



GLS-OIR-CSM-EX-BATT
Wireless Passive Infrared Occupancy Sensor,
Battery Powered

Product Manual
Crestron Electronics, Inc.

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Regulatory Model: GLS-OIR-CSM-EX-BATT

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Contents

Overview	1
Features	2
Specifications	4
Product Specifications	4
Dimension Drawings	6
Installation	7
Determine the Mounting Location	8
PIR Masking	8
Motion Detection Range	10
Mounting	12
In the Box	12
Installing The Sensor	12
Configuration	16
Timeout Settings	16
Sensitivity Settings	16
Verify the Sensitivity Settings	18
TEST Button	18
Test Mode	19
Set the RF ID	19
Replace the Battery	20
Wireless Communications	20
Firmware Upgrade	22
Troubleshooting	23
Resources	24
Crestron Support and Training	24
Programmer and Developer Resources	24
Product Certificates	24
Related Documentation	24

Overview

The [GLS-OIR-CSM-EX-BATT](#) is a battery-powered, passive infrared occupancy sensor designed for ceiling mount installation in small areas up to 500 sq ft (47 sq m). It communicates wirelessly with a Crestron® control system via the infiNET EX® wireless network, allowing for quick installation without running any wires.

As part of a complete Crestron system, the GLS-OIR-CSM-EX-BATT enables automation of lighting, shading, HVAC, and AV equipment based on room occupancy or vacancy. It can also be used to expand the capabilities of room scheduling, asset management, or energy monitoring solutions through integration with the Crestron Fusion® Enterprise Management service.

This section provides the following information:

- [Features](#)

Features

Key features include:

- Wireless ceiling mount occupancy sensor
- Passive infrared motion detection
- 360 degree, 500 sq ft (47 sq m) coverage
- Half mask and perforated mask included
- 10-year battery life using 9V lithium battery (included)
- Control system integration via infiNET EX® wireless network
- Vacancy-only capability with grace occupancy
- Discreet, low-profile appearance

Passive Infrared Occupancy Sensing

Passive infrared (PIR) technology employs a highly sensitive, specialized lens that divides the field-of-view into sensor zones. The sensor detects motion when a person passes between zones, achieving dependable motion detection with superior immunity to false triggering from vibrations, inanimate objects, or movement in an adjacent corridor. The detection sensitivity is adjustable for optimum performance. Timeout can be set anywhere from 30 seconds to 30 minutes to maintain occupied status during short periods of inactivity. A half mask and perforated mask are included to customize the coverage area.

Vacancy Only Mode with Grace Occupancy

The GLS-OIR-CSM-EX-BATT can be configured via the control system program to sense vacancy only. In this mode, lighting and other equipment is shut off automatically when a room becomes vacant, but can only be turned on manually. If the lights turn off while someone is in the room, they can be turned back on by simply waving a hand within the 15 second grace period.

infiNET EX® Wireless Technology

Ultra-reliable infiNET EX wireless technology provides steadfast two-way RF communications throughout a residential or commercial structure without the need for physical control wiring. The GLS-OIR-CSM-EX-BATT communicates with a Crestron control system via an infiNET EX wireless gateway ([CEN-GWEXER](#), sold separately), and functions as part of a complete network of wireless sensors, lighting dimmers, motorized shades, thermostats, door locks, keypads, handheld remotes, and other devices.

Crestron infiNET EX wireless technology employs a mesh network topology so each "EX" device on the network acts as a routing node or "expander," which relays the signals it receives on to other EX devices within range. This effectively extends the total range of the network and provides multiple redundant signal paths for extra reliability. A maximum of six "hops" across routing nodes is allowed, although a maximum of three is recommended. Please note that the GLS-OIR-CSM-EX-BATT and other battery-powered infiNET EX devices only operate as leaf nodes and do not provide expander functionality. If needed, up to five dedicated infiNET EX expanders ([CLW-EXPEX](#), sold separately), may be deployed as supplemental routing nodes to fill

any gaps in coverage. Up to 100 infiNET EX devices are permitted per gateway, although best practices suggest a limit of 50. For details, refer to the "[Installation and Setup of Crestron RF Products, Best Practices](#)" guide.

Ceiling Surface Mount Installation

The GLS-OIR-CSM-EX-BATT includes hardware for mounting to a typical drywall or drop-tile ceiling. When installed, it achieves a discreet appearance against a white ceiling, and the body may be painted to blend with other surfaces.

NOTE: Painting over the lens may result in erroneous occupancy detection.

Specifications

Product specifications for the GLS-OIR-CSM-EX-BATT.

