"Million Ohms" Microcontroller Board

Jack Christensen
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Amuse your friends and confuse your enemies! Keep the uninitiated away from your desk and out of your lab!

- Great conversation piece or gag gift
- Pre-programmed AVR microcontroller (ATtiny85)
- Arduino-compatible, hackable open-source hardware and software
- Can be programmed with an ICSP programmer, either from the Arduino integrated development environment or from WinAVR.

Pressing the SELECT button will turn the circuit on and cause the red LEDs to flash. To change the flashing speed and pattern, press SELECT again. Hold SELECT down to turn off the circuit, or it will automatically turn itself off after five minutes.

Assembly Tips

1. Even though this is a simple kit that a beginner should be able to complete with little difficulty, these instructions are general in nature and assume that you know how to solder and can determine where to place the components on the board. If you need to learn how to solder, there are several good tutorials on the web. Check out SparkFun's tutorial (*tinyurl.com/3f4dpxj*), and Adafruit Industries also has several good links as well (*tinyurl.com/3ooo2fj*).
2. Be sure to observe polarity when installing the following components.
    a. LEDs may have a longer lead denoting positive (+) and/or a flat on the side denoting negative (-).
    b. The microcontroller may have a notch on one end, and/or a small dot near pin 1.
    c. Connect the red wire (positive) from the battery holder to the terminal block screw nearest the bottom of the board (+) and the black wire (negative) to the (-) screw. Observe polarity when installing batteries as marked on the battery holder.
3. Positioning of the terminal block and battery holder is flexible depending on your intended use and installation of the board. To allow the board to stand at a slight angle on a desk, etc., put the terminal block and the battery holder on the back side of the circuit board. Use a one-inch square of double-stick foam tape to fasten the battery holder about 0.2 inch (4mm or 5mm) from the bottom of the board.
4. There are four small holes in the circuit board near the terminal block. These can be used as strain reliefs for the battery wires by threading the wires through the holes (see pictures at *tinyurl.com/MohmsPics*). Where you locate the battery holder, whether you use the strain relief holes, and how long you leave the wires from the battery holder all depend on your personal preference and installation.

5. A reset button and an ICSP header are not normally required and are not included in the kit. These are left to be added by the user if desired, e.g. if they intend to reprogram the unit with an ICSP programmer.

Links of Interest

Hackable open-source!

Hardware: *tinyurl.com/MohmsHW*

Software: *tinyurl.com/MohmsSW*

Assembly pictures: *tinyurl.com/MohmsPics*

Parts List

C1	2.2uF ceramic
IC1*	Atmel microcontroller, ATtiny85V-10PU (or ATtiny45V-10PU)
ICSP	Programming header, 0.1" pitch, 2x3 (Optional, not included in kit)
LED1-4*	5mm LED
R1-4	100Ω, 1/8W or 1/6W, ±5% (brown, black, brown, gold)
R5	10KΩ, 1/8W or 1/6W, ±5% (brown, black, orange, gold)
R6	1MΩ, 2W, ±5% (brown, black, green, gold)
SELECT	6mm tactile button switch
RESET	6mm tactile button switch (Optional, not included in kit)
TB1	Terminal block, 3.5mm pitch, two position
	Battery holder, 2xAA with cover
	Double-stick foam tape
	Printed circuit board

*Observe polarity when installing.

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Parts Placement