echoflex E-OCC-SR Elaho Responsive Occupancy Sensor User Guide

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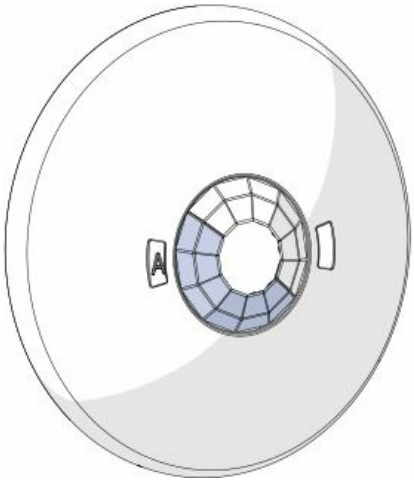
Overview

The Elaho Occupancy Sensor is a ceiling mounted sensor that utilizes passive infrared (PIR) technology, providing reliable vacancy and occupancy detection for lighting control. The sensor allows for both auto on and auto off functionality along with any commands supplied from local stations. The Occupancy Sensor provides 360 degree coverage of the installed location and is available in these models:

Model	Coverage m^2	Coverage ft^2	
E-OCC-SR Small Room	41.8 m2 at 2.4 m	450 ft2 at 8 ft	
	74.3 m2 at 6.7 m	800 ft2 at 12 ft	
E-OCC Large Room	167 m2 at 2.4 m	1,800 ft2 at 8 ft	
	279 m2 at 6.7 m	3,000 ft2 at 12 ft	
E-OCC-HC High Ceiling	28 m2 at 2.4 m	300 ft2 at 10 ft	
	650 m2 at 12.2 m	7,000 ft2 at 40 ft	

Field-installed lens masks are provided to allow customized occupancy detection fields for each sensor lens type.

Custom Configuration
This document guides you through the installation and local DIP switch setup of the sensor. For more detailed information about custom configuration options available using ElahoAccess, see the ElahoAccess App integrated help system.

Note: To use the configuration settings applied using ElahoAccess, DIP switch 2 must be enabled. See DIP Switch Settings on page 8.

Prepare for Installation

Ceiling-mount sensors are intended for installation to a finished ceiling surface, soft ceiling tile mounted, or attached to a round or octagonal fixture junction box.

Compliance

- cULus Listed
- CE compliant

For use with Echoflex Elaho Control Systems, powered by an Elaho station power supply.

Environment

Ambient
For indoor, commercial controls use only. Operating temperature 0°C–40°C (32°F–104°F), humidity maximum 90% (non-condensing).

Location
Echoflex recommends paying special attention to the installation environment:

- The sensor must have an unobstructed view of the room. Do not mount behind or near tall cabinets, shelves, hanging light fixtures, etc.
- Do not install the sensor within eight feet from an HVAC airflow duct/vent.
- Install the sensor where it cannot easily sense movement in areas outside of the intended space, such as hallways, glass partitions, or adjacent rooms. If the installation location cannot avoid these conditions, portions of the lens can be masked to block the sensor view of these undesired areas. See Lens Masking on page 11.

Wire Specification

The Occupancy Sensor connects to the EchoConnect communication bus. EchoConnect is a bi-directional protocol that uses one pair of wires (data+ and data–) for both data and power. Echoflex recommends using Belden 8471 Class 2 wire (or approved equal – see the Echoflex cable cross database echoflexsolutions.com/files/Elaho_Data_Cable_Wire_ Specs for equal alternatives). The total combined length of an EchoConnect wire run using Belden 8471 may not exceed 500 m (1,640 ft), with a maximum distance of 400 m (1,312 ft) between any two devices.

Note: All control wiring should be installed and terminated by a qualified installer and should follow standard wiring installation practices. Leave approximately 25.4 cm (10 in) of wiring in the back box for connection and to allow slack for future service needs.

