Smart Home Occupancy Sensor

User Guide

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User Guide:

Getting Started:

Thank you for purchasing the Smart Home Occupancy Sensor! Our goal is to fill the gap in home automation and finally enable your Smart Home to cater to you and others in your home. Having your home automatically sense your presence and take action will make your smart home feel magical.

Installation:

Your sensors communicate to a hub over WiFi. You will need to ensure the following:

1) A wireless network is within range and accessible to all the sensors
2) One network port to physically plug the Hub into the network.
3) Power source for all devices

Installing the Smart Home Occupancy Sensor Hub and App

1) This only needs to be done once per home. If you're just installing an additional sensor, skip to step 2
2) Download the Smart Home Occupancy Sensor app on your smartphone
   a. [TODO: Insert QR code and link]
3) Start the app and enter the information requested at start up
4) Plug your hub into both a power source and connect the ethernet to a wireless network

Installing a sensor

1) Plug your sensor into a power source near (within 3 feet/1 meter) your hub
   Note: Proximity to the hub is only required when your sensor is joining or updating WiFi credentials
2) While your sensor is on (you will see the LEDs light blinking), open the smartphone app and click 'Add Sensor' on the sensors screen
   a. This process will search for any sensors that are near the hub and send them your network credentials.
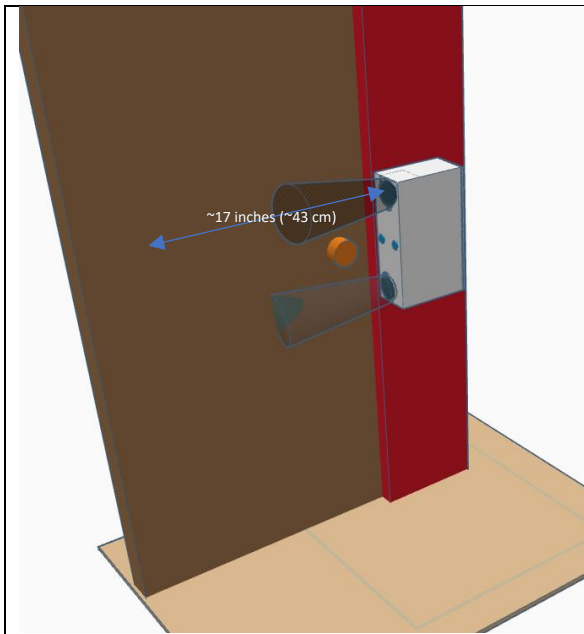
~17 inches (~43 cm)

Not drawn to scale

The sensors are configured to detect an object 17 inches (43cm) from the unit. The sensors have a ~15 degree cone for detecting an object and are angled side to side and up and down.

Place the sensor where no objects will be in the way of the sensor beams. The corresponding LED will light up when detecting an object.

If there is a door that will pass through the sensor's beams when opening or closing, ensure the door will be in the path of one beam when the door is closed (this is why the beams are angled). Doing so will prevent the door from being detected as a person entering or leaving the room.

A standard doorway is between 30 and 36 inches. The distance of 17 inches was used to cover the area a person would probably pass through and not require adjustments for smaller doors. If you need to make adjustments, please see Advanced topics: Adjusting sensor distance

How it works:

Your Smart Home Occupancy sensor is equipped with two diffuse photoelectric sensors. These send a particle approximately 17 inches away from the sensor. If the particle hits anything, it will reflect back to the sensor and register as a "hit".

The Occupancy sensor looks for a series of events to determine if someone is entering a room. The following is an example of the pattern for moving from room A to B

Event	Sensor A	B
E1: No hits detected	O	O
E2: First sensor detects a hit, second does not	●	O
E3: Both sensors detect a hit	●	●
E4: First sensor does not detect a hit, second one does	O	●
E5: No hits detected	O	O

The sensor will tell your hub somebody moved out of room A and into room B. Your hub will then look for what automation should occur based on how your automation is configured.

