

## Passive Infrared Detector SE-10



The passive infrared detector (PID) motion sensor SE-10, also called a passive infrared (PIR) sensor, detects movement of infrared light sources at 7 to 14  $\mu\text{m}$ . People emit infrared radiation from 8 to 14  $\mu\text{m}$ , which makes this an excellent sensor for detecting human movement. Two infrared detector “pixels” allow the detector to filter out changes affecting the whole sensing area, like weather or light.

### **Overview**

The SE-10 passive infrared detector senses motion of infrared light sources at the same wavelengths humans emit. Passive infrared detectors like the SE-10 are used in security and automation applications. In security, motion sensors are integrated into alarm systems and used to turn on security cameras. PIR motion detectors are also used to automatically turn on lights when people enter a room.

The two pyroelectric sensing elements allow the SE-10 IR motion detector to see moving infrared light sources while ignoring changes in background infrared radiation. A lens focuses the infrared light on to the two 2×1 mm silicon coated sensing elements spaced 1 mm apart.

When the sensor is powered on, it takes 1-2 seconds to calibrate itself to the background infrared radiation before it can detect motion. After calibration, the detector drives the open-collector Alarm pin low for the duration of the sensed motion (the alarm pin state is not latched); when there is no motion detected, the alarm pin is floating. The open-collector setup allows multiple motion sensors to be connected on a single input pin, but it means that you will need an external pull-up resistor on the alarm pin. If any of the motion sensors go off, the input pin will be pulled low.

## Connections

The red wire is power (5 to 12V), brown wire is GND, and black wire is an open-collector signal (Alarm) that requires an external pull-up. This sensor works from 5 to 12 V (datasheet shows 12 V). You can also install a jumper wire past the 5 V regulator on board to make this unit work at 3.3 V. The sensor draws 1.6 mA at 3.3 V.

The connector is slightly odd but has a 0.1" pitch female connector making it compatible with [jumper wires](#) and [0.1" male headers](#).