Note: Echoflex requires that all stations and devices be grounded for ESD protection. Pull an additional 2.5 mm2 (14 AWG) wire for grounding when control wires are not installed in grounded metal conduit.

Note: When using Category 5 (or equivalent) cable on the EchoConnect communication bus, please note the following:

- Cat5 wiring must be terminated using EchoConnect Cat5 Termination Kits and must be installed using a bus topology. Refer to the instructions provided with the Cat5 Termination Kit (8186A1207) for information to terminate Cat5 wiring.
- Not all topologies are supported using Cat5; careful planning is required to ensure the proper termination kits are available and the wire is pulled appropriately.

Supplies

The following supplies are provided with the sensor:

- EchoConnect and ESD ground wire pigtails
- Soft ceiling tile adapter
- Mounting screws, 8-32×1 3/4 in
- Lens masks

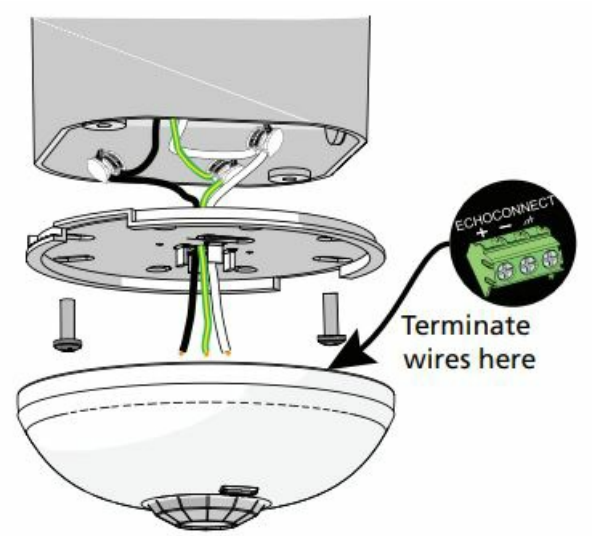
Installation

Note: Installation must follow all national and local codes for electrical equipment. NEC Class 2 product to be wired in accordance to NEC Article 725 and local jurisdiction requirements.The ceiling-mount sensor is provided with a mounting plate that can be mounted to a junction box, finished ceiling, or soft ceiling tile. Determine the installation method and follow the detailed instructions:

- Junction Box or Surface Installation on the next page
- Soft Ceiling Tile Installation on page 5

Junction Box or Surface Installation

1. Pull the Belden 8471 (or equivalent) and one 2.5 mm2 (14 AWG) ground wire to the mounting location (junction box or finished surface).
2. If you are installing the sensor in series with other sensors or stations (continuing the data run), use the provided EchoConnect and ESD ground wire pigtails. Wire termination connectors are not provided. If you are not continuing the data run, direct termination to the sensor controller is recommended, skip this step and proceed to step 3.

