# Greengate

# Dual Technology Ceiling Mounted Line Voltage Occupancy Sensor

# Installation Instructions

PIR Activated | Ultrasonic Activated | Self-Adjusting | cULus LISTED APPLIANCE CONTROL 36T0 | California Title 24 Compliant | RoHS

**Model # OAC-DT-2000-MV**
**Model # OAC-DT-2000-DMV**

P/N 9850-000186-01

## General Information

- Read all instructions on both sides of this sheet first
- Install in accordance with ALL local codes
- For indoor use only

## Specifications

**Power Requirements:**
120 to 347 VAC, 50/60 Hz - Neutral Required
120 VAC:
- Incandescent/Tungsten - 0 to 800W, 50/60 Hz
- Fluorescent/Ballast - 0 to 1200W, 50/60 Hz

Motor Load: ¼ HP @ 125 VAC
230 VAC:
- Fluorescent/Ballast - 0 to 1200W, 50/60 Hz

277 VAC:
- Fluorescent/Ballast - 0 to 2700W, 50/60 Hz

347 VAC:
- Fluorescent/Ballast - 0 to 1500W, 50/60 Hz

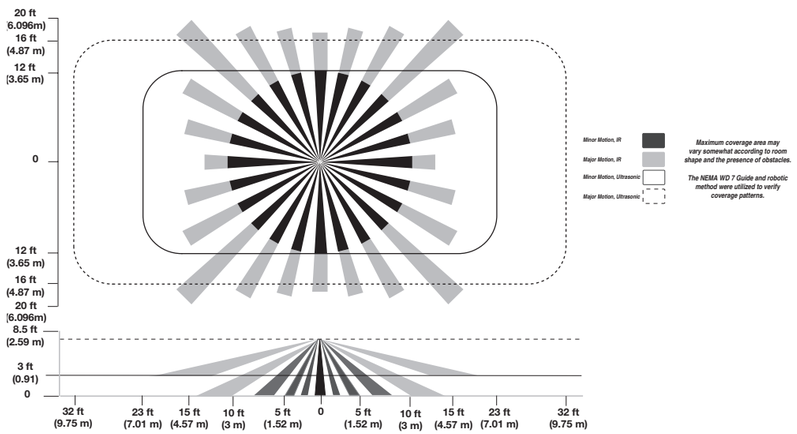
**Operating Environment:**
- Temperature: 32° F – 104° F (0° C – 40° C)
- Relative Humidity: up to 90% non-condensing

## Description

The OAC-DT Ceiling Mount Line Voltage Occupancy Sensor is a Passive Infrared (PIR) and Ultrasonic (US) motion sensing lighting control, used for energy savings and convenience. PIR is used to turn the lights ON and then either technology is used to keep the lights ON.

The sensor includes self-adaptive technology that continually adjusts to conditions by adjusting sensitivity and time delay in real-time.

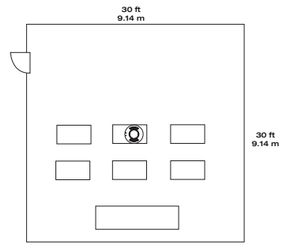
## Coverage




**OAC-DT-2000-MV/DMV Coverage Diagram**

## Location

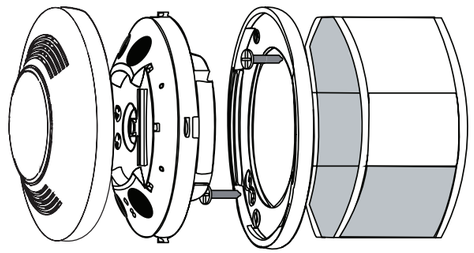
The maximum coverage area may vary somewhat according to room shape and the presence of obstacles. Decrease total coverage area by 15% for "soft" rooms (for example, heavy draperies or heavy carpeting). The sensor must have a clear view of the area to be controlled. The sensor will not "see" through glass. Mounting height should not exceed 12 feet. Optimum mounting height is 8 to 10 feet. Mount the sensor so the grills face the open portion of the room and are not facing a nearby wall, door, window, or other obstructing object. Avoid pointing into hallways. Mounting at fixture height is most effective. *To prevent false activation, the sensor should be mounted away from the air supply duct a minimum of 4 to 6 feet.




**OAC-DT-2000**

## Installation

The OAC-DT sensor can be mounted to a standard 2.125" deep x 4" octagon or 2.125" deep x 4" foursquare electrical boxes (foursquare box requires a two-gang mud ring).



