

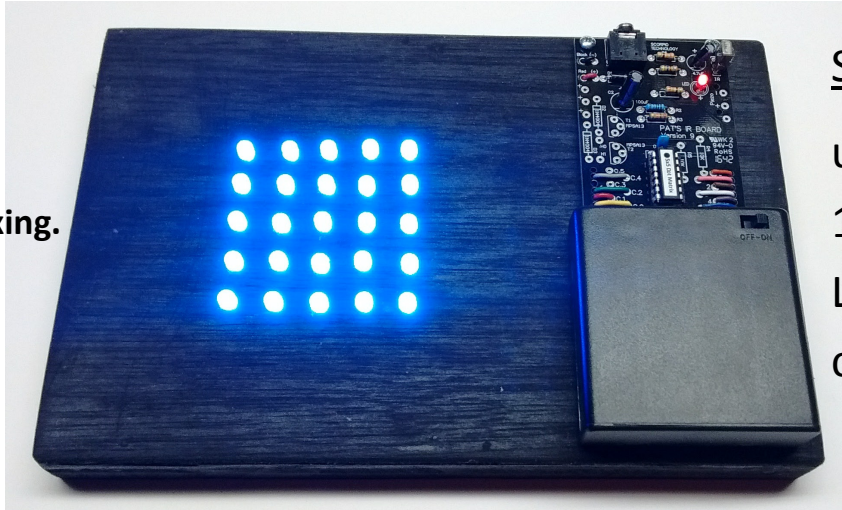
How to Build your Infrared 5x5 LED Dot Matrix

Pat McMahon– V2– 30/10/2017

Design Brief– Building a 5x5 Dot Matrix 3mm plywood base, construct your Infrared Controlled 14M2 Picaxe 5x5 LED Dot Matrix Array, using 25 LED's.

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

Using Multiplexing.



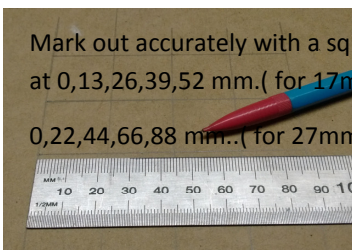
Single Colour
using short leg
17 mm long
LED's @ 13mm
centres

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– Square, Rule, Soldering Iron, Side Cutters, Pointy Nose Pliers, Phillips Head Screwdrivers, Glue, Tape, Pencil.

NOTE– Extra special care should be taken to get an accurate 4.8 mm (3/16”) Drilled Base to ensure a tight press fit with the 25 LED's.

You will need a ~ 150 x 220 mm x 3 mm plywood base.



Mark out accurately with a square, Rule and thin pencil at 0,13,26,39,52 mm.(for 17mm short leg LED's)
0,22,44,66,88 mm...(for 27mm long leg LED's)

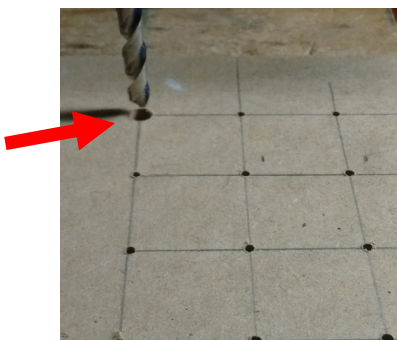
Carefully at 13 mm or 22 mm centres, construct a 5 x 5 Grid



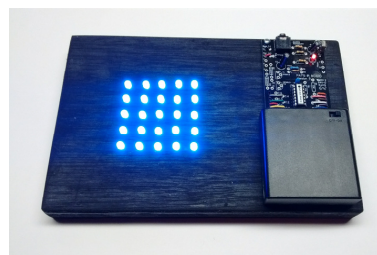
Drill first with a small pilot drill for accuracy, then the 4.8mm (3/16”) drill.

Assumes ~17mm long, short LED legs or Long LED Legs of ~26/27 mm,

Drill out pilot holes with a 4.8mm (3/16”) Drill.