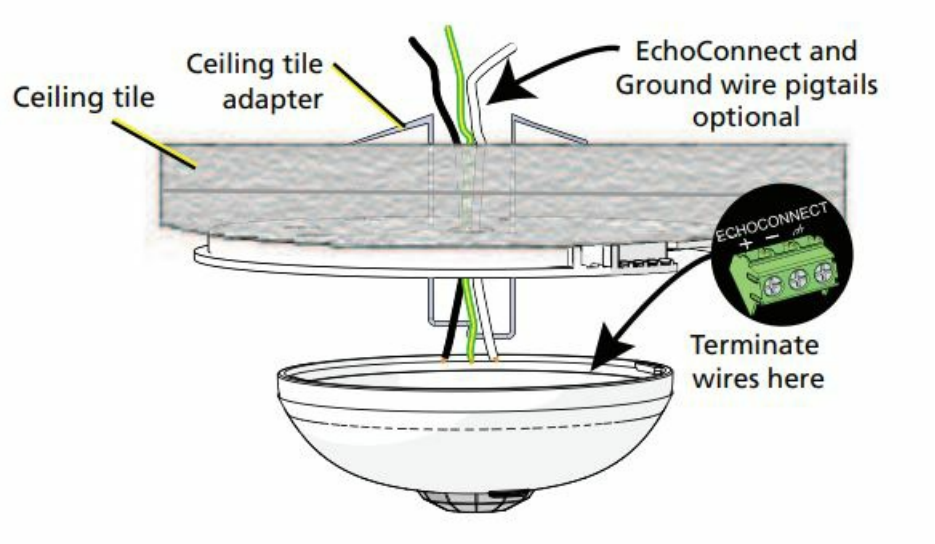


   - Strip each wire to the appropriate length according to the wire nut or other termination used (wire nuts are not provided).
   - Twist the incoming data– EchoConnect wire (typically black) and the data– wire (black) from the EchoConnect pigtail as well as any continuing data– EchoConnect wire together and secure with a wire nut.
   - Repeat the above step for the data+ EchoConnect wire (typically white) and again for the ESD ground wire (typically green/yellow), using a new wire nut for each termination type.
3. Orient the flat side of the mounting plate to the junction box and pull all incoming wires from the junction box through the provided holes near the center of the mounting plate.
4. Secure the mounting plate to the junction box using the screws provided.
5. Terminate EchoConnect and ESD ground wires to the terminal block on the sensor controller. Torque each terminal 3.1–3.5 in-lb.
   - Strip each wire 8 mm (5/16 in).
   - Insert the data+ (typically white) EchoConnect wire into the data+ terminal and secure.
   - Insert the data– (typically black) EchoConnect wire to the data–terminal and secure.

- Insert the ground (typically green/yellow) wire into the ground terminal and secure.

6. Attach the sensor to the mounting plate by aligning the tabs on the sensor with the slots on the mounting plate, and then twist clockwise until the two are secured in place.

Soft Ceiling Tile Installation



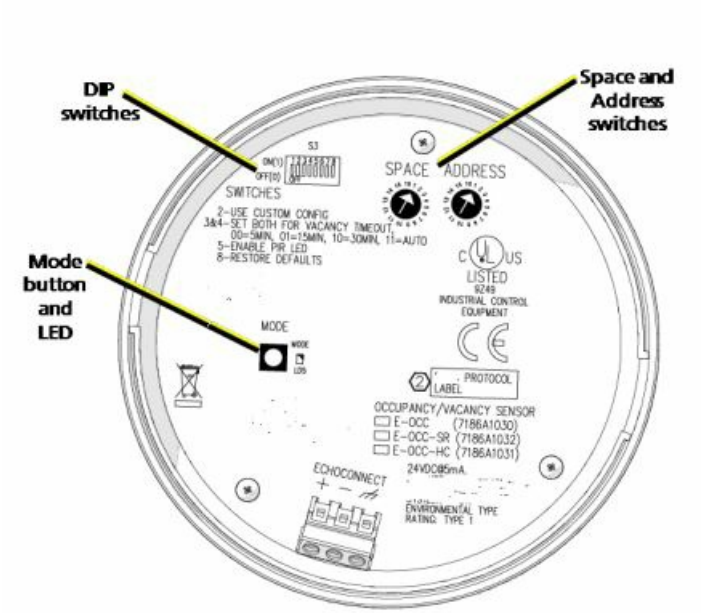
1. Pull the Belden 8471 (or equivalent) and 2.5 mm2 (14 AWG) ground wire to the mounting location. Strip each wire to the appropriate length according to the wire nut or other termination used (wire nuts are not provided).
2. If you are installing the sensor in series with other sensors or stations (continuing the data run), use the provided EchoConnect and ESD ground wire pigtails. Wire termination connectors are not provided. If you are not continuing the data run, direct termination to the sensor controller is recommended, skip this step and proceed to step 3.
    - Twist the incoming data– EchoConnect wire (typically black) and the data– wire (black) from the EchoConnect pigtail as well as any continuing data– EchoConnect wire together and secure with a wire nut.
    - Repeat the above step for the data+ EchoConnect wires (white), and again for the ESD ground wires (green/yellow). Use a new wire nut for each termination type.
3. Prepare the ceiling tile.
    - Align the flat side of the sensor mounting plate to the finished side of the ceiling tile and mark the center access hole for wire pass-through.
    - Remove the ceiling tile material from marked access hole.
    - Pull all incoming wires through the access holes of the ceiling tile.
4. Secure the sensor mounting plate in place.
    - Insert the soft ceiling tile adapter through the pinholes on the mounting plate.
    - Push the adapter through the ceiling tile, and then bend each tine over in opposite directions for a secure fit.
5. Terminate EchoConnect and ESD ground wires to the terminal block on the sensor controller. Torque each terminal 3.1–3.5 in-lb.
    - Strip each wire 8 mm (5/16 in).
    - Insert the data+ EchoConnect wire (typically white) into the data+ terminal and secure.
    - Insert the data– EchoConnect wire (typically black) to the data–terminal and secure.