Things I hope you find clever:

- The device is symmetrical so you can flip it over to get your room set up. The one exception is where the device plugs in. This allows you to flip the sensor if it doesn't quite fit
- When you close a door the sensor shouldn't think somebody left the room. This is why the sensors are at an angle. When the door is closed, the sensor should be angled in a manner to still detect the door and never complete the exit series of events.
- The sensor is approximately the same with as a strike plate on a door which means the sensor can be embedded into a door frame and installed out of sight and out of mind
- The sensor can be placed at the level of your choosing. This allows you to avoid detecting pets
- I choose the photoelectric sensors for a few reasons:
  - Cameras would lack privacy. The photoelectric sensors only know if something is in front of them
  - Heat and image sensing requires significant processing on the hub

Advanced Topics:

- Adjusting sensor distance: Your sensors are adjustable! The default distance is approximately 17". If you open the back of your sensor, you will see a screw and a light on each photoelectric sensor. Turning the screw will increase or decrease the distance each sensor is able to detect an object. Please read the section on How it works to understand the detection pattern that is required.

  Pro tips:

  1) For most scenarios, you will want to ensure both sensors are configured at the same distance
  2) Leave a gap in the space you're looking to cover. The sensor will sometimes pick up beyond the detection range depending on varying conditions. A buffer will avoid false positives
  3) Consider the distance you're looking to cover, the angle of the sensors, and if a person will trigger E3: Both sensors detect a hit. As the ranges grows so does the gap between the sensors.

- APIs: Yes! You have access to everything. Once your hub is on the network, use the following to connect to your library of APIs:
  - URL: http://sohub:5000/api/v1/
  - Documentation: APIs — Smart Home Occupancy Sensor

Troubleshooting:

One or both lights stay lit up

Make sure your sensor isn't detecting a wall or object where it's mounted. See the section "How it works" for an explanation on the sensor

LEDs are alternating blinking slowly

This means your sensor is connecting to your WiFi network. This happens each time you power on your device.

Both LEDs are slowly blinking at the same time

This means the sensor is not able to connect to your WiFi network. Open the app, on the Sensors tab click 'Add Sensor'
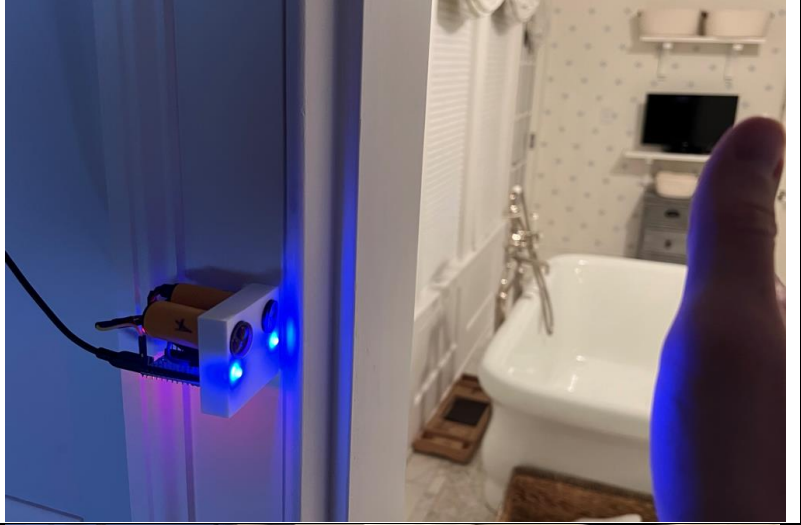
LEDs going on or blinking

When the device is in debug mode the LED will turn on when a sensor is getting a 'hit' and blink when a room enter event has occurred.

Best results:

1) **Putting a sensor at a height where a person entering will trigger the entrance pattern once. For example, you wouldn't want the sensor to be at knee level as when you walk your first leg could trigger the sensor to count a break pattern, then the second leg will trigger a second break pattern, resulting in two people being counted.**

2) **I found one shirt that would not get picked up by the sensors**

Shirt Material	

Sensor detecting hand	
Sensor not detecting shirt	