Product Specifications

Sensing

Motion Detection Technology	Passive infrared (PIR) motion detection
Coverage Area	500 sq ft (47 sq m)
Coverage Pattern	360° (half mask and perforated mask included)
Major Motion Area	150 to 500 sq ft (14 to 47 sq m)
Minor Motion Area	0 to 150 sq ft (0 to 14 sq m)

LED Indicators

STATUS	(1) Red and (1) green LEDs for test mode, setup, and battery condition
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Controls

SENSITIVITY	(1) Knob (behind cover), adjusts PIR sensitivity from low to high
TIMEOUT	(1) Knob (behind cover), adjusts timeout from 30 seconds to 30 minutes
TEST	(1) Pushbutton (behind cover) for test mode, setup, and battery condition

Wireless

RF Transceiver	infiNET EX 2-way RF, 2.4 GHz ISM Channels 11-26 (2400 to 2483.5 MHz), default channel 15; IEEE 802.15.4 compliant
Range (typical)	50 ft (15 m) to gateway or nearest mesh network device(s), subject to site-specific conditions and individual device capabilities, range between floors or ceilings is limited to one level
Gateway	Requires an infiNET EX gateway (sold separately)

Power Requirements

Battery	(1) Ultralife® U9VL-J-P 9 Volt 1200 mAh lithium disposable battery (included)
Battery Life	10 years under normal operating conditions

Environmental

Temperature	32° to 104°F (0° to 40°C)
Humidity	10% to 90% RH (noncondensing)

For indoor use only

Construction

Housing	Plastic, white finish, removable cover
Mounting	Ceiling surface mount, 3 in. (76 mm) screw spacing

Dimensions

Height	1.19 in. (31 mm)
Diameter	4.38 in. (112 mm)

Weight

0.4 lb (170 g)

Compliance

Regulatory Model: GLS-OIR-CSM-EX-BATT

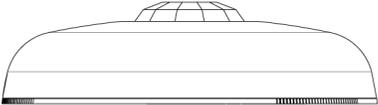
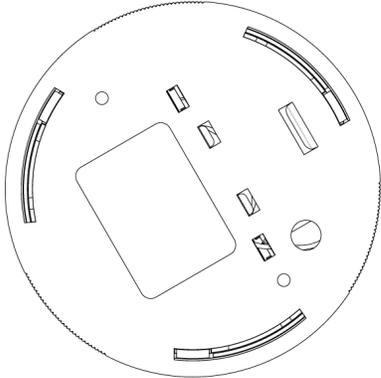
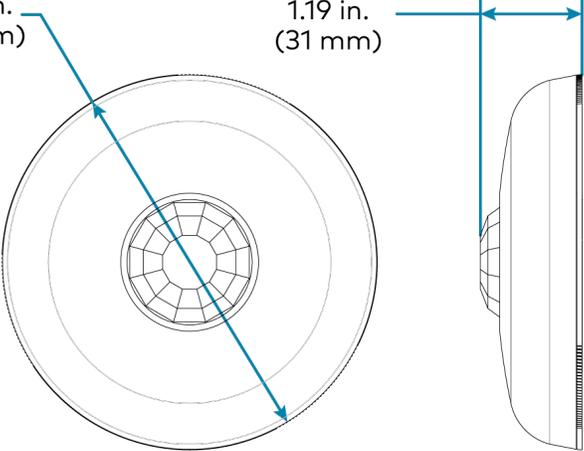
CE, IC, FCC Part 15 Class B digital device

To search for product certificates, refer to support.crestron.com/app/certificates.

Dimension Drawings

ø4.38 in.
(ø112 mm)

1.19 in.
(31 mm)



Installation

This section provides the following information:

- [Determine the Mounting Location](#)
- [Mounting](#)

Determine the Mounting Location

Use the following information to help determine the ideal mounting location.

NOTE: When determining the mounting location:

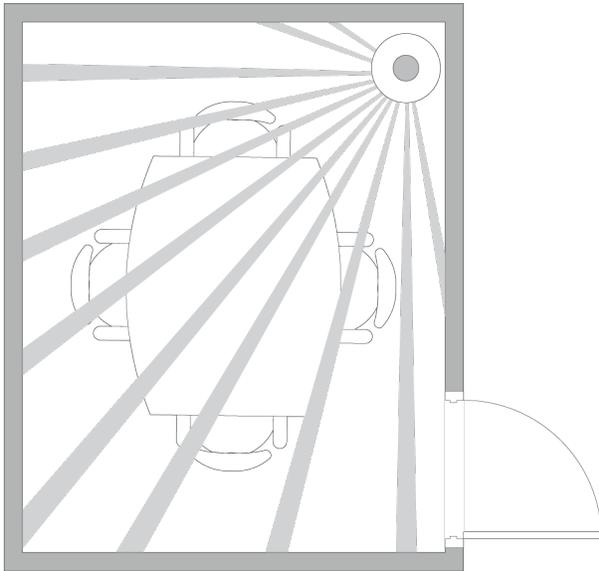
- Avoid areas where false tripping may occur due to outside motion such as an open door.
- Identify and avoid areas of possible vibrations and air currents (for example, projectors, fans, vents) and mount the sensor at least 5 feet (2 meters) away from these items.