- Insert the ESD ground wire (typically green/yellow) into the ground terminal and secure.

6. Attach the sensor to the mounting plate by aligning the tabs on the sensor with the slots on the mounting plate, and then twist clockwise until the two are secured in place.

Settings

The Elaho Responsive Occupancy Sensor participates in an Elaho control system using the configured Space and Address, which are selectable using the rotary switches on the sensor electronics. DIP switches and the [MODE] button, also located on the sensor electronics, set the sensor functionality and the occupancy detection action when set to Basic configuration mode. See Configuration on page 9.



Note: When the sensor is placed into Custom configuration mode, DIP switch 2 set to On, all other DIP switch and Mode button settings are ignored.

Set Space and Address

Two rotary switches on the sensor electronics provide for Space and Address assignment for the sensor. By default, these switches are set to Space 1, Address 1. Commands are shared by all devices within a given space.

1. Set the Space rotary switch to the desired number (1 through 16) for the space you want the sensor to control.
2. Set the Address rotary switch to desired address (1 through 16) for the sensor identification in the selected space.

Note: Do not duplicate a device Address within the same Space.

DIP Switch Settings

DIP switches on the sensor electronics provide for additional configuration options including Use Custom Config, Vacancy Timeout, Enable/Disable PIR detection LED, and the ability to restore the sensor to its factory defaults.

Switch #	Use
1	Unused (leave Off)
2	Enable/Disable Custom Config Mode • When “Custom Config” is set to On (the default setting), all other local DIP switch settings are ignored. Instead, the settings made by the ElahoAccess App are used. • When “Custom Config” is set to Off (also known as Basic configuration mode), local DIP s witch settings for Vacancy Timeout and Enable PIR LED are used. Sensor actions can be a djusted using the program [MODE] button.See ***Configuration on page 9***.
3 and 4	Vacancy Timeout • 5 min = Switches 3 and 4 are Off • 15 min = Switch 3 is Off and Switch 4 is On (default) • 30 min = Switch 3 is On and Switch 4 is Off • Auto = Both switches are On (See ***Vacancy Timeout on page 10***.)
5	PIR Detection LED • When set to On (default), the occupancy detection LED illuminates the lens when movem ent is detected. • When set to Off, the occupancy detection LED is disabled unless the unit is in Walk Test mode.
6	Unused (leave Off)
7	Unused (leave Off)
8	Restore to Defaults at boot • When set to On and power is cycled to the sensor, the unit restores to its factory default s ettings. • Off is the default setting.

Power Up
All EchoConnect terminations in the system must be made before applying power to the system and sensor. When the sensor is powered, the PIR LED illuminates for one minute for calibration and warm-up. The PIR detection features of the sensor will automatically adjust the sensitivity threshold to eliminate nuisance tripping. During this time, configuration is not allowed and no events are triggered.

