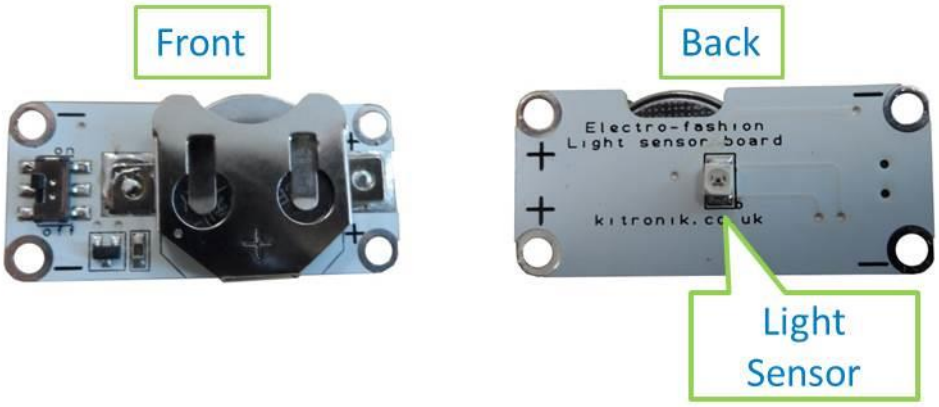
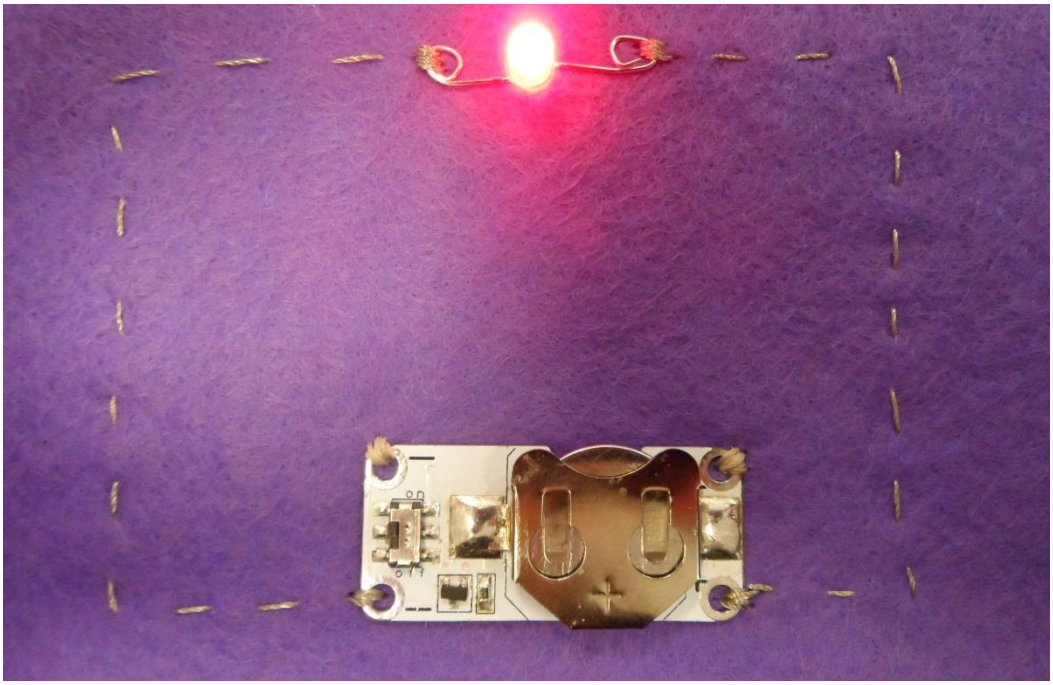
Using your Light Sensor Board with an LED

Overview

This is a brief tutorial explaining how to connect your light sensor board to an LED using conductive thread. The Light Sensor Board acts as a switch that turns on when it gets dark. The sensor is a small white phototransistor located on the reverse side of the board.





You will need:

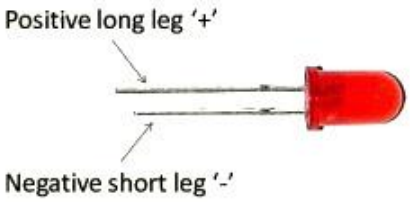
- An Electro-Fashion light Sensor
- Some conductive thread
- An LED
- A pair of scissors
- A needle

Before you start

To recreate this circuit, **two** pieces of conductive thread are used. One is used to connect the positive connection on the battery holder, to the positive leg on each LED used. The second piece of thread is used to connect the negative connection on the battery holder, to the negative leg on each LED used. The positive and negative pieces of thread **must not** touch each other.