Decide on all the same colour or mixed *colour LED's.

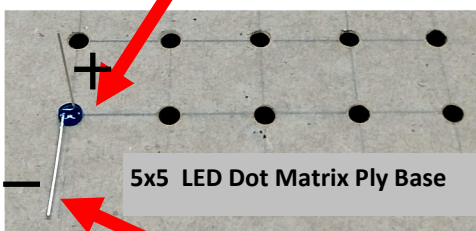


Single Colour is more reliable.

*IMPORTANT- Because of different colour LED's having different Voltages, in parallel, some will display differently if mixed.

Insert the 1st LED in far bottom left hole, when looking from the rear.

Top

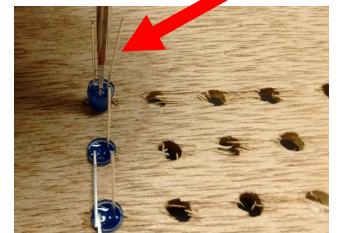
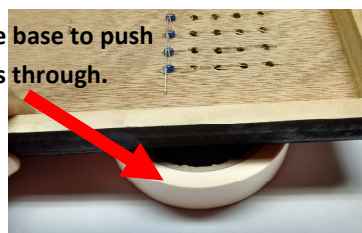


Bottom

Only bend down the Negative Leg.

Insert the first 5 LED's in the first column using a small flat blade screwdriver to press fit home LED's. Bend down the negatives only to touch each other and solder.

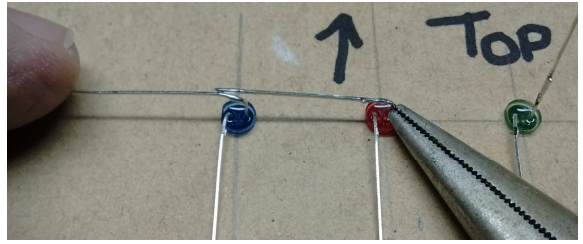
Raise base to push LED's through.



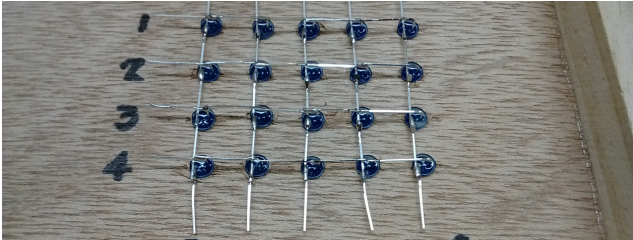
- Repeat bending negatives & soldering for all 5 columns.



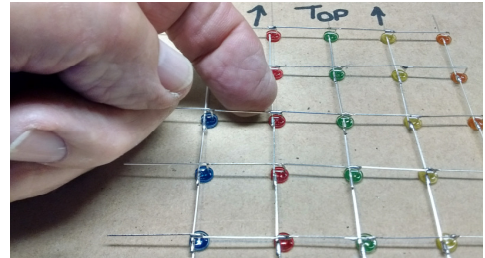
- Starting in the bottom left corner, using pointy nose pliers ~5 mm up, bend all the bottom row of positives to the left & onto each other without touching negatives.



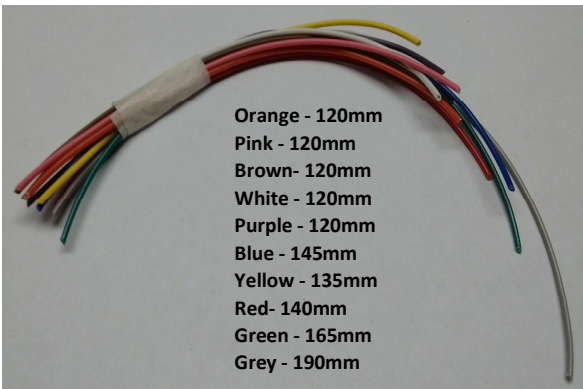
- Solder the bottom row and repeat the process for each row, working to the top.