Configuration

Basic
A sensor that is set for Basic configuration mode (DIP switch 2 set to Off) can be further configured locally using the other available DIP switch settings, and the [MODE] and Auxiliary [A] buttons and their associated LEDs. See Preset below.

Custom
A sensor that is set for Custom configuration mode (DIP switch 2 set to On, the default setting) can be customized

using the ElahoAccess App. For more detailed information about custom configuration options available, see the ElahoAccess App integrated help system.

Preset
While in Basic configuration mode (DIP switch 2 set to Off), use the [MODE] and Auxiliary [A] buttons to program the preset that is activated with an occupancy detected state change. By default, this is Preset 1. When vacancy is detected, the default action event is Off.

Follow these steps to configure the preset for your sensor:

1. Access the sensor electronics and press and hold the [MODE] button for three seconds to enter “Program Mode.” The Mode LED lights in amber to indicate the sensor is in Program Mode and the Auxiliary LED flashes to indicate the preset number controlled by the occupancy action. By default, this is Preset 1, therefore the LED will flash one time, pause two seconds and flash again.
2. Press and release the Auxiliary [A] button the number of times that corresponds to the preset that you want to use. For example, press the [A] button eight times to set Preset 8. The LED flashes the number of the preset used.
3. Press and release the [MODE] button to save the current setting.

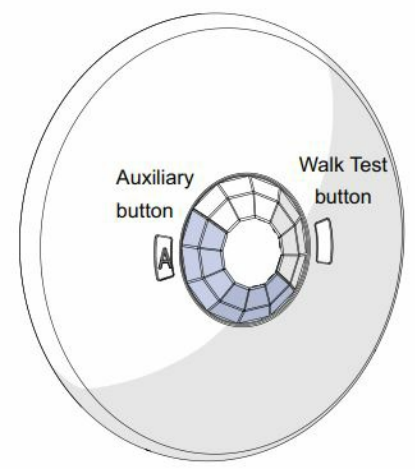
Operation
• When the space is vacant, manual control can switch the state to occupied.
• When the space is occupied, PIR detection and manual control can reset the vacancy timeout.

Vacancy Timeout
Vacancy timeout is the amount of time the sensor waits to take action after no movement is detected. By default, vacancy timeout is set to 15 minutes (indicated by DIP switch 3 set to Off and 4 set to On; see DIP Switch Settings on page 8). When the vacancy timeout ends, the grace period begins. When the sensor detects vacancy, the vacancy timeout period begins. If the sensor does not detect occupancy again during the vacancy timeout period, the lights turn off and a 30 second grace period begins.

Grace Period
The sensor features a 30 second grace period after a vacancy timeout occurs. During this grace period, if the sensor detects occupancy, it will turn on or restore the previous lighting condition.

Auto Vacancy Timeout
The “Auto” vacancy timeout setting varies the vacancy timeout between 5 and 30 minutes depending on how often it identifies an occupancy trigger after a vacancy timeout occurs (during the grace period).

Walk Test
The sensor offers a Walk Test mode, which shortens the vacancy timer to 10 seconds and allows for simple and quick verification of the sensor’s coverage and range in the installed space.

