

# OAC-U – MicroSet Ultrasonic Low Voltage Ceiling Sensor

|          |             |
|----------|-------------|
| Catalog# | Prepared by |
| Project  | Date        |
| Comments | Type        |

## Overview

The MicroSet Ultrasonic Low Voltage Occupancy Sensing Ceiling Sensor is a motion sensing lighting control that is used for energy savings and convenience.

## Features

- MicroSet self-adjusting time delay and sensitivity
- Optional built-in light level sensor
- Optional BAS/HVAC isolated relay
- Products tested to NEMA WD 7 - 2011 Occupancy Motion Sensors Standard
- Selectable Walk-Through Mode
- Dual Relay control


 Ultrasonic  
Activated

 MicroSet  
Self-Adjusting

# EAT•N

*Powering Business Worldwide*

## Specifications

|  |   |
|--|---|
| <b>Technology</b>                      | Ultrasonic (US)   |
| <b>Power Requirements</b>              | <p><b>Input</b></p> <p>10-30 VDC from Greengate Switchpack or Greengate system</p> <p>Maximum current needed is 25mA per sensor</p> <p><b>Output</b></p> <p>Open collector output to switch up to ten Greengate Switchpacks</p> <p>BAS with Isolated Form C Relay in (-R) model</p> <p>Isolated Form C Relay Ratings: 1A 30 VDC/VAC</p> |
| <b>Time Delays</b>                     | Self-adjustable, 15 seconds/test (10 minutes Auto), or Selectable 5, 15, 30 minutes, or Zero Time Delay   |
| <b>Coverage</b>                        | 500, 1000, and 2000 sq. ft. (56 ft. x 16 ft. corridor)  |
| <b>Light Level Sensing (-R Models)</b> | 0 to 300 foot-candles   |
| <b>Operating Environment</b>           | <p>Temperature: 32°F - 104°F (0°C - 40°C)</p> <p>Relative humidity: 20% to 90%, non-condensing</p> <p>For indoor use only</p>   |
| <b>Housing</b>                         | Durable, injection molded housing. Polycarbonate resin complies with UL 94V-0   |
| <b>Size</b>                            | 1.42" H x 4.5" W (36.068mm x 114.3mm)   |
| <b>Mounting</b>                        | Mounts directly to ceiling tile, to a 4" square box and round mud ring or to 4" octagon box   |
| <b>LED Indicators</b>                  | Green LED for Ultrasonic detection  |
| <b>Standards</b>                       | FCC Compliant<br>cULus Listed<br>RoHS Compliant   |



## Description/Operation

The ultrasonic sensor uses the Doppler principle. It produces a low intensity, inaudible sound and detects changes in sound waves caused by motion, such as walking into the room, reaching for the telephone, or turning in a chair. They are volumetric in nature and therefore not line-of-sight dependant. Since they fill the space with these sound waves, they are excellent in bathrooms with stalls, enclosed hallways, or other oddly shaped rooms. In addition, they are much more sensitive to smaller motions. The sensor includes self-adaptive technology that continuously self-adjusts sensitivity and Time Delay in real-time, maximizing the potential energy savings that are available in the particular application. In Automatic On Mode, the lights turn ON when a person enters the room. In Manual On Mode (-R model only), the lights are turned ON by activating a momentary switch (model # GMDS-\*) that is connected to the sensor. The MicroSet Ultrasonic Low Voltage Ceiling Sensor has an ambient light level sensor. When enabled, the daylighting feature (-R models only) prevents lights from turning ON when the room is adequately illuminated by natural light.

## Applications

- Conference Rooms
- Open Office Areas
- Restrooms (With Partitions)
- Restrooms (Non Partitioned)
- Hallways
- Other Indoor Office Spaces