Step 1 – Identifying the LED legs

Any LEDs that are used with the sensor board will only work if they are connected the correct way around. It is very easy to determine the positive leg (anode) and negative leg (cathode).



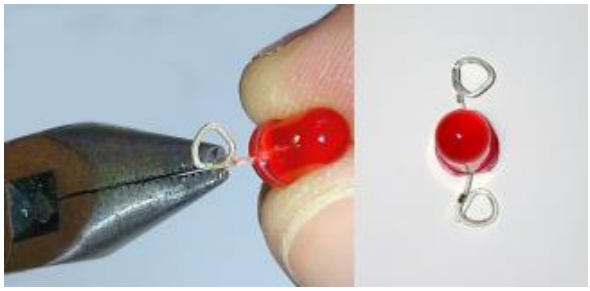
Leg length

The easiest way to identify the positive and negative leg is by the length of the legs (see diagram left). The long leg is the positive '+' and the short leg is the negative '-'.

Flat edge

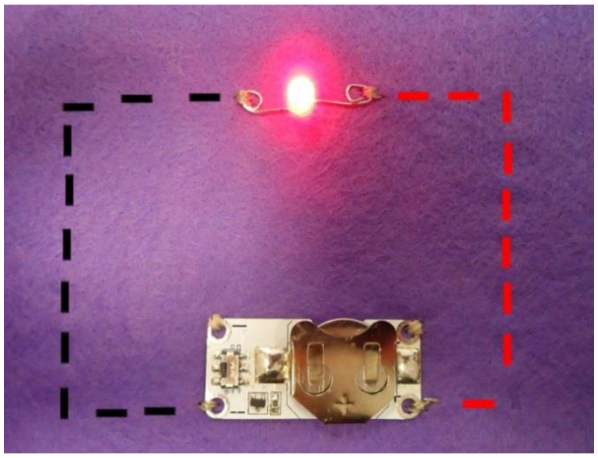
The other way of identifying the negative '-' leg is by the flat edge on the LED (see diagram left). This can be very useful if you have formed your leg into eyelets.

Step 2 - Forming the LED legs into 'Eyelets'



To make the LEDs easier to stitch into position the legs can be formed into 'eyelets'. This can be achieved easily by forming the legs of the LED with a pair of long nose pliers.
The reason for creating the 'eyelets' is to ensure the thread can be securely attached the LED, without the possibility of it being easily dislodged.

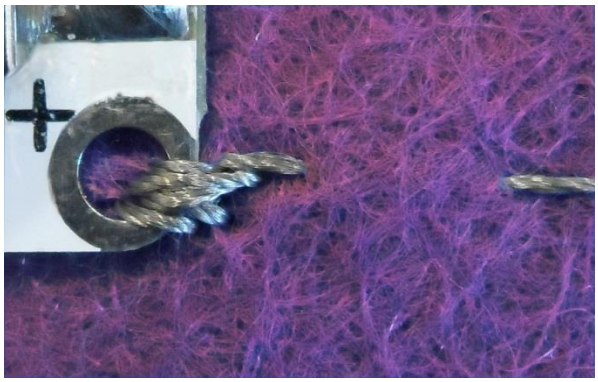
Step 3 – Sewing the components down



Making the circuit

Using the first piece of conductive thread connect the positive hole in the board to the positive leg of the LED. Using a second piece of conductive thread connect the negative side of the board to the negative leg of the LED. Take care that the two threads do not touch.

Sew the remaining holes in the board to the fabric for stability. These do not form part of the circuit.

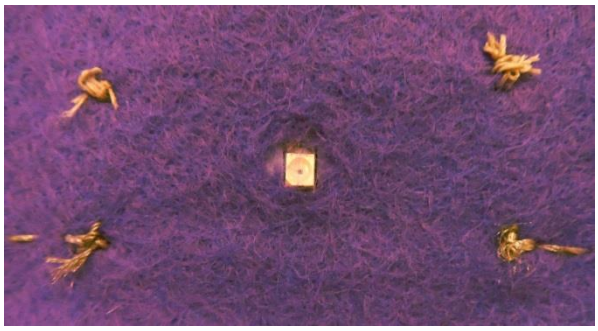


Stitched connections

It is important to create tight and secure connections at the point where the thread attaches to the battery holder and LEDs. The thread must be attached tightly to these items, so that a good electrical connection is established.

Each joint should be stitched through a number of times, each time it should be pulled tight, to ensure this is the case.

Step 4 – Making a hole for the light sensor



With the board sewn securely down, feel where the phototransistor is and cut a small rectangular hole for it to stick out through, this is best done with a pair of scissors. Make sure the whole surface of the phototransistor is exposed.

Now when the power switch is in the ‘on’ position and the sensor board is placed a dark location the LEDs connected to the board will come on.