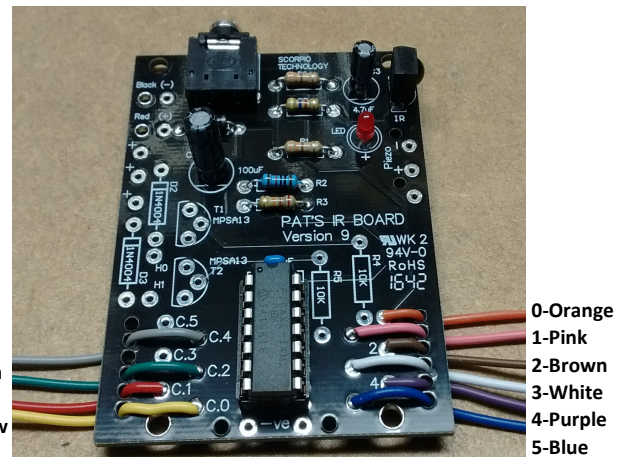
- Flick the solder joints with your finger to ensure a good joint & double check with a Multimeter for continuity.



- Strip & Tin both ends of the 10 coloured long wires as shown, in the pre cut length loom below.



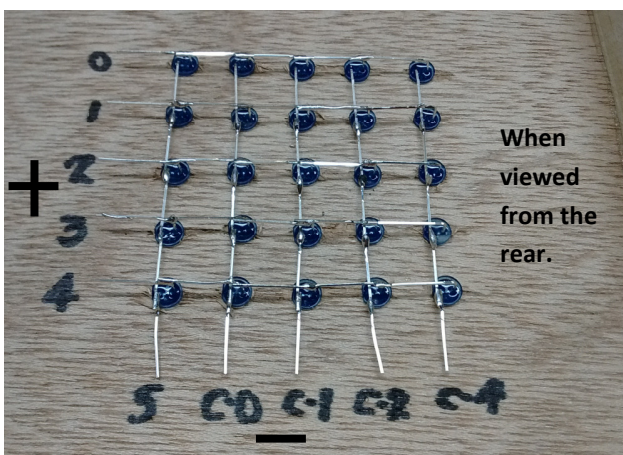
- Build up one of Pat's 14M2 Microcontrollers and insert the 10 coloured wires as shown.



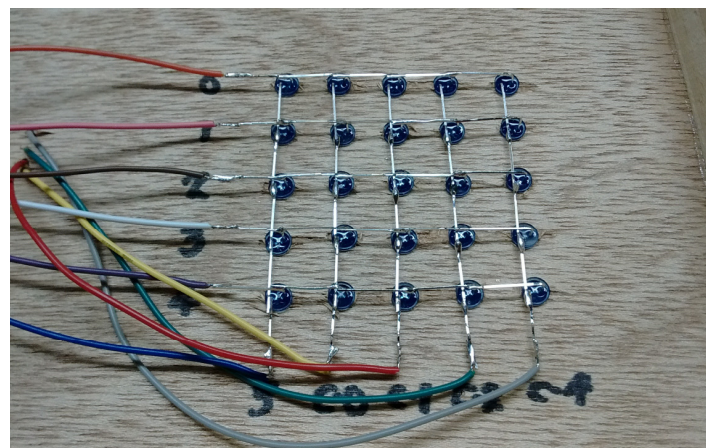
- Drill 10 x 2mm wire holes and attach battery box with small self tappers.



- Pass the coloured wires through the 2mm holes in the ply base and tin the legs (looking from the rear). Top row of positives to pin 0, second to 1, third to 2, fourth to 3, fifth to 4. Left Column of negatives to pin 5, second to c.0, third to c.1, fourth to c.2, fifth to c.4.



- Attach by soldering the coloured wires as listed above.



- Use Picaxe Programming Editor, to CODE your displays or see Pat for one of his sample program.

- Congratulations on Constructing, Soldering and Coding your own 5x5 LED Dot Matrix. WELL DONE! Next try a 5x5x5 LED Cube (125 LED's) for a challenge.