

# 1, 2, 3, Metal Detector

by **TXTCLA55** on March 13, 2009

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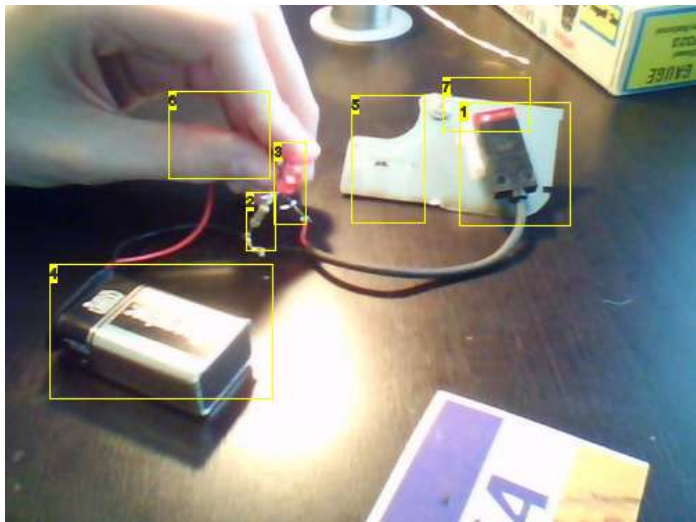
### Intro: 1, 2, 3, Metal Detector

In this Instructable I will show you how to create a very simple, low cost metal detector. This is not the type of large scale metal detector you can use on the beach however; this can be used for finding where two studs in your walls meet (aka locating the nails), a lost screw, screws, or just simply fooling around testing different objects around the house.

**Materials**  
-a 9 volt battery  
-9 volt battery connector  
-a LED (any color)  
-a switch  
- a resistor 100 ohm +/-5% color bands are: brown, black, brown (needed for the 1.5v LED)  
-and of course a metal sensor. I got mine from SunX.com, but you can try a number of different robot part sites or electronic components suppliers. try and get one with a LED built in that way you can see if the metal detector works when it touches metal.

OK lets get started!

Also don't forget to visit the site!  
<http://www.wix.com/SimpleCircuits/Simple-Circuits>



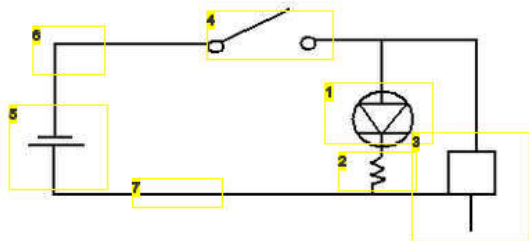
#### Image Notes

1. A SunX Metal Sensor (not sure if they still make them).
2. resistor
3. LED and resistor are in parallel
4. 9 volt battery
5. scrap metal
6. fingers blocking switch
7. tiny LED in sensor shows whether or not what it is touching is metal. If LED is on the object is or contains metal. If LED is off the object does not or contains no metal.

### step 1: The circuit

The circuit is very simple. For assembly please follow the provided circuit diagram. Remember that the LED and metal Detector are polarity sensitive. I ask you strongly to test each component before soldering them all together.

## Circuit Diagram For The Metal Detector



#### Image Notes

<http://www.instructables.com/id/1-2-3-Metal-Detector/>

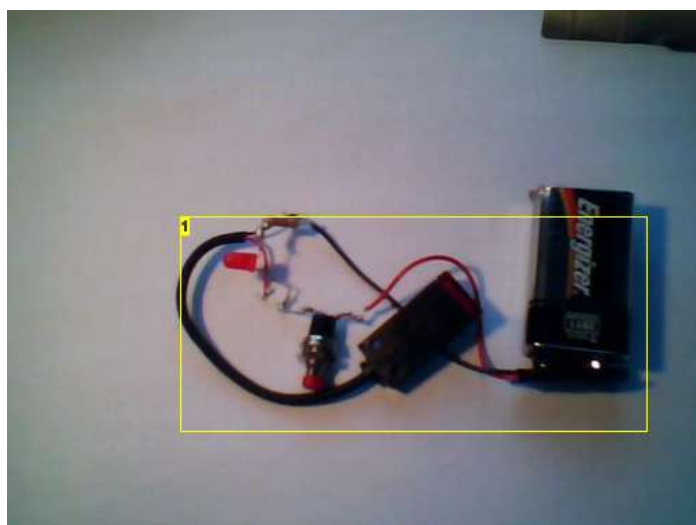
1. 1.5 volt LED color of your choice.
2. 100 ohm +/-5% color bands are brown, black, brown, gold
3. Metal Detector, some might come with 3 wires, test all of them and narrow it down to two. (positive and negative) sometimes they are just red and black, once you find your two, just leave the third alone, do not use it!
4. switch
5. 9 volts
6. positive wire
7. negative wire