## Wiring Diagrams

### OAC-U-2000-R, OAC-U-1000-R, OAC-U-0501-R Models

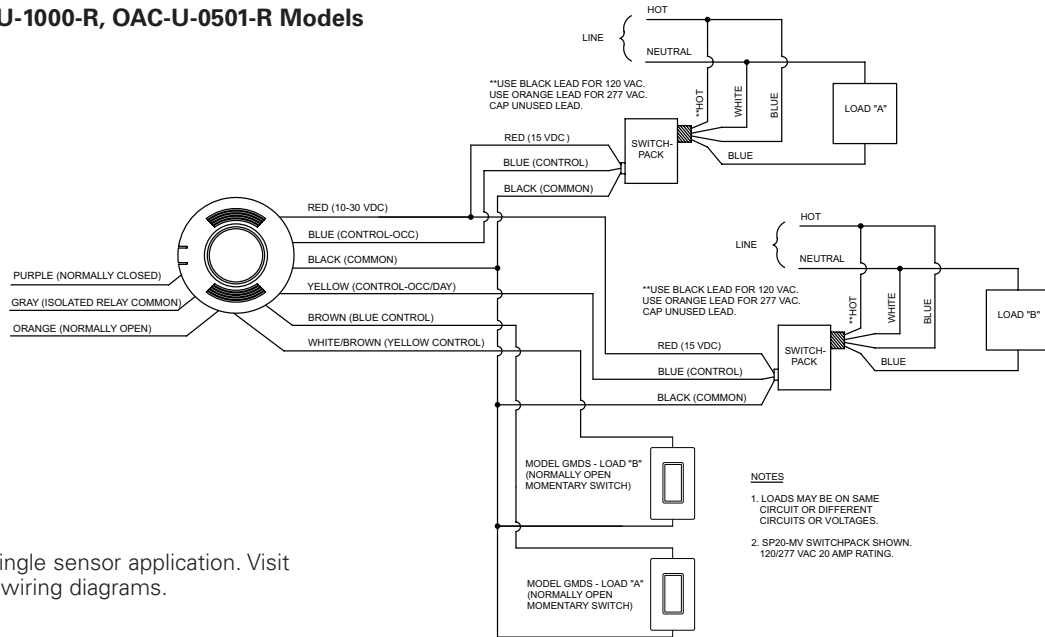
**OAC AND VAC MANUAL MODE OPERATION:**

1. SWITCHES ARE REQUIRED TO TURN CORRESPONDING LOADS ON.
2. LOADS TURN OFF WHEN SENSOR TIMES OUT OR WITH SWITCHES.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, SWITCHPACK CONNECTED TO YELLOW LEAD WILL NOT TURN LOAD ON.

**OAC AUTOMATIC MODE OPERATION:**

1. WHEN SENSOR ACTIVATES, BOTH LOADS TURN ON.
2. SWITCHES CAN BE USED TO TURN LOADS ON OR OFF.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, SWITCHPACK CONNECTED TO YELLOW LEAD WILL NOT TURN LOAD ON.

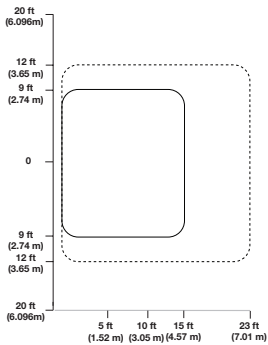
RECOMMENDED WIRE:  
18-3 AWG STRANDED WIRE SHIELDED OR NONSHIELDED



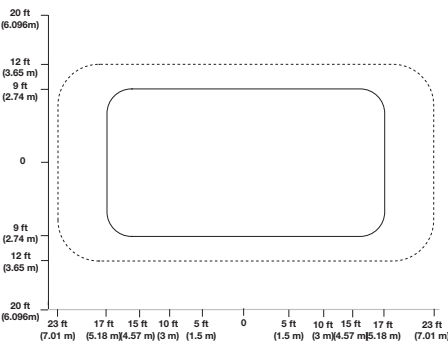
\*Wiring diagram for single sensor application. Visit our website for other wiring diagrams.

## Coverage

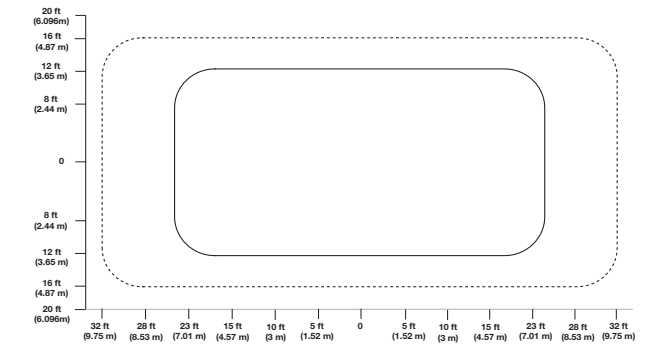
**OAC-U-0501-R**  
500 sq. ft.



