrode placement, electrode saturation, type of electrode-wetting solution used individual personal factors and sensitivities, set and setting.

An intensity control may be added by putting a 100K potentiometer in series with one of the electrode wires.

A trimpot or limiting resistor (about 1K-2.2K ohms) may be put in series with the frequency-setting potentiometer to adjust the maximum frequency. The unit will stop oscillating if the resistance of R is set below about 1K ohm. This can result in a continuous direct current signal at the electrodes, which is unsuitable for extended exposure.

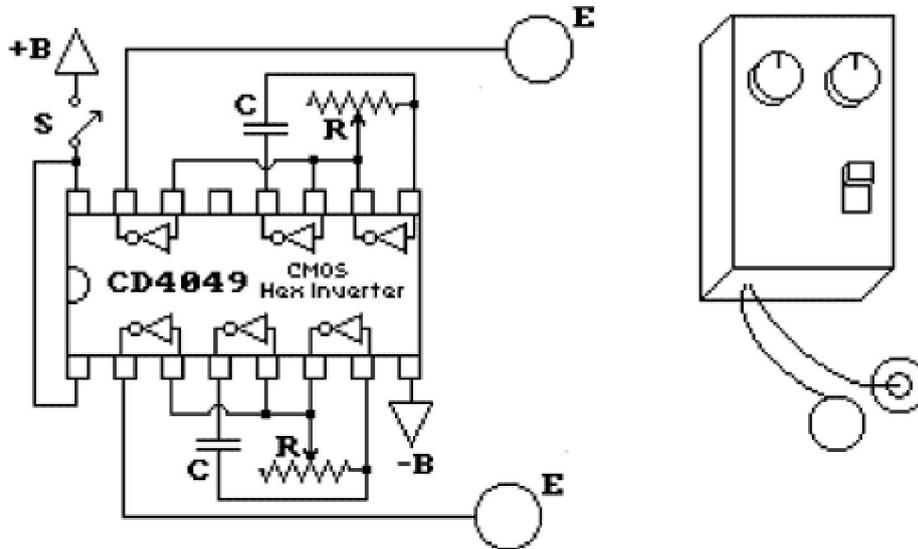
A light-emitting diode (LED) can be placed in the circuit to provide a visual frequency cue. This unit is also capable of driving a pair of LED-goggles for experimenting with flicker-entrainment.

Alternative Circuits

Important Note! The CD4069 chip shown here is actually incorrect. The data sheet for the CD4069 shows the inverters pointing the OPPOSITE direction. I have not personally built this circuit, but it should work if you erase the drawn outline of the DIP package and follow the remaining schematic diagram instead. Warning #2: the chip data sheet doesn't recommend leaving the unused inverters unconnected/floating. Probably the best solution would be to tie the inputs to Vcc and outputs to ground.

Beat Frequency Electronic Brain Stimulator

- C Capacitor (.22 MicroFarad)
- R Potentiometer/Variable Resistor (1 MegOhm or 100 K ohm)
- S SPST (On/OFF) Switch
- B 9-volt battery terminals
- E Salt Water Electrodes



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