PIR Masking

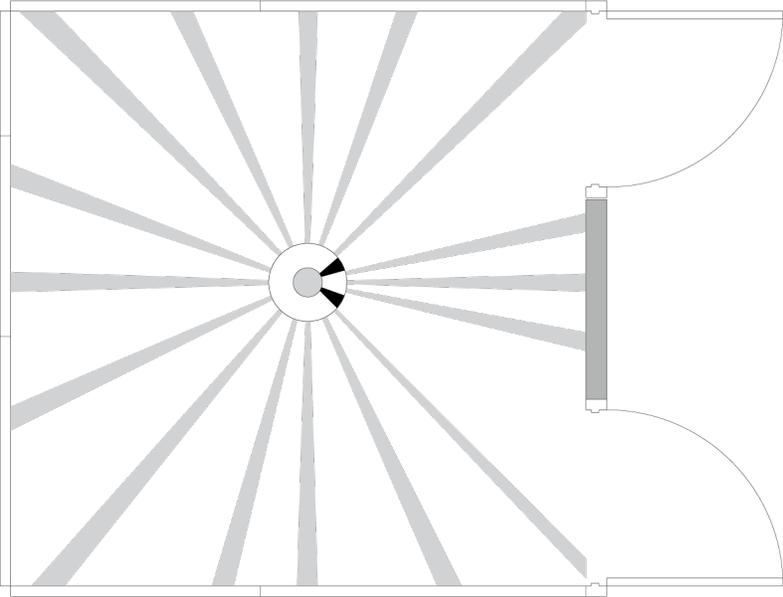
Use the included masks to block part of the PIR sensor to prevent it from detecting motion in that area. Insert the half mask into the dome of the occupancy sensor to block 180° of the detection area or remove any of the twelve 30° perforations from the full mask for a custom detection area.

The following images provide typical illustration examples.

Occupancy Sensor Mounted in a Corner



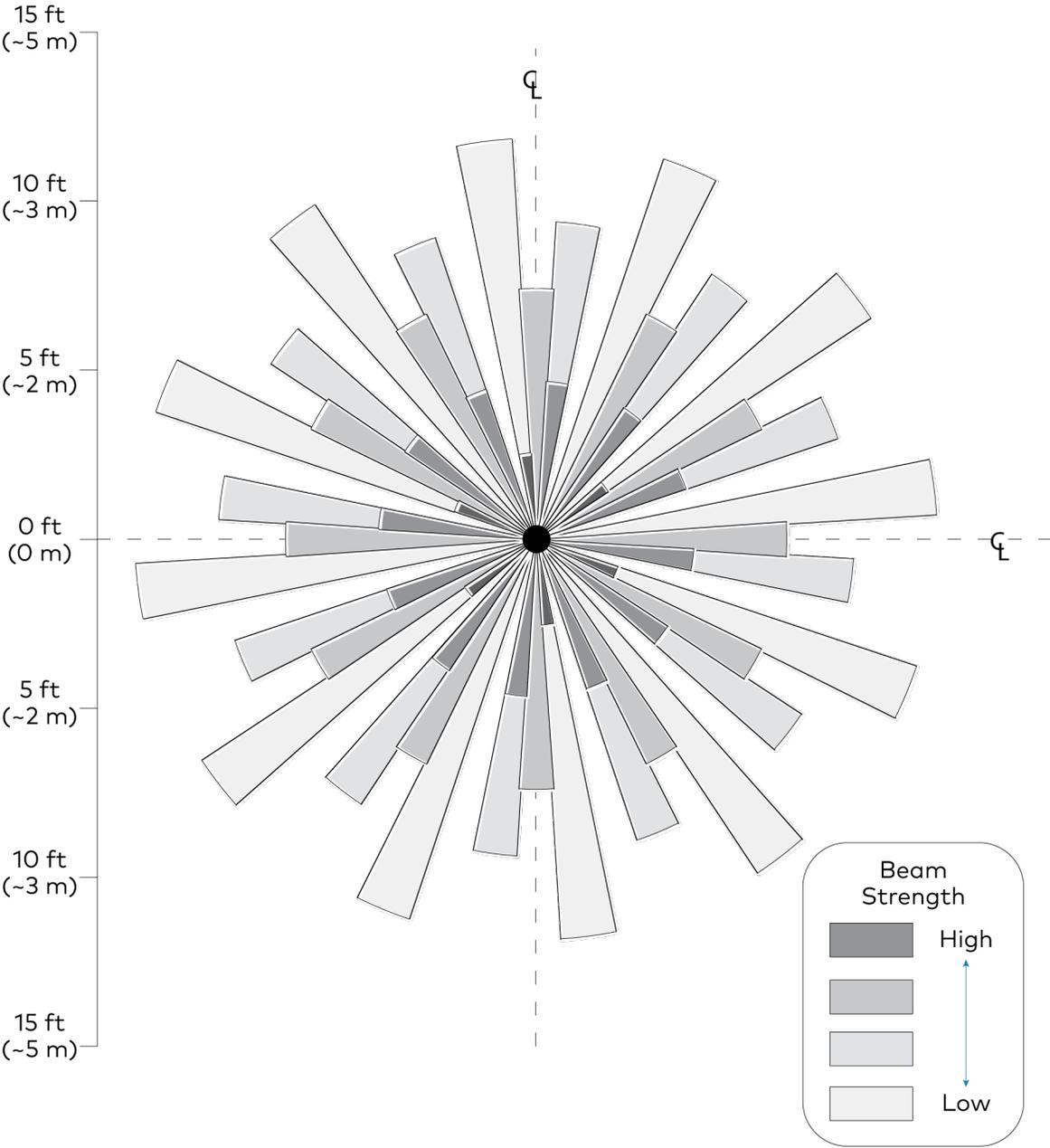
Occupancy Sensor Mounted in Center of Room, Perforated Mask Used to Block Doorways