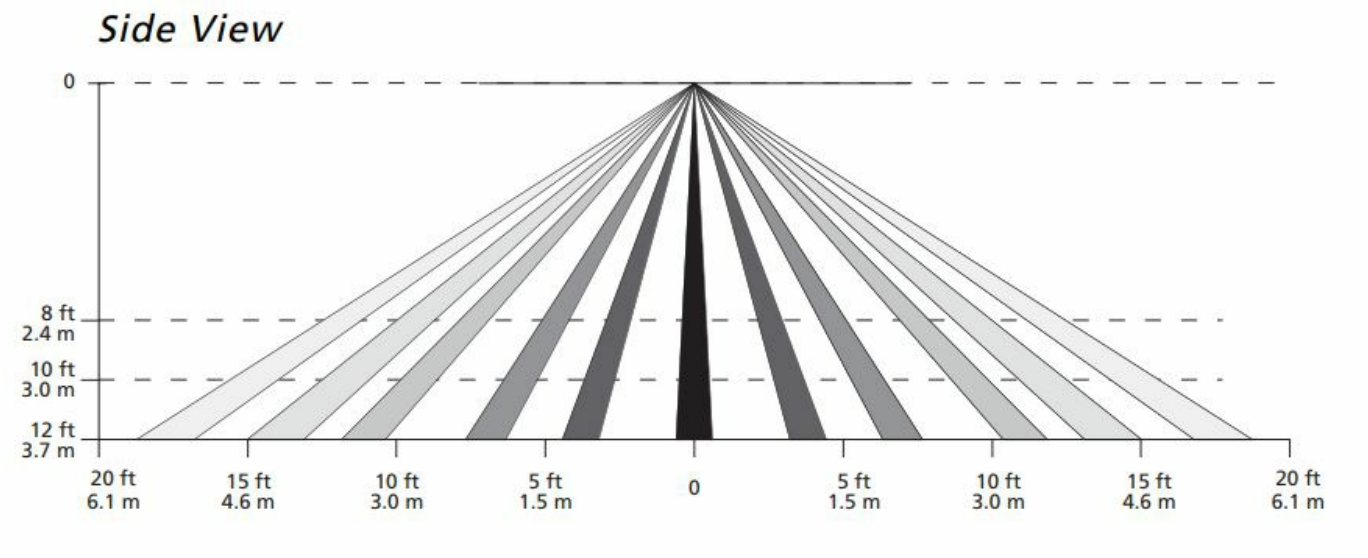


1. Prepare the site for configuration.
    - Make certain the sensor and lighting loads are powered and connected for control by the Elaho control system.
    - You will need direct access to the sensor in order to place it into Walk Test mode.
2. Press the [Walk Test] button on the sensor to enable the Walk Test feature. A green LED flashes, indicating Walk Test is enabled and the vacancy timer is shortened to 10 seconds.
3. Move throughout the space, including corners and areas that may be obscured from line of sight to the sensor. Each time the sensor detects movement, the lens illuminates red. If acoustic detection is enabled, any sound detected illuminates the lens green.
4. Adjust the lens masking, if installed, blocking certain areas of the installed space from sensor detection. See Lens Masking below.
5. Walk Test mode automatically exits and the sensor returns to normal operation after five minutes. You can also manually terminate by pressing the [Walk Test] button again.

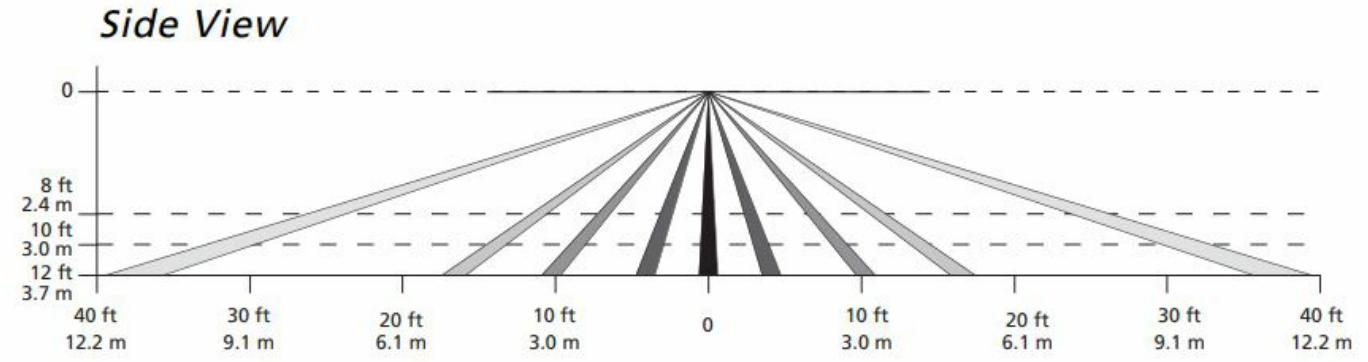
Lens Masking
Lens masks are provided in the packaging for your convenience. Use this to block a section of the lens from detecting occupancy. To attach, cut to the desired size, remove the backing and stick it on the sensor lens, covering the desired sections.

