

# How to Build an Electronic LED Dice

Pat McMahon- V3 - 27/11/2019

**Design Brief** – Build a switch activated, Electronic LED Dice, controlled by your micro-controller.

**Note**– The photos taken in this “How to Build” are using Pat’s method of construction, but you may use your own design method.



Electronic LED Dice - Switched Activated  
using 7, long leg, 27 mm long LED's

**Parts Required**

or

Plus 7 Coloured Wires.

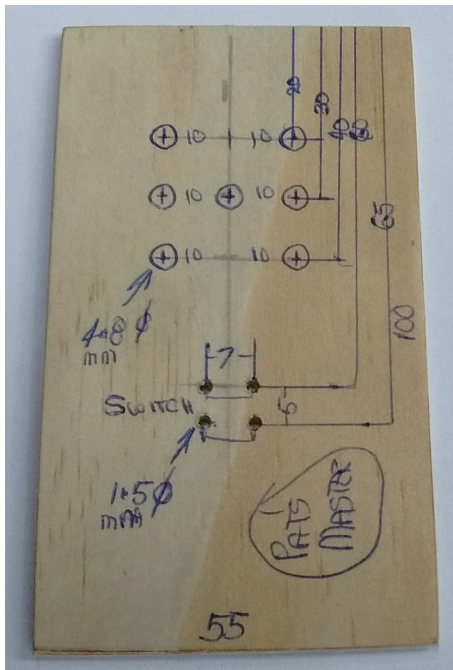
- Pink
- Green
- Blue
- Yellow
- Red
- Black
- White

Plus 10 K Resistor

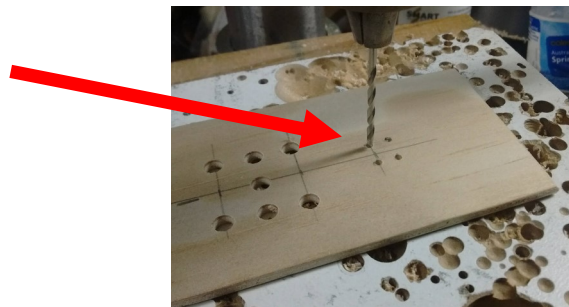
Below are some of the Production Steps, you can use or design your own, Tick off each box as you complete a task and Document it.

Tools Required– Drill, Drill bits, Square, Rule, Soldering Iron, Side Cutters, Pointy Nose Pliers, Glue, Pencil.

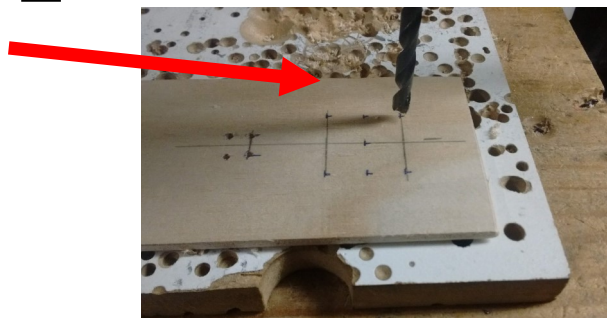
You will need a ~ 100 x 55 mm x 3 mm plywood base.



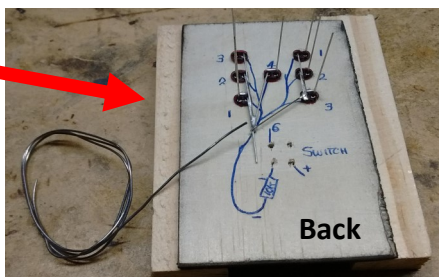
Drill the 4 small switch holes with a 1.5 mm diam drill



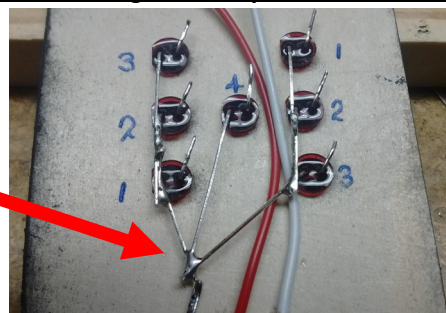
Drill the 7 Large LED holes with a 4.8 mm (3/16") diam drill



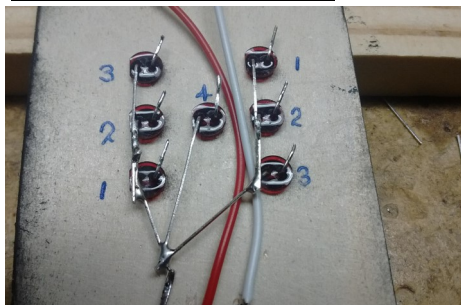
Insert the 7 LED's with the Flat (short leg -) facing to the left, raising the ply, to enable a tight push on inserting.