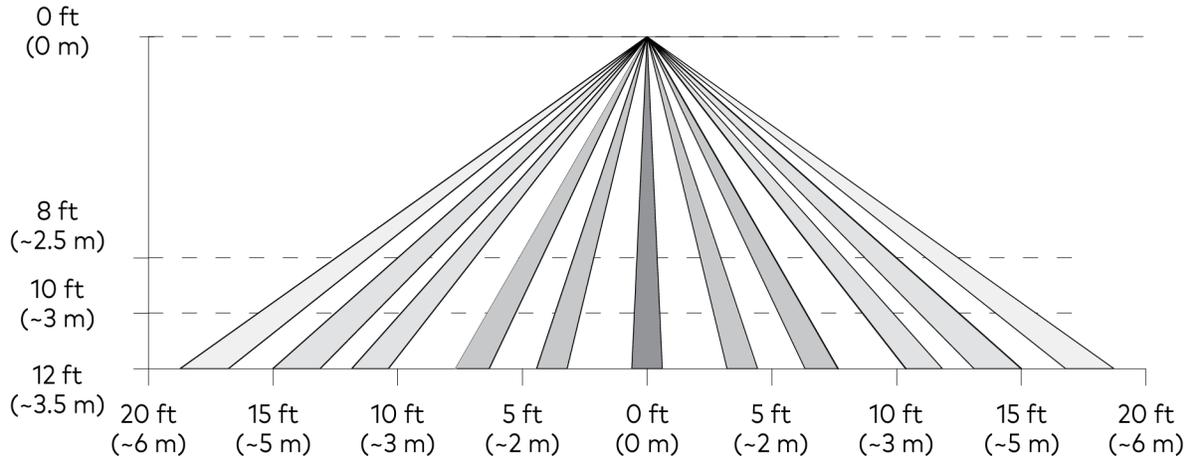
Motion Detection Range

The detection pattern for the sensitivity settings are shown in the illustrations that follow.

Top View - 8 ft (~2.5 m)



Side View - 8 - 12 ft (~2.5 - 3.5 m)



Mounting

Install in a drop ceiling or drywall, or into an octagon electrical box. The following items are included with the GLS-OIR-CSM-EX-BATT for installation.

In the Box

Qty.	Description
2	Plastic Wall Anchors
2	Phillips Head Screws
1	1/2 Solid PIR Mask
1	360 degree 12 section perforated PIR mask
1	Ultralife 9 volt lithium battery

The following items are required for installation:

- Phillips head screwdriver
- Pencil
- Cutting Tools

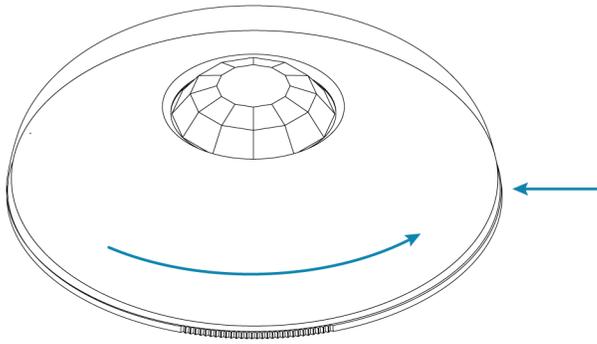
NOTE: Ensure that the cover faces in the correct direction when it is installed.

