

## Infrared Obstacle Avoidance Module

This module contains a medium distance infrared reflection detector (matched transmitter / receiver pair) mounted perpendicular to the Printed Circuit Board. It outputs an analogue signal proportional to the amount of infra-red reflection from an object within a range of approximately 70 millimetres [mm]. The module can be set to sense continually ("EN" ("Enable" jumper fitted), or be triggered manually, by sending a signal to the "EN" pin. To use software (manual) detection, remove the "EN" jumper, then the detections are triggered by setting a digital pin to high. The signals will sent continually while there is a logic high signal present at the "EN" pin.

The trimpot (trimmer potentiometer) closest to the "EN" pin, adjusts the sensitivity (detection distance), with full anticlockwise being the most sensitive. The other trimpot is used for the frequency adjustment for the infrared transmitter. The sensitivity will be affected by the ambient light in the area where it will be used, the reflectivity of the surface, as well as the colours of the object being detected.

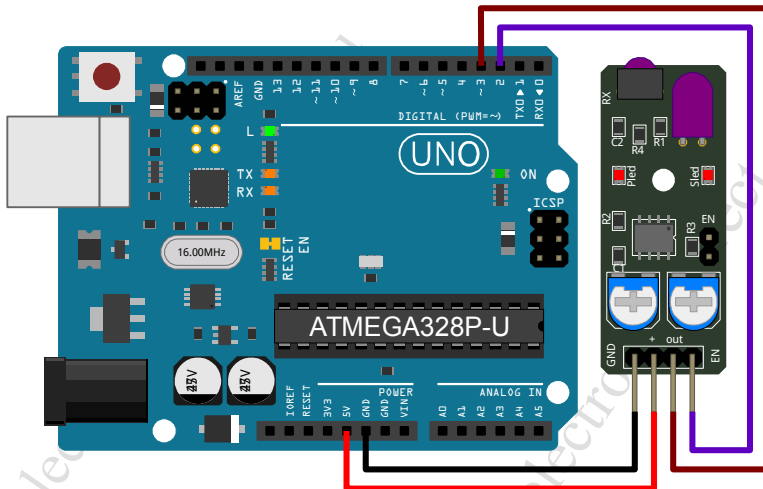
This type of component is commonly used in robotics for close range object detection, as well as being extensively used in the field of process control automation where it is used to sense the positions of rotary and linear actuators.

*Note! The trimmer potentiometer closest to the "GND" controls the infrared transmitter frequency and has been set at the factory so it should not need adjusting. Make a note of its position. If it does get moved accidentally, the frequency across the transmitter's infrared Light Emitting Diode pins should be 38 kHz. It can be set by trial and error, by setting the trimmer potentiometer to 50% rotation, and then rotating the frequency adjustment trimpot in either direction until the best level of detection is found.*

Table 1: Infrared Obstacle Avoidance Module Pin Connections

Device	Arduino	Wire	Description
GND	GND	Black	Ground connection.
+	5V	Red	Positive 5 Volts Direct Current supply for board circuitry.
OUT	D2	Brown	Digital output signal from infrared sensor.
EN	D3	Purple	Optional: Manually trigger a read when EN jumper is not used.

D2, D3: can be any digital pin.



The sketch below can be used to display the results to the Arduino Serial Monitor / Plotter.

```
int pAvoidInput = 2;
int pAvoidEnable = 3;
void setup() {
  Serial.begin( 9600 );
  pinMode( pAvoidInput, INPUT );
}
```

## Infrared Obstacle Avoidance Module...

```
void loop() {  
  digitalWrite( pAvoidEnable, HIGH );  
  Serial.println( digitalRead( pAvoidInput ), DEC );  
  digitalWrite( pAvoidEnable, LOW );  
}
```

### Module Specifications

PCB Dimensions ( H × W × D ): 40.7 × 16.6 × 1.6 mm  
Enclosing Dimensions ( H × W × D ): 46.7 × 16.6 × 11.3 mm  
Weight: 4.13 grams [g]  
Input Voltage: 5 VDC

### Module Performance

Current Draw (not triggered): 4.4 milliamps [mA] @ 5.06 VDC  
Current Draw (triggered): 6.2 mA @ 5.06 VDC

### Module Mounting

The module has a single 3 mm diameter mounting hole. As the bare component leads protrude through the bottom of the PCB, suitable spacers and insulation must be used.

### Projects

Folder: \Modules\Optical\Infrared\_Avoidance\

- **Infrared\_Avoidance\_SM**: Display the results to the Arduino Serial Monitor / Plotter.
- **Infrared\_Avoidance\_SM\_Manual**: Uses a timer to set the enabled state, and, when the module is enabled, results are sent to the Serial Monitor.