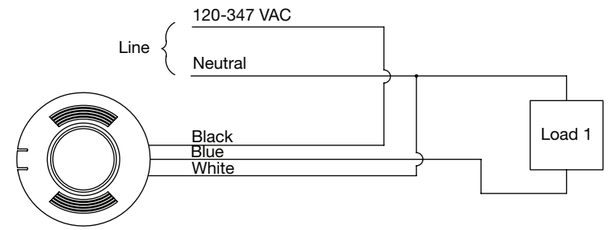
## Wiring

**CAUTION: Before installing or performing any service on a Greengate system, the power MUST be turned OFF at the branch circuit breaker. According to NEC 240-83(d), if the branch circuit breaker is used as the main switch for a fluorescent lighting circuit, the circuit breaker should be marked "SWD". All installations should be in compliance with the National Electric Code and all state and local codes.**

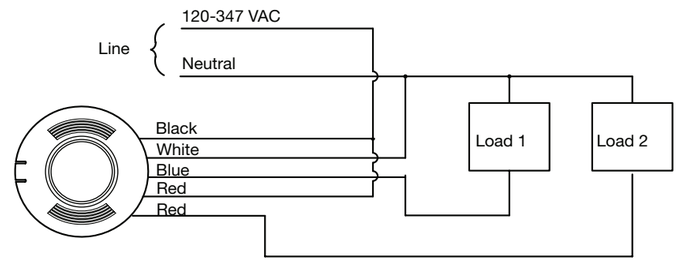
*NOTE REGARDING COMPACT FLUORESCENT LAMPS: The life of some compact fluorescent lamps (CFLs) is shortened by frequent automatic or manual switching. Check with CFL and ballast manufacturer to determine the effects of cycling.*

1. Make sure power is turned OFF at the branch circuit breaker.
2. Wire units as shown in wiring diagrams per applicable voltage requirements. (Use twist-on wire connectors for all connections) CAP ALL UNUSED WIRE LEADS.
3. Mount unit to ceiling, junction box, or round fixture with raceway.
4. Turn power back ON at the branch circuit breaker and wait 2 minutes for the unit to stabilize.
5. Make necessary adjustments. (See Checkout and Adjustments section)

**One Sensor, One Load**




**One Sensor, Two Loads**




Red leads are non-polorarity sensitive.

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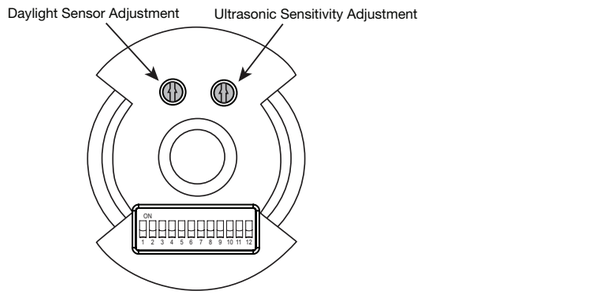
## DIP Switch Settings

**DIP Switch Legend**

| | Time Delay | | Not Used | | PIR Sensitivity | Walk-Through Mode | LEDs | Override | Not Used | Daylighting | Bathroom Mode | Relay Swap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DIP Switch** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Auto* | ▼ | ▼ | | | Full ▼ | Disable ▼ | Enable ▼ | Disable ▼ | | Relay 2 ▼ | Disable ▼ | Disable ▼ |
| 5 Minutes | ▼ | ▲ | | | 50% ▲ | Enable ▲ | Disable ▲ | Enable ▲ | | Relay 1 & 2 ▲ | Enable ▲ | Enable ▲ |
| 15 Minutes | ▲ | ▼ | | | | | | | | | (DMV model only) | (DMV model only) |
| 30 Minutes | ▲ | ▲ | | | | | | | | | | |

*Self-Adjusts to 10 min. user mode

**Default =**




## Checkout and Adjustment

**LED Indicators Functionality**

| | During Installer/Test Mode | While in User Mode |
|---|---|---|
| **LED Flashing Speed** | LEDs will flash once per ¼ second | LEDs will flash once per second |
| **Duration** | 10 minutes | 10 to 30 minutes |

Adjustments should be made with the HVAC system ON. Use only insulated tools to make adjustments.

**Self-Adjust**

Sensor is shipped in the Self-Adjust Mode. This applies to time delay, US and PIR sensitivity. In preparation for the Installer Test, the time delay is set to 15 seconds, after the sensor is installed, powered ON and has stabilized, the unit will time-out 15 seconds after the last motion detected. Coverage and sensitivity can be confirmed by watching the Green (US) and Red (PIR) indicator LEDs on the front of the sensor, while moving around the room.

1. Walk around the room and monitor LEDs. LEDs should flash every ¼ second with each motion. (If LEDs do not turn ON, go to Installer Adjustments - Sensitivity Adjustments Section)
2. Stand still six to eight feet away from the sensor for five seconds. LEDs should not turn ON. (If any LED turns ON, note LED and go to Installer Adjustments – Sensitivity Adjustment section)
3. Walk outside the room and wait 15 seconds for the lights to turn OFF. (If lights do not turn OFF go to Installer Adjustments Section)
4. Re-enter the room to activate sensor. (If lights do not turn ON go to Troubleshooting Section)
5. The unit will remain in Test Mode for 10 minutes then automatically exit Test Mode and go into the 10 minute Time Delay User Mode setting.

**Note:** To place into Test Mode, toggle DIP switch 10 out of its current position, wait 3 seconds, and then back in to its original position. To force into 10 min User Mode move Dip switches 1 and 2 down. (If DIP switches 1 and 2 are already down, toggle DIP switch 1 out of its current position, wait 3 seconds, and then back to its original position) While in Test Mode, the LEDs will flash once per 1/4 second.