Installing The Sensor

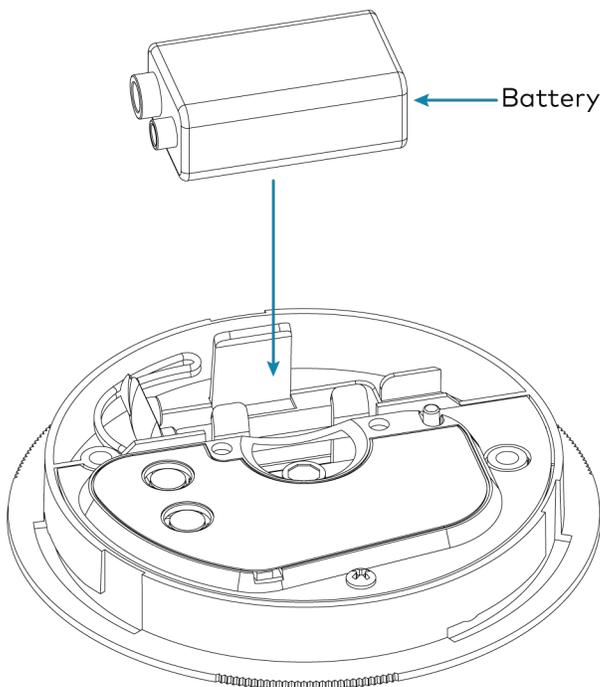
NOTE: To determine the mounting location, refer to [Determine the Mounting Location on page 8](#)

1. Mark two holes on the mounting surface 3 in. (76 mm) apart for the plastic wall anchors.
2. Install the plastic wall anchors.

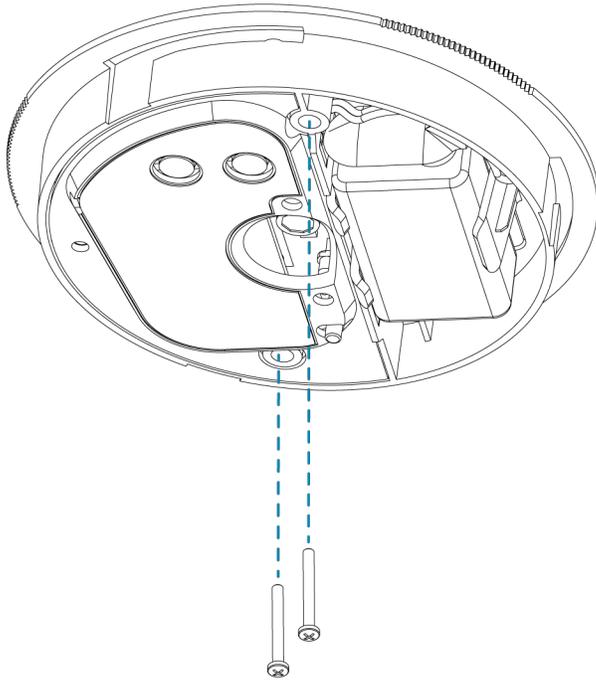
3. Twist the sensor cover counterclockwise to separate it from the sensor base.



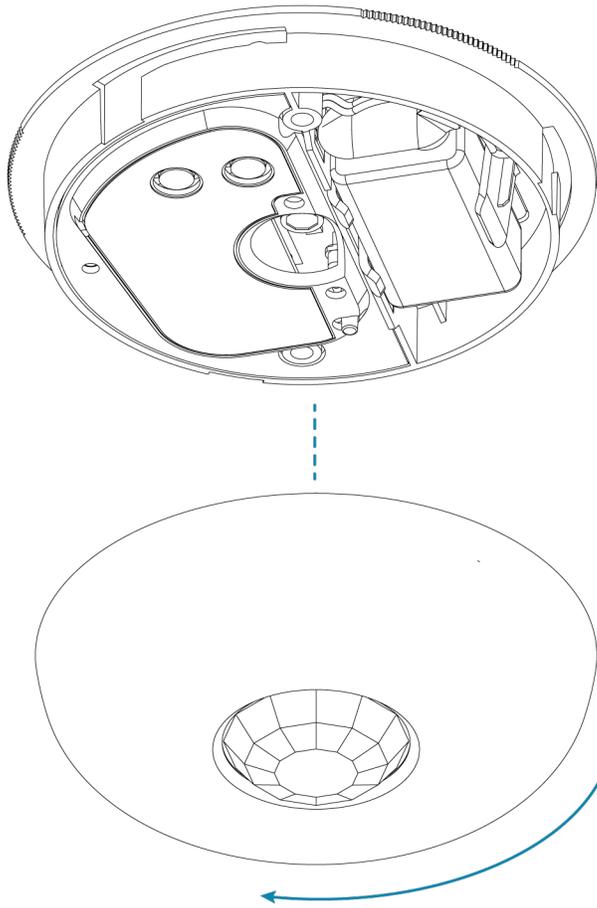
4. Connect the battery to the two terminals in the sensor and secure the battery into the housing.



