

# Identifying Senses and Grounds

The scratchboard can have 4 additional inputs, shown as sockets A, B, C and D on the board. These can be connected using the wires with two crocodile clips and a jack plug. One of these clips is the Sense and the other is the Ground. For some applications it is useful to know which one is the Sense and which one is the Ground.

This document provides more information about them and page 2 gives a method of identifying the Ground and Sense. Once identified mark the Ground clips with black tape, and the Sense clips with red tape.

## The Science Bit

The Scratch board gives you four inputs, referred to as A, B, C and D, each as a 2.5mm Jack Socket:

There are two clips connected to each input. One of these clips is the Sense, and the other is the Ground.

Each of the Grounds is the same – zero volts, and they are all connected together inside the Scratch Board.

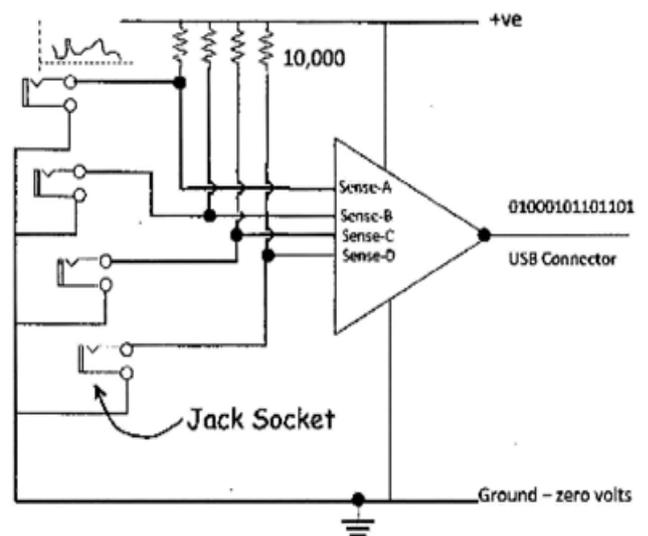
Each of the Senses inputs are different – a variable voltage up to five volts, which is converted by the clever electronics into a digital signal which is squirted down the USB lead into your computer.

To make sure you always have a value, the makers have added a resistor between each of the sense inputs to the +ve of the Scratch Board (which is the +5 volts it gets down the USB lead).

That's why, when nothing is connected to the clips, Scratch sees a value of 100.

Connecting the two clips together for any input makes the sense go to ground (zero volts) so Scratch gets a value of 0.

With our projects we may connect a resistance between the two clips, which gives us a value between 0 and 100. That resistance may vary depending on how hot it is or how much light is falling on it.



A resistor is normally shown like this