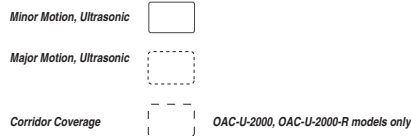
**OAC-U-1000-R**  
1,000 sq. ft.



**OAC-U-2000-R**  
2,000 sq. ft.

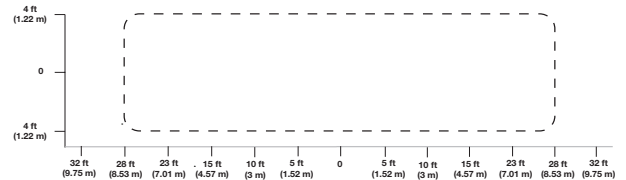


Maximum coverage area may vary somewhat according to room shape and the presence of obstacles.



Recommended Mounting Height 8 to 12 feet

### OAC-U-2000-R and OAC-U-1000-R Hallway Coverage



\* When creating a sensor coverage layout in a cubicle space, best practice is to use the minor motion coverage pattern as maximum coverage area. Results may vary based on cubicle height and ceiling height. (Cubicle wall height should not exceed 71 inches).

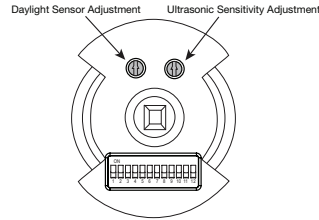
## Controls

### DIP Switch Legend

| DIP Switch | Time Delay |   | Activation |          | Not Used | Walk-Through Mode | LEDs      |           | Override  | Sweep  | Full/Half Logic | HVAC/Tracking | Zero Time Delay |
|------------|------------|---|------------|----------|----------|-------------------|-----------|-----------|-----------|--------|-----------------|---------------|-----------------|
|            | 1          | 2 | Relay 1    | Relay 2  |          |                   | 3         | 4         |           |        |                 |               |                 |
| Auto*      | ▼          | ▼ | Auto ▼     | Auto ▼   |          | Disable ▼         | Enable ▼  | Disable ▼ | Disable ▼ | Full ▼ | Disable ▼       | Disable ▼     |                 |
| 5 Minutes  | ▼          | ▲ | Manual ▲   | Manual ▲ |          | Enable ▲          | Disable ▲ | Enable ▲  | Enable ▲  | Half ▲ | Enable ▲        | Enable ▲      |                 |
| 15 Minutes | ▲          | ▼ |            |          |          |                   |           |           |           |        |                 |               |                 |
| 30 Minutes | ▲          | ▲ |            |          |          |                   |           |           |           |        |                 |               |                 |

\*Self-Adjusts to 10 min. user mode

Default =



## Ordering

| Catalog #    | Maximum Room Size                         | Field of View  | Frequency | Features                       |
|--------------|---|----------------|-----------|--------------------------------|
| OAC-U-2000-R | 2,000 sq. ft.<br>(56 ft x 16 ft corridor) | Two Way (360°) | 32 kHz    | w/ BAS Relay & Daylight Sensor |
| OAC-U-2000   | 2,000 sq. ft.<br>(56 ft x 16 ft corridor) | Two Way (360°) | 32 kHz    |                                |
| OAC-U-1000-R | 1,000 sq. ft.                             | Two Way (360°) | 32 kHz    | w/ BAS Relay & Daylight Sensor |
| OAC-U-1000   | 1,000 sq. ft.                             | Two Way (360°) | 32 kHz    |                                |
| OAC-U-0501-R | 500 sq. ft.                               | One Way (180°) | 40 kHz    | w/ BAS Relay & Daylight Sensor |
| OAC-U-0501   | 500 sq. ft.                               | One Way (180°) | 40 kHz    |                                |

**Eaton**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com

Eaton's Cooper Controls Business  
203 Cooper Circle  
Peachtree City, GA 30269  
coopercontrol.com

© 2014 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. ACC141058  
January 20, 2015

Eaton is a registered trademark.  
All other trademarks are property  
of their respective owners.