**Piggyaxe 08Mx RGB-ADC-LDR-PTM-TEMP-PIR description and assembly.**

By referring to the component silkscreen layer, (left) silkscreen and holes (right) and the circuit diagram (below) you should be able to fit everything into its correct place. However, this board has been designed to cover several options as follows. It all revolves around INPUT – PROCESS –OUTPUT with the output on this board basically being LED(s). The board is set out to offer outputs on pins 0,1 &2, with inputs on 3 (digital only) and 4 (Analogue to digital, readtemp or digital).

Starting at the output, the LEDs – firstly you can use with either three different LEDs (e.g. Red-Green-Blue) or a single encapsulation RGB common cathode with 4 wires. The PCB has holes for both. Or you could use all white (or red, green, blue). You may wish to remote mount the LED(s) in which case learn the ‘tin each and heat-shrink’ technique. Ask for a demo.

There is also a ‘cut’ option’ which allows for remote mounting of the actual lights, including having a pair of ‘fix’ holes on the lighting head. Note a single wire link will be needed - ‘LINK IF CUT’ is marked, just use a piece of resistor leg off-cut. This was added for simplifying ‘Angle-poise’ style LED light designs, possibly a bit advanced for KS3 but why not?

Input wise there are plenty of choices and some can be combined. Even simple LEDs can be made to do great things with just a cheapo push-button – or even coin-drop triggered.

Some of the choices:

1. A potentiometer (0-300 degrees) – a wide range of different effects can be obtained with this, uses input #4
2. An LDR with a series resistor R6 on the board, this will give a rising voltage the brighter the light gets, also input #4, ideal if you want to use light or the lack of it as the trigger for your lights!! (LEDs will need shielding from the LDR).
3. A temperature sensing IC, the Dallas 18B20, along with resistor R4 to keep it happy. It can read negative temperatures too, so frost detector, freezer/fridge monitor or baby’s bathwater indicator are all possible.

Note that if you are using input 4 for something, input 3 can still be used if your programme accommodates it, as follows....

1. A push button is all you need to ‘trigger’ your desired programme.
2. Using a modified ‘piezo sounder’ to detect a ‘tap’ or a ‘coin drop’ – ‘taps’ can provide sequential functions round to ‘switch off’ at the end.
3. A PIR Module from Rapid Electronics. Connections are shown for +ve, 0v and signal which will need a short wire link fitting to use as a 3-SIL connection unless it’s on remote wires in which case it can go ‘direct’ to C.3. The potentiometer can STILL be used with this option, so different effects can be chosen per trigger event, OR the LDR could be used to only turn the lights on in the dark WHEN movement detected (and variations of course)!

R5 is included if you wish to use a pull up resistor on the input C.3, equally, if you prefer it can work as a pull-down resistor. No real advantages for one or the other. Either way stress relief holes are provided for flying leads to a remote switch. It is not needed when using the modified piezo, which provides a positive-going pulse when triggered.

Not bad on a single board – mix and match as you find the need or stick with what you like and are happy with.

08M2_RGB_multi-board.emf

Schematic above shows the several input option arrangements. Please read text description on first page.

Below (left) shows component placement and below (right) shows the holes to aim for.

 