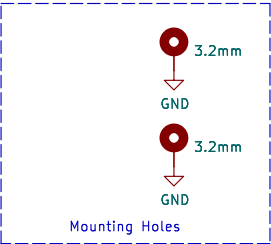
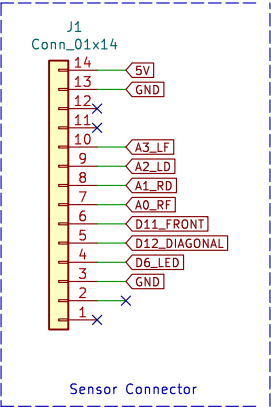


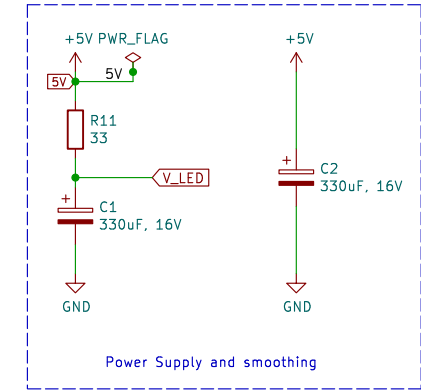
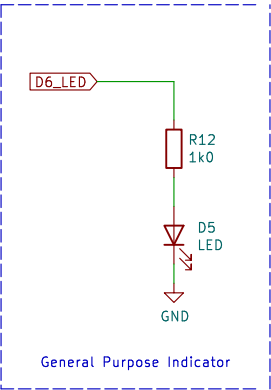
# Advanced Wall Sensor for Maze Solvers



Spacers of 11.25mm are needed between the sensor board and the mainboard to match the typical height of the combined pin header and socket of the sensor connector



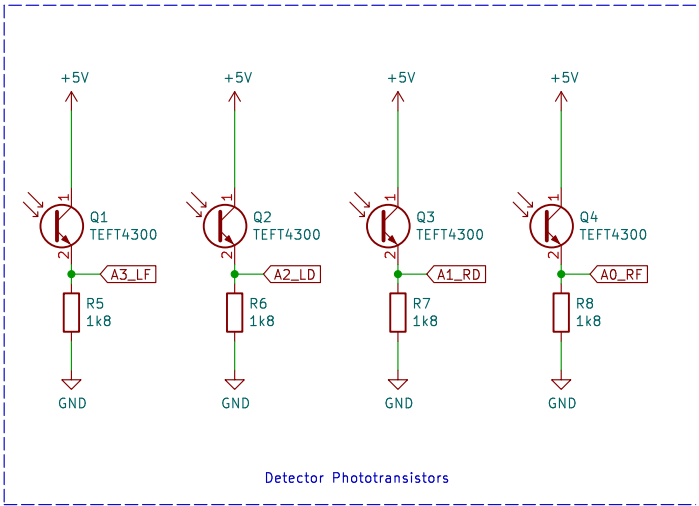
The sensor connector would be a 14 pin SIL socket to push directly onto the sensor header on the mainboard



Smoothing capacitors should be 16V types and no more than 10mm diameter. Put in the largest value you can find.

R11 may need to be adjusted to ensure that charge is not lost from C1 when sensors are operating.

Note that R11 sets the maximum current through the emitters if they are accidentally left on.



Resistors R1, R2, R3 and R4 will be adjusted on test to suit the emitters in use. Current for the emitters is drawn from the capacitor C1.

LEDs D1, D2, D3 and D4 may alternatively be high intensity red, blue or IR emitters. Whatever is chosen, take care that the detectors, Q3–6 are spectrally matched.

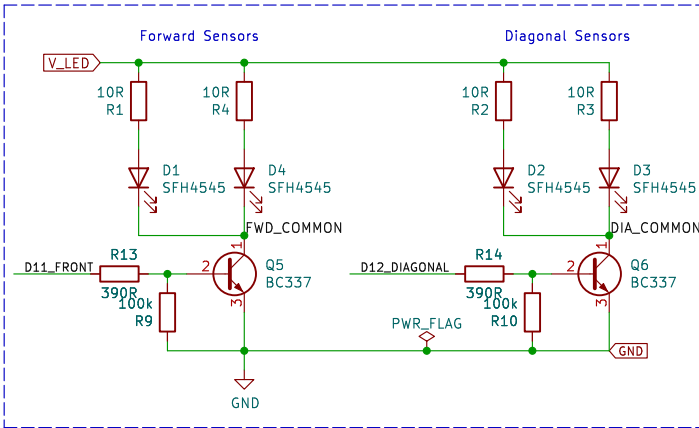
An alternative to the SFH4545 IR emitters might be VSLY5940 or, for visible light, super bright red LEDs such as the TLCR5800 paired with BPW96 phototransistors

NOTE that high-power IR emitters such as the SFH4545 may present a possible eye safety hazard and should not be viewed directly. Your eyes have no blink reflex for Infra red radiation and you may only become aware of a problem after permanent damage has been done.

Detector load resistors R5–8 should be adjusted on test to give a suitable response. Ideally the emitters will be as bright as you can manage and the detectors will be as insensitive as you can manage. In both cases, this means choosing smaller resistor values.

Do not make the emitter current limit resistor smaller than 10 Ohms. If your code accidentally leaves the emitters turned on, their life will be shortened.

Aim to have a maximum response from the detectors of no more than 70% of the available range in the ADC converter. This will offset some risk of saturating the detectors in the presence of high ambient illumination levels.



Peter Harrison  
UKMARS

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Title: UKMARSBOT WALL SENSOR ADVANCED

Size: A4 Date: 2022-08-23

KiCad E.D.A. 8.0.4

Rev: 1.0

Id: 1/1