Sensor Coverage

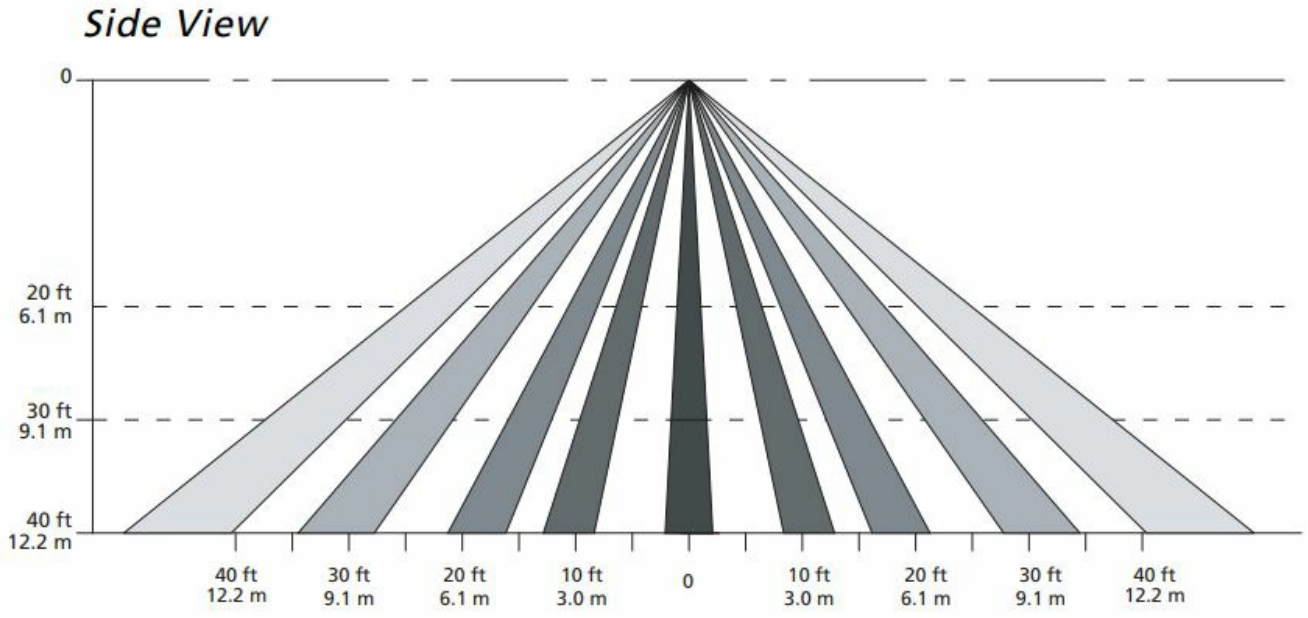
Small Room Lens



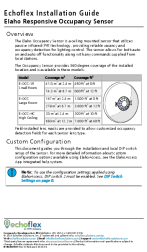
Large Room Lens



High Ceiling Lens



Documents / Resources

	echoflex E-OCC-SR Elaho Responsive Occupancy Sensor [pdf] User Guide E-OCC-SR Elaho Responsive Occupancy Sensor, E-OCC-SR, Elaho Responsive Occupancy Sensor, Responsive Occupancy Sensor, Occupancy Sensor

References

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