## Installer Adjustments

**Sensitivity Adjustments**

**Ultrasonic Sensitivity** (Green LED) – Using a small flathead screw driver turn the green potentiometer so that the arrow points up.

1. Stand in different areas of the room and wave your hands.
2. If the Green LED does not turn ON, increase the US sensitivity by turning the green potentiometer clockwise in small increments. Repeat Step 1.
3. Stand still six to eight feet away from sensor for five seconds. LED should not turn ON.
4. If Green LED turns ON without motion or is constantly ON decrease the US sensitivity by turning the Green potentiometer counter-clockwise in small decrements. Repeat Step 3.

**PIR Sensitivity**

1. Stand in different areas of the room and wave your hands.
2. If the Red LED does not turn ON, check for any obstructions.
3. Stand still six to eight feet away from sensor for five seconds. LED should not turn ON.
4. If Red LED turns ON without motion or is constantly ON adjust PIR sensitivity to 50% by moving DIP switch 5 up.

**Field-of-view outside the space**

1. Adjust PIR sensitivity to 50% by moving DIP Switch 5 up.
2. Adjust Ultrasonic Sensitivity.

**Daylight Adjustments (0 to 300 foot-candles)**

If this feature is not needed, leave the light level at maximum (fully clockwise).

The Daylighting feature prevents the lights from turning ON when the room is adequately illuminated by natural light. If there is enough light in the room regardless of occupancy, the sensor will hold the lights OFF. If there is not enough light in the room, the sensor will allow the lights to turn ON when occupied. However the lights will not turn OFF if the light level goes above the preset value as per the daylight potentiometer.

**Note:** Set the light level when the ambient light is at the level where no artificial light is needed.

1. With the load ON, put the sensor into Test Mode. To place into Test Mode, toggle DIP Switch 10 out of its current position, wait 3 seconds and then back in to its original position.
2. Set DIP Switch 10 to Relay Two Only or Relay One and Two.
3. Set the Light level to Minimum (fully CCW).
4. Leave the room and let the sensor Time-out so lights are OFF. Enter the space and lights should remain OFF.
5. Make sure not to block the sensor from the daylight source and adjust the light level potentiometer CW in small increments until the lights are ON. (Pause 5 seconds between each adjustment)
6. Once the lights are ON, the load connected to the sensor will not turn ON if light levels are above the current illumination.

**Time Delay Adjustments**

People who remain very still for long periods of time may need a longer time delay than the default setting of 10 minutes. As long as Auto is enabled, the sensor will respond to each pair of false-offs with no normal OFF in between, by alternately making slight adjustments to either time delay (by 2 minute increments) or sensitivity, so there should be no need for manual adjustment. If manual adjustment is desired, refer to Time Delay settings in DIP switch legend.

Reset sensor Time Delay to factory settings by moving DIP switches 1 and 2 down. (If DIP switches 1 and 2 are already down, toggle DIP switch 1 out of its current position, wait 3 seconds, and then back to its original position)

**Bathroom Mode (OAC-DT-2000-DMV Model Only)**

When selected, bathroom mode keeps the second relay ON for an additional 10 minutes after the first relay has been turned OFF.

**Relay Swap (OAC-DT-2000-DMV Model Only)**

A common problem in electric wiring is wiring the wrong wire to the wrong load. This can make control of loads confusing to an end user. The Relay Swap option solves the problem by swapping the relays after the unit is wired and installed.

**Override**

The Override setting allows the lights to remain ON in the unlikely event of sensor failure.

1. Move DIP Switch 8 up.

## Troubleshooting

| Issue | Possible Causes | Suggestions |
|---|---|---|
| ***Lights Will Not Turn ON automatically*** | Daylight Feature Enabled | If all lights are required to turn ON adjust daylight potentiometer |
| | Power interruption | Check incoming voltage and/or wiring |
| **If lights will still not turn ON, set sensor to override mode and call Technical Services at 1-800-553-3879** | | |
| ***Lights Will Not Turn OFF automatically*** | Override | Make sure sensor is not in Override Mode (DIP Switch 8 up). |
| | Sensor installed close to an air vent | Sensors should be installed minimum 4 - 6 feet away from any air vent and out of path of heavy airflow. |
| | Sensor installed close to indirect lighting. | Sensors should be mounted away from indirect lighting. |
| | Self-adjust | It may be possible for the unit to have self-adjusted the time delay to a 30 minute delay. If the lights do not turn OFF after 30 minutes follow next step. |
| | 30 Minute Delay | Maximum time delay is 30 Minutes. Check DIP Switches to verify DIP Switch settings. If lights do not turn OFF at the set time delay, check next step. |
| | Ultrasonic Sensitivity set High | Lower sensitivity by turning green potentiometer CCW in small decrements. |
| | PIR activated by heat source other than occupant | Move DIP Switch 5 up |
| **If lights will still not turn OFF, call Technical Services at 1-800-553-3879** | | |

## Warranties and Limitation of Liability

Please refer to www.coopercontrol.com under the Legal section for our terms and conditions.

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