

E18 Infrared Obstacle Avoidance Module

This module uses infrared light to detect the presence of an object in front of the sensor. The detection distance is set using the small slotted screw at the cable entry end of the body. This is a multi-turn (~ 30 turns) potentiometer, with anti-clockwise decreasing its sensitivity to its minimum distance ~20 millimetres [mm], and clockwise increasing its sensitivity to its maximum distance ~800 mm. When an object is detected, the red Light Emitting Diode at the cable entry end of the body will lit.

The accuracy will depend on the size of the object to be detected, as well as its reflective properties, with more reflective materials producing better results. While the datasheet states that its range is from 20 mm up to 800 mm, under testing with the flat white laminate of a desk, the sensor was able to be set to trigger reliably between 5 mm, and 1100 mm under normal lighting. With the same adjustment screw setting, carpet triggered the sensor at a distance of 270 mm, while a mirror triggered the sensor at 1100 mm.

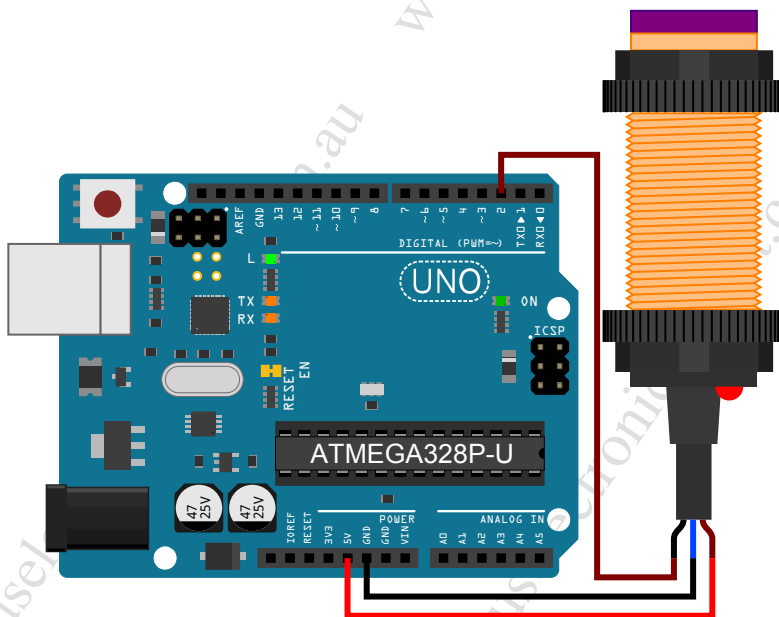
While the infrared beam is not visible by the naked eye, it can be tested by viewing the front face of the sensor with a digital camera. Test the detection functionality of the sensor by positioning it close to the object to be detected, and if the LED does not light, turn the adjustment screw clockwise until it does. (This may take up to 30 turns).

Note! This module has a non standard wiring colour scheme, with the black wire being the signal, the brown wire being for positive, and the blue wire being ground.

Table 1: E18 Infrared Obstacle Avoidance Module Pin Connections

Device	Arduino	Wire	Description
Blue Wire	GND	■	Ground connection.
Brown Wire	5V	■	Positive 5 Volts Direct Current supply.
Black Wire	D2	■	Digital output signal from infrared sensor.

D2: can be any digital pin.



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

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```
int pAvoidInput = 2;
void setup() {
  Serial.begin( 9600 );
  pinMode( pAvoidInput, INPUT );
}
void loop() {
  Serial.println( digitalRead( pAvoidInput ), DEC );
}
```

Module Specifications

Body Dimensions (OD × Length): 17.7 mm × 49.7 mm
Weight: 42.0 grams [g]
Input Voltage: 5 VDC
Lead length: 685 mm

Module Performance

Current Draw (not triggered): 2.57 milliamps [mA] @ 5.06 VDC
Current Draw (triggered): 4.30 mA @ 5.06 VDC
Detection Distance (Timber Laminate): ~5 mm (minimum), ~1100 mm (maximum)

Module Mounting

The cylindrical body has a 17.7 mm external thread, so an 18 mm hole should provide enough clearance if the sensor can be inserted perpendicular to the hole. If the sensor has to be inserted at an angle (due to surrounding objects), the hole will need to be larger, although it should not be more than 20 mm, otherwise the nuts will not have enough purchase on the surface to properly secure the unit. As the module has a plastic thread, it should only be tightened with your fingers (a 21 mm Across Flat spanner should only be used if the module is mounted in a position where it can not be tightened using your fingers).

Installation

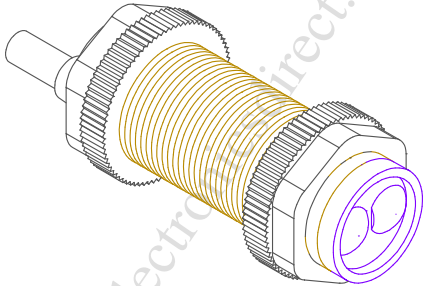
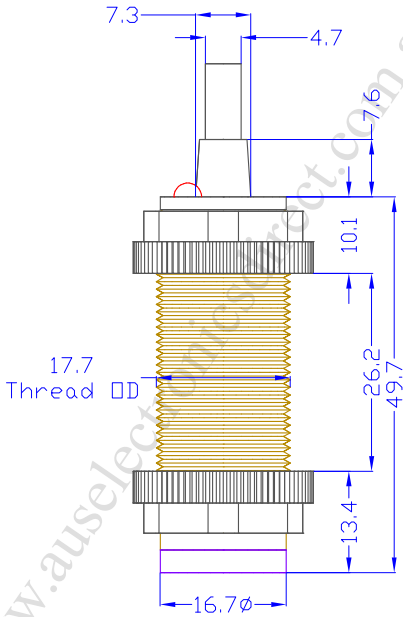
- Position the sensor at the maximum distance from the object it will be required to detect.
- If the LED is lit, turn the adjustment screw anti-clockwise until the LED turns off, then turn it clockwise, until the LED turns on again.
- If the LED is not lit turn the adjustment screw clockwise until the LED turns on.

Projects

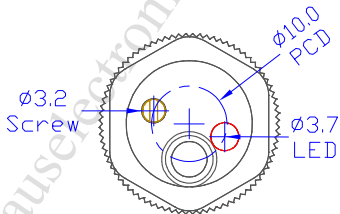
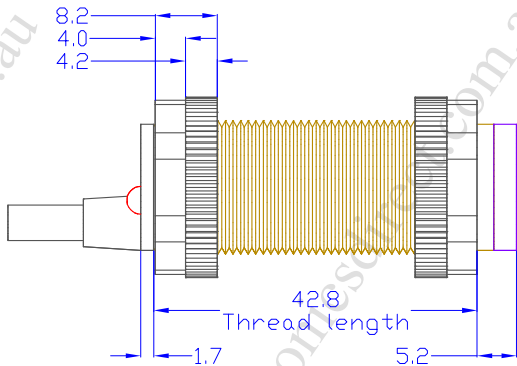
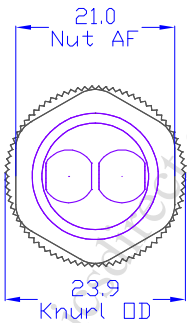
Folder: \Modules\Optical\E18_Infrared_Obstacle_Avoidance\

- E18_Infrared_Obstacle_Avoidance_SM: Display the results to the Arduino Serial Monitor / Plotter.

E18 Infrared Obstacle Avoidance Module - Dimensions



Lead Length
685 mm



Rear View