## step 2: Test

flick the switch or hold it down, depending on what type you used. hold the detector to some metal and if the light inside lights up, its metal!

the LED is simply to let you know there is power going to the metal detector.

A video of the metal detector in action



### Image Notes

1. the complete metal detector.

## Comments

14 comments [Add Comment](#)



**jonman24680** says:

What metal sensor did you use? I can't seem to find one online.

Nov 24, 2009. 5:58 AM [REPLY](#)



**TXTCLA55** says:

Its a SunX Metal sensor. Here is the company web page [sunx.jp/en/products/particular/gd/index.html](http://sunx.jp/en/products/particular/gd/index.html) with all the information on the sensor. I acquired mine through a store in my area So I am not sure how you would go about ordering them (cannot find buying options on the web page) unless you were to buy it off ebay or something. Sorry I cannot help you more but i hope this helps you.

Nov 24, 2009. 11:59 AM [REPLY](#)



**skydive102** says:  
i like the beeping :)

Jun 26, 2009. 3:23 AM [REPLY](#)



**Blaik** says:  
this may be useful in checking a car body for damage (would not light up when over a surface that has bondo fill) might be something to see how well it works for that purpose.

May 14, 2009. 12:53 PM [REPLY](#)



**robot117** says:  
cool idea!!!!!!

Apr 27, 2009. 2:42 PM [REPLY](#)



**NachoMahma** says:  
. I don't know if it will work with your sensor, but your battery should last longer if you put the LED/resistor in series with the sensor.

Mar 14, 2009. 9:26 AM [REPLY](#)



**TXTCLA55** says:  
Series? I put them in parallel because this way the sensor get the power it requires (9 volts) and the LED (with resistor) would get its required voltage as well. If in series the LED would use some power and leave not enough left to power the sensor, hence they have to put in parallel in order to share the amount of current and function properly.

Mar 14, 2009. 8:10 PM [REPLY](#)



**NachoMahma** says:  
. As I said, it may not work. ;) Since there will be a voltage drop across the sensor, you can use a smaller resistor (maybe none), which will mean less voltage drop across the LED/resistor. . Worth a try. I don't see how it could harm the sensor - if I'm wrong it just won't work.

Mar 15, 2009. 11:11 PM [REPLY](#)



**TXTCLA55** says:  
oh, no its the LED the battery can and will harm if the resistor isnt there. i am sure you know what happens if you try to hook up a 1.5v LED to a 9 volt battery right?

Mar 16, 2009. 11:30 AM [REPLY](#)



**NachoMahma** says:  
. But the sensor has to have some resistance or it couldn't get power. If it has enough resistance, you won't need the resistor. Use a pot to experiment. The worst you can do is burn up a cheap LED.

Mar 16, 2009. 5:54 PM [REPLY](#)



**TXTCLA55** says:  
ok, hold on...I think were both taking about the same thing, but in a different way.....you'r last post is exactly what I was trying to tell you.

Mar 16, 2009. 7:51 PM [REPLY](#)



**NachoMahma** says:  
. I don't think we are, but it's not important enough to worry about. It works and, after the new wears off, it probably won't be used for very long at a time.

Mar 17, 2009. 4:54 AM [REPLY](#)



**TXTCLA55** says:  
true

Mar 17, 2009. 10:21 AM [REPLY](#)



**Rs master** says:  
oh yea this is better then i thought it would be

Mar 15, 2009. 8:12 AM [REPLY](#)