5. Using the Phillips head screws and screwdriver, mount the base of the sensor to the plastic wall anchors.



6. Align the arrows on the sensor cover with the arrows on the sensor base and then place the sensor cover on the sensor base. Twist clockwise until the sensor cover clicks into place.



Configuration

Prior to configuration, ensure the device is running the latest firmware. To update the firmware, refer to [Firmware Upgrade on page 22](#).

The GLS-OIR-CSM-EX-BATT detects motion in a room to determine if the room is occupied or vacant and then relays the occupancy or vacancy state to the connected control system. If the sensor no longer detects motion, the timeout triggers. The length of the timeout is set using the **TIMEOUT** knob under the cover.

NOTES:

- The sensor requires a complete cycle of occupancy, vacancy, and the vacancy timeout for proper operation. If occupancy is detected and the sensor turns on the lights, and then the occupant quickly exits the room and turns the lights off using a local switch, the sensor will not turn the lights on again until it can complete the vacancy timeout. To avoid this, set the **TIMEOUT** knob on the sensor to 30s and program the timeout via the control system.
- The red LED will flash to indicate that the battery needs to be replaced. To replace the battery, refer to [Replace the Battery on page 20](#).

Timeout Settings

The time that the sensor takes to declare the room vacant after motion is no longer detected is determined by the **TIMEOUT** knob setting inside the sensor. The **TIMEOUT** knob does not scale linearly; it ranges from 30 seconds to 30 minutes with the midpoint of the knob corresponding to 5 minutes. Markings of 30s, 2m, 5m, 15m, and 30m are on the label to identify the settings. Timeout settings can be changed by the control system based on the time of day or occupancy status. The timeout settings revert back to the settings on the GLS-OIR-CSM-EX-BATT when no control system overrides exist.

Sensitivity Settings

The sensor sensitivity can be adjusted so that small, medium, or large motion is required to trigger an action within a 500 sq ft (47 sq m) detection area. The sensitivity scales linearly. The top of the knob (High) represents high sensitivity (small motions such as finger and head movement are needed to trip the device), the mid-point (Med) represents medium sensitivity (medium motions such as moving arms and legs are needed to trip the device), and the bottom of the knob (Low) represents low sensitivity (large motions such as entering or exiting a room are needed to trip the device).

The tables below show recommended settings for commercial and residential applications.

NOTE: The GLS-OIR-CSM-EX-BATT can also be used as a vacancy sensor. When used in this manner, the sensor turns lights off upon vacancy but does not turn lights on upon occupancy.

Commercial Applications

Environment	Mounting Location	Sensitivity	Timeout
Open Office	Above Work Space	High	15 minutes
Conference Room	Center of Ceiling	High	15 minutes
Hallway	Center of Ceiling	Medium	5 minutes
Large Lobby	Center of Ceiling	High	30 minutes
Closet	Corner Parallel to Door	Low	30 seconds
Cafeteria	Center of Ceiling	Medium	15 minutes
Bathroom	Center of Ceiling	High	15 minutes

Residential Applications

Environment	Mounting Location	Sensitivity	Timeout
Dining Room	Center of Ceiling	High	30 minutes
Hallway	Center of Ceiling	Medium	2 minutes
Closet	Corner Parallel to Door	Low	30 seconds
Garage	Center of Ceiling	Medium	5 minutes
Kitchen	Center of Ceiling	High	30 minutes
Bathroom	Center of Ceiling	High	5 minutes
Bedroom	Corner Parallel to Door	Low	15 minutes
Living Room	Center of Ceiling	High	30 minutes

Verify the Sensitivity Settings

To verify the sensitivity settings for the sensor:

1. Press and hold the test button until the green LED flashes once (after approximately 4 seconds) to enter Test mode.

NOTES: While in Test mode,

- The timeout settings are ignored and the sensor does not send occupancy information to the control system.
- The sensor is able to receive updates from the control system such as firmware or RF ID changes.

