.:A Small Electronics Primer:.

Electronics in Brief

No previous electronic experience is required to have fun with this kit. Here are a few details about each component to make identifying, and perhaps understanding them, a bit easier. If at any point you are worried about how a component is used or why it's not working the internet offers a treasure trove of advice, or we can be contacted at **help@oomlout.com**

Component Details

LED
(Light Emitting Diode)

What it Does:
Emits light when a small current is passed through it. (only in one direction)
Identifying:
Looks like a mini light bulb.

No. of Leads:
2 (one longer, this one connects to positive)
Things to watch out for:
- Will only work in one direction
- Requires a current limiting resistor

More Details:
http://ardx.org/LED

Diode

What it Does:
The electronic equivalent of a one way valve. Allowing current to flow in one direction but not the other.
Identifying:
Usually a cylinder with wires extending from either end. (and an off center line indicating polarity)

No. of Leads:
2
Things to watch out for:
- Will only work in one direction (current will flow if end with the line is connected to ground)

More Details:
http://ardx.org/DIOD

Resistors

What it Does:
Restricts the amount of current that can flow through a circuit.
Identifying:
Cylinder with wires extending from either end. The value is displayed using a color coding system (for details see next page)

No. of Leads:
2
Things to watch out for:
- Easy to grab the wrong value (double check the colors before using)

More Details:
http://ardx.org/RESI

Transistor

What it Does:
Uses a small current to switch or amplify a much larger current.
Identifying:
Comes in many different packages but you can read the part number off the package. (P2N2222AG in this kit and find a datasheet online)

No. of Leads:
3 (Base, Collector, Emitter)
Things to watch out for:
- Plugging in the right way round (also a current limiting resistor is often needed on the base pin)

More Details:
http://ardx.org/TRAN

Hobby Servo

What it Does:
Takes a timed pulse and converts it into an angular position of the output shaft.
Identifying:
A plastic box with 3 wires coming out one side and a shaft with a plastic horn out the top.

No. of Leads:
3
Things to watch out for:
- The plug is not polarized so make sure it is plugged in the right way.

More Details:
http://ardx.org/SERV

DC Motor

What it Does:
Spins when a current is passed through it.
Identifying:
This one is easy, it looks like a motor. Usually a cylinder with a shaft coming out of one end.

No. of Leads:
2
Things to watch out for:
- Using a transistor or relay that is rated for the size of motor you're using.

More Details:
http://ardx.org/MOTO

Component Details (cont.)

Piezo Element

What it Does:
A pulse of current will cause it to click. A stream of pulses will cause it to emit a tone.
Identifying:
In this kit it comes in a little black barrel, but sometimes they are just a gold disc.

No. of Leads:
2
Things to watch out for:
- Difficult to misuse.

More Details:
http://ardx.org/PIEZ

IC (Integrated Circuit)

What it Does:
Packages any range of complicated electronics inside an easy to use package.
Identifying:
The part ID is written on the outside of the package. (this sometimes requires a lot of light or a magnifying glass to read).

No. of Leads:
2 - 100s (in this kit there is one with 3 (TMP36) and one with 16 (74HC595)
Things to watch out for:
- Proper orientation. (look for marks showing pin 1)

More Details:
http://ardx.org/ICIC

Pushbutton

What it Does:
Completes a circuit when it is pressed.
Identifying:
A little square with leads out the bottom and a button on the top.

No. of Leads:
4
Things to watch out for:
- these are almost square so can be inserted 90 degrees off angle.

More Details:
http://ardx.org/BUTT

Potentiometer

What it Does:
Produces a variable resistance dependant on the angular position of the shaft.
Identifying:
They can be packaged in many different form factors, look for a dial to identify.

No. of Leads:
3
Things to watch out for:
- Accidentally buying logarithmic scale.

More Details:
http://ardx.org/POTE

Photo Resistor

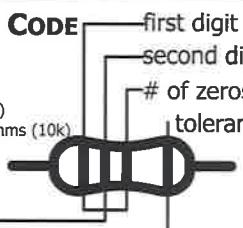
What it Does:
Produces a variable resistance dependant on the amount of incident light.
Identifying:
Usually a little disk with a clear top and a curvy line underneath.

No. of Leads:
2
Things to watch out for:
- Remember it needs to be in a voltage divider before it provides a useful input.

More Details:
http://ardx.org/PHOT

Resistor Color Code

Examples:
green-blue-brown - 560 ohms
red-red-red - 2 200 ohms (2.2k)
brown-black-orange - 10 000 ohms (10k)



0 - Black	5 - Green	20% - none
1 - Brown	6 - Blue	10% - silver
2 - Red	7 - Purple	5% - gold
3 - Orange	8 - Grey	
4 - Yellow	9 - White	

Lead Clipping

Some components in this kit come with very long wire leads. To make them more compatible with a breadboard a couple of changes are required.
LEDs:
Clip the leads so the long lead is ~10mm (3/8") long and the short one is ~7mm (9/32").
Resistors:
Bend the leads down so they are 90 degrees to the cylinder. Then snip them so they are ~6mm (1/4") long.
Other Components:
Other components may need clipping. Use your discretion when doing so.