

Magnet-Operated Light Stand

Assembly Instructions:

1. Place both AAA batteries inside the battery holder. **Make sure the + and - ends are lined up properly!**
2. Place the battery holder and circuit together in the 3D printed box with the LED on top. **Make sure the two legs of the LED don't touch each other!**
3. Place the lid on top of the box. Ensure the LED lies directly underneath the slot in the middle of the lid.
4. Place the acrylic stand into the slot on the lid.
5. Place the magnet in the slot on the magnet case.
6. Place the box on top of the magnet case so that the magnet is underneath the reed switch. You may need to move the magnet around inside the slot until the LED lights up.
7. Place the light stand in a dark room to see the logos light up!

You can also use the batteries, circuit and magnets to make your own light stands, torches and more. Feel free to be creative and make your own light designs!



List of Parts

2x AAA batteries



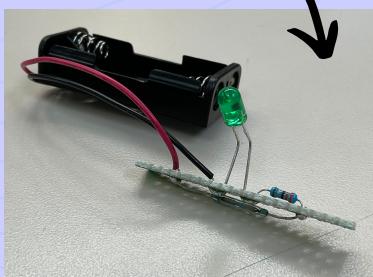
Box and lid



Magnet case and magnet



Battery holder and circuit



Acrylic stand with logos



Assembled parts



Complete stand!



The Circuit Explained

List of Symbols:

- Wire: connection between parts to allow current to flow between them
- Resistor: reduces the amount of electricity moving in the circuit
- Reed switch: closes when a magnet is close by to allow current to flow
- LED: light emitting diode — lights up when current is flowing in the circuit
- Batteries: provide the circuit with electricity to power the LED



Complete Circuit:



If the switch is open, the circuit is “open” and current cannot flow, so the LED stays off. When a magnet is held near the reed switch, the switch closes and creates a “closed circuit.” This allows current to flow and light up the LED!

Reed Switches Explained

How does it work?

A reed switch has two tiny blades that are close to, but not quite touching, each other. If a magnet gets close to the blades, they move towards each other until they're touching, creating a closed connection that can allow current to flow across the blades.



Where can it be used?

Ever notice how your laptop turns off if the screen gets close enough to the keyboard? That could be accomplished with a reed switch! Different versions of reed switches can *close* or *open* if a magnet is nearby. The reed switch we used *closes* if a magnet is nearby (this is called a Normally Open switch), but you can also get reed switches that *open* if a magnet is nearby (a Normally Closed switch) — this can then turn off an LED, or a laptop screen, instead of on!

Reed switches can also be used to make burglar alarms. If a door is open and contains a magnet that moves close to, or far away from, a reed switch, this could close a circuit and trigger a loud sound to play, alerting you that someone's broken into your house.

Basically, reed switches can be used as a sensor to detect whether something containing a magnet is close by or not. The specific applications are endless!