2. When the sensor detects initial motion, the green and red LEDs flash.
3. When the sensor detects additional motion, the red LED flashes. If continuous motion is detected, the red LED remains lit.
4. To exit Test mode, do either of the following:
 - Press the **TEST** button.
 - Wait for the 5-minute timeout to expire. When the timeout expires the sensor checks for updates from the control system every 30 seconds, for 60 minutes.

TEST Button

The **TEST** button allows for setup and configuration of the device. It also provides a visual indication of battery health.

To view the battery health, tap the **TEST** button. The green or red LED will light to indicate the battery health.

- Green indicates that the battery health is good.
- Red indicates that the battery health is bad, and that the battery needs to be replaced. To replace the battery, refer to [Replace the Battery on page 20](#).

Test Mode

Test mode allows the GLS-OIR-CSM-EX-BATT to be tested to ensure that the sensor is triggered by the proper amount of motion. It also allows for the RF ID and firmware to be updated more efficiently.

To enter Test mode, hold the **TEST** button for 4 seconds. The green LED flashes to indicate the device is powered and has entered Test mode.

When the device is in Test mode, the green LED flashes once to indicate that initial motion has been detected. The red LED lights when motion is detected and stays lit if continuous motion is sensed. Timeout settings do not take effect and no information is sent to the control system during Test mode. After final vacancy is detected, the green LED flashes once.

The sensor exits Test mode once the **TEST** button is pressed again or after 5 minutes. When exiting Test mode, the sensor's green LED flashes. When the sensor exits Test mode, it enters Light Sleep mode. When in Light Sleep mode, the sensor checks for updates from the control system (such as new firmware or RF ID changes) every 30 seconds.

NOTE: When the GLS-OIR-CSM-EX-BATT is in Test mode, all the Light Sleep mode functionality is available.

Set the RF ID

It is recommended to have direct access to the GLS-OIR-CSM-EX-BATT and to use Crestron Toolbox™ to set the RF ID of the device. To set the RF ID:

1. Wake the device by pressing the **TEST** button.
2. Set the RF ID of the device using Crestron Toolbox. The RF ID must match the RF ID specified in the Crestron Studio™ or SIMPL Windows program.
3. Press the **TEST** button on the GLS-OIR-CSM-EX-BATT to ensure that the device is still awake and the RF ID is transferred to the device.

The RF ID can also be set by placing the device into **TEST** mode:

1. Press the **TEST** button for more than 4 seconds. The LED flashes.
2. Set the RF ID using Crestron Toolbox. Setup mode is exited after 5 minutes.

When the sensor is acquired by a gateway, it checks for RF ID updates from the control system for 60 minutes.

Replace the Battery

To replace the battery:

CAUTION: The battery used in this device may present a risk of fire or chemical burn if mistreated. Do not recharge, disassemble, heat above 212 °F (100 °C), or incinerate. Replace the battery with an Ultralife 9V lithium battery only. Use of another battery may present a risk of fire or explosion.

1. Rotate the cover of the sensor counterclockwise to remove the cover.
2. Remove the battery from the sensor.
3. Disconnect the battery from the two terminals in the sensor.
4. Connect the new battery to the two terminals in the sensor and secure the battery into the housing.
5. Rotate the cover of the sensor clockwise onto the installed base until it is secured in place. The assembly clicks when secured.

NOTE: Dispose of a used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.

Wireless Communications

The device connects to the Crestron network via the infiNET EX communications protocol. Use the procedures outlined below to join or leave an infiNET EX network and to verify communications between the device and the control system.

Joining an infiNET EX Network

Before a device can be used in a lighting system, it must first join an infiNET EX network by being acquired by an infiNET EX gateway:

NOTE: A device can be acquired by only one gateway.

1. Put the infiNET EX gateway into Acquire mode from the unit itself or from Crestron Toolbox, as described in the gateway's manual at www.crestron.com/manuals.

NOTE: In an environment where multiple gateways are installed, only one gateway should be in Acquire mode at any time.

2. Place the device into Acquire mode by doing the following:
 - a. Tap the **TEST** button three times, then press and hold it down (tap-tap-tap-press+hold) until the green LED on the device flashes once (this can take up to 10 seconds)
 - b. Release the button to start the acquire process. The green LED flashes slowly to show that the device is actively scanning the infiNET EX network.
 - i. The device is acquired when the green LED lights for 5 seconds.
 - ii. The red LED flashes 10 times to indicate that the device was not successfully acquired to the infiNET EX network. Ensure the gateway is in Acquire mode and within range before attempting the acquire process again.
3. Take the infiNET EX gateway out of Acquire mode from the unit itself or from Crestron Toolbox, as described in the latest version of its manual.