Bend down the negatives only to touch each other and solder.

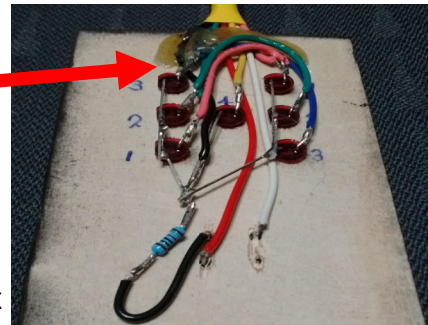


**Bend up & trim the positives.**

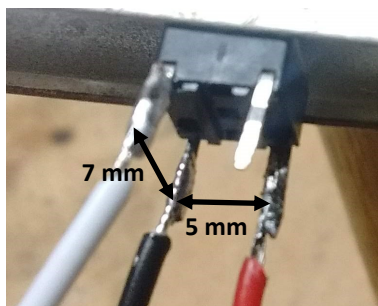


**Connect the LED 1's with Pink wire, 2's with Green, 3's with Blue, 4 with Yellow wire.**

LED 1's - Pink Wire  
 LED 2's - Green Wire  
 LED 3's- Blue Wire  
 LED 4 - Yellow Wire  
 + or 5V - Red Wire  
 - or GND -Black Wire + 10K



**Solder wires to the switch with white on one side and red (+) and black (-) to the shortest 5 mm gap spaced legs on the other side.**

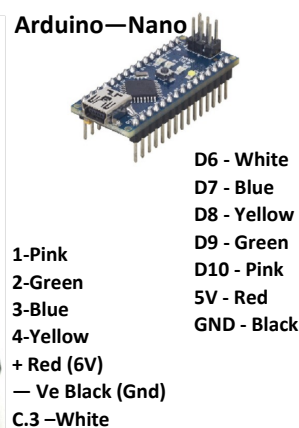
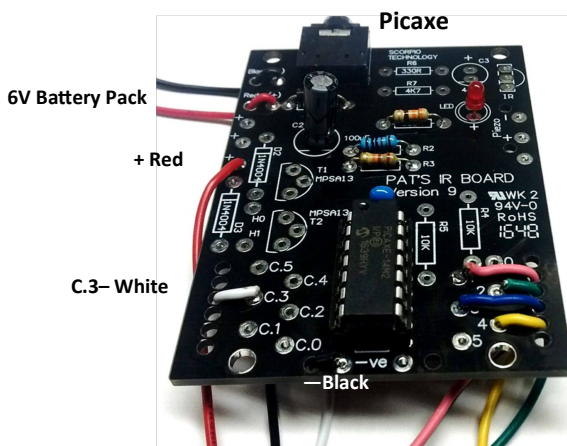
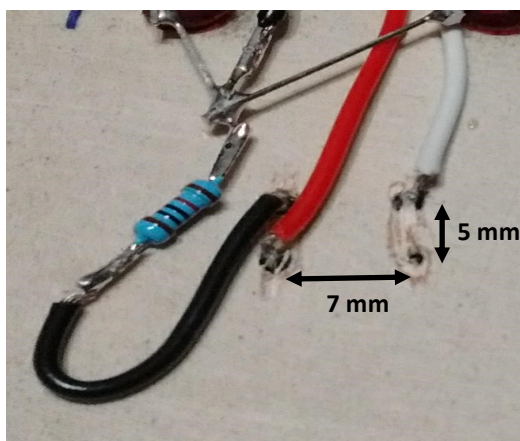


**Poke the wires of the switch, through the small holes in the ply & attach a 10K pull down resistor as below to the LED's negatives legs.**



**Pass the Red (+) switch wire & the white switch wire up through the LED's to the microcontroller.**

**Build up one of Pat's 14M2 Microcontrollers or an Arduino and attach the coloured wires as shown.**



**Using the Picaxe Programming Editor or Arduino IDE,**

**Congratulations on Constructing, Soldering and Coding your own Electronic LED Dice. WELL DONE!**

The following is part of the Code required to correctly display the Dice.

**Dice Roll Numbers**

	<b><u>Picaxe</u></b>	<b><u>Arduino</u></b>
		digitalWrite (.....)
1 - high 4 low 1,2,3		1 - HIGH D8
2 - high 1 low 2,3,4		2 - HIGH D10
3 - high 3, 4 low 1,2		3 - HIGH D7,D8
4 - high 1, 3 low 2,4		4 - HIGH D10,D7
5 - high 1,3,4 low 2		5 - HIGH D10,D7,D8
6 - high 1,2,3 low 4		6 - HIGH D10,D9,D7

**Picaxe**

**Arduino**

