Ultrasonic Ceiling Mounted Low Voltage Occupancy Sensor

Specifications

Power Requirements:
- 10-30 VDC from Greengate Switchpack or Greengate System. Maximum current needed is 25mA per sensor

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

Input:
- Open collector output to switch up to ten Greengate Switchpacks

Output:
- BAS with Isolated Form C Relay (-R model)
- Isolated Form C Relay Ratings: 14.30 VDC/VAC

Coverage

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 minimum of 4 to 6 feet. Optimum mounting height is 8 to 10 feet. Mount the sensor so the grilles 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.

Installation

The OAC-U sensor can be mounted to the ceiling, junction box, or round fixture with raceway.

Manual or Automatic-On Control of Two Standard Switchpacks

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 Checklist and Adjustments section)

One Sensor, One Switchpack

Two Sensor, Two Switchpacks

Recommended Wire:
- 18-3 A WG Stranded Wire

Recommended Wire:
- Orange lead for 277 V AC
- Cap unused lead.
- Use orange lead for 277 V AC
- Cap unused lead.
- **Use black lead for 120 V AC**
- Cap unused lead.
- **Use black lead for 120 V AC**
- Cap unused lead.

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.
**Checkout and Adjustment**

**LED Indicators Functionality**

**During Installer/Test Mode**
- **LED Flashing Speed**: The sensors will flash once per second.
- **While in User Mode**: The sensors will flash once per second.

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

**Self-Adjust**

- **Sensor**: The main sensor is shipped in the Self-Adjust Mode. This applies to time delay and US sensitivity. For the Installer/Tester, the time delay is set to 15 seconds, after which the sensor is powered on and has stabilized, the unit will time-out 10 seconds after the last motion detection. Coverage and sensitivity can be changed by watching the Green (US) indicator LEDs on the front of the sensor, while moving around the room.
  1. Walk around the room and monitor LEDs. LEDs should only turn ON for ¼ second with each motion. (If LEDs do turn ON, go to Installer Adjustments). Sensitivity Adjustments (Section)
  2. Stand still 6 to 8 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. Perform 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 for 10 min. 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 mode Use Up Switches 1 and 2 down. (If Switches 1 and 2 are already down, toggle Dip Switch 10 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.

**Full and Half Logic Modes (See Dip Switch Settings)**

- **Self-Adjust**: Full Logic Mode - All lights will turn ON upon occupancy activation, the ambient light level does not affect the light level to remain ON. Once in Full Logic Mode, the light level will not affect the light level to remain ON. Half Logic Mode - The ambient light level to remain ON must be set to the sensor. Half Logic Mode - the output state of the yellow control lead will no longer affect the ambient light level to remain OFF, as occupancy changes. If the output state of natural light available rises above the setpoint, the sensor will not turn the lights OFF while occupancy is being detected.

- **Note**: The brightness level of the ambient light level to the at the where no artificial light is needed. In order for this feature to function, the yellow control lead must be wired.

- **1. With the load ON, pull 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 to its original position.**
  - 2. Set Dip Switch 10 to Full or Half Logic Mode.
  - 3. Set the Light Level to Minimum (Full CO2).
  - 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’s blue lead (zero Time Delay for the form C relay).

**Installer Adjustments**

**Sensitivity Adjustments**

- **Ultrasonic Sensitivity (Green LED)**
  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 6 to 8 feet away from sensor for five seconds. LED should not turn ON. (If LED turns ON, note LED and go to Installer Adjustments - Sensitivity Adjustment Section)
  4. If Green LED turns OFF without motion or is constantly ON decrease the US sensitivity by turning the green potentiometer counter-clockwise in small decrements. Repeat Step 3.

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

- **Adjust Ultrasonic sensitivity.**

**Daylight Adjustments (-R Model Only to 300 foot-candles)**

- **If this feature is not needed, leave the level light 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.**

**Troubleshooting**

- **Possible Issues**: If the lights will not turn ON, ask technical support if Technical Services at 1-800-553-3879 for our terms and conditions.

- **Solutions**
  - **Walls Switch OFF**
  - **Turn Wall Switch ON**
  - **Lights Will Not Turn OFF automatically**

- **Lights Will Not Turn OFF automatically**
  - **If lights will still not turn ON, ask technical support 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.