Leaving an infiNET EX Network

To leave an infiNET EX network, put the device into Acquire mode when no gateway is in Acquire mode.

Verifying Communications Status

To check the communication status of the device, tap the **TEST** button three times, then press and hold it down (tap-tap-tap-press+hold) for less than 2 seconds. The green LED indicates the communications status. Refer to the following table for details.

LED	Communications Status
Turns on for 5 seconds	The device is communicating with the control system.
Flashes three times	The device is not communicating with the gateway, but the gateway is not communicating with the control system.
Flashes twice	The device was previously joined to the network but is not communicating with the gateway.
Flashes once	The device is not joined to the network.

Firmware Upgrade

NOTE: Before using the GLS-OIR-CSM-EX-BATT, ensure the device is using the latest firmware. Check for the latest firmware for the GLS-OIR-CSM-EX-BATT at www.crestron.com/firmware. Load the firmware onto the device using Crestron Toolbox™ software.

To upgrade the firmware on the GLS-OIR-CSM-EX-BATT, follow the procedure below using Crestron Toolbox (v. 2.36.216 or later):

1. Select **Tools > Network Device Tree View**.
2. Right-click the gateway in the Network Device Tree View window.
3. Select **Functions > Firmware Upload (Deep Sleep)**.
4. Select the **Load Firmware File** button in the Firmware Upload (Deep Sleep) window and browse for the firmware in the Open window.
5. Once the firmware is selected, select **Open** to add the firmware to Firmware Images.
6. In the Assignments section, select the device (CTRL + select or SHIFT + select for multiple devices) that the firmware should be assigned to. The row turns light gray.

NOTES:

- If a device is not located in the Assignments section, select **Show all Available IDs**.
 - If a deep sleep device has not been acquired by the gateway, assign the firmware to an ID if the future ID number of the device is known.
7. In the Firmware Images section, select the firmware that should be assigned to the device (s). The row turns light gray.
 8. Once the device(s) and firmware are selected, select **Assign Selected Image to Selected Target(s)** to assign the firmware to the device(s). The firmware is stored on the gateway and assigned to the device(s).
 9. Select a method to initiate the firmware upgrade on the GLS-OIR-CSM-EX-BATT:
 - Allow the GLS-OIR-CSM-EX-BATT to automatically initiate the firmware upgrade, which occurs every 24 hours.
 - To manually initiate the firmware upgrade, enter or exit the room—the occupancy sensor initiates the firmware upgrade once it detects occupancy or vacancy.

Troubleshooting

The following table provides corrective actions for possible trouble situations. If further assistance is required, please contact [Crestron True Blue Support](#).

Trouble	Possible Cause(s)	Corrective Action
The lights do not turn on.	The circuit breaker or fuse has tripped.	Reset the circuit breaker or replace the fuse.
	The control system is incorrectly programmed.	Verify the program in the control system.
	There is a miswire.	Verify that the wires are connected properly.
	There are incorrect settings on the device.	Increase the sensitivity setting on the PIR sensor
	The mounting location is incorrect.	Move the sensor into an area that can "see" the occupant or point of motion.
The lights do not turn off.	There is constant motion in the room.	To test, reduce the sensitivity level and remove the motion source. If there is no change, then the mounting location must move.
	The sensor can "see" too far into hallway or another room.	Put the sensor into Test mode and walk by the area. If the red LED blinks, move the sensor or mask the sensor.
	There are incorrect settings on the sensor.	Reduce the sensitivity and timeout levels.
	The control system is incorrectly programmed.	Verify the program in the control system.
The lights remain on for too long.	The timeout setting is too high.	Reduce the timeout one step at a time.

Resources

The following resources are provided for the GLS-OIR-CSM-EX-BATT.

NOTE: You may need to provide your Crestron.com web account credentials when prompted to access some of the following resources.

Crestron Support and Training

- [Crestron True Blue Support](#)
- [Crestron Resource Library](#)
- [Crestron Online Help \(OLH\)](#)
- [Crestron Training Institute \(CTI\) Portal](#)

Programmer and Developer Resources

- help.crestron.com: Provides help files for Crestron programming tools such as SIMPL, SIMPL#, and Crestron Toolbox™ software
- developer.crestron.com: Provides developer documentation for Crestron APIs, SDKs, and other development tools

Product Certificates

To search for product certificates, refer to support.crestron.com/app/certificates.

Related Documentation

- [Occupancy Sensor Placement and Technology](#) Best Practices
- [Installation and Setup of Crestron RF Products](#) Best Practices

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