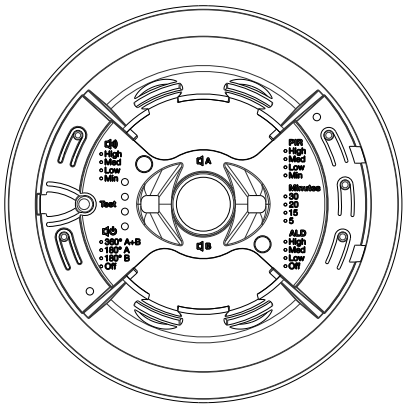
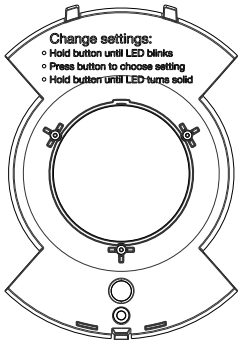
3691244a 1 07.21.25

Dual Technology Ceiling Mount Sensor

The wired, dual technology ceiling-mount sensors can easily integrate into many Lutron systems or function as stand-alone controls using a Lutron power pack.





Features

- Ultrasonic (US) combined with Passive Infrared (PIR) sensing provide high sensitivity, high noise immunity, and excellent false tripping immunity
- XCT technology for major, minor, fine, and very fine motion detection
- Suited for complex environments that are difficult to control with single-technology sensors
- Up to 2000 ft² (186 m²) coverage (when mounted on 8 ft to 12 ft [2.4 m to 3.7 m] ceiling)
- Both PIR and US sensing provide a 360° field of view. PIR can be masked off and US can be adjusted for 180° or 360° field of view. See page 10 for more details
- Simple, accurate and intuitive adjustments available for Timeout, Ambient Light Detection, and Sensitivity settings
- Adjustable timeout (1*, 5, 8*, **15 (Default)**, 20, or 30 minutes)
- Sensitivity adjustment
  - PIR (**High (Default)**, Medium, Low, Minimum)
  - Ultrasonic (High, **Medium (Default)**, Low, Minimum)
- Front-accessible test button makes coverage validation easy
- Lens illuminates during test mode to verify ideal locations
- Can be used as a direct replacement for LOS-CDT or LOS-CIR sensors

Models Available

Model	Description	Color	Coverage	Field of View	Mount
LOS2-CDT-WH	Dual Technology	White	2000 ft² (186 m²)	180° – 360°	Ceiling
LOS2-CDT-R-WH	Dual Technology with Relay	White	2000 ft² (186 m²)	180° – 360°	Ceiling
ULOS2-CDT-WH	Dual Technology-BAA Compliant	White	2000 ft² (186 m²)	180° – 360°	Ceiling
ULOS2-CDT-R-WH	Dual Technology with Relay-BAA Compliant	White	2000 ft² (186 m²)	180° – 360°	Ceiling
LOS2-CDT-BL	Dual Technology	Black	2000 ft² (186 m²)	180° – 360°	Ceiling
LOS2-CDT-R-BL	Dual Technology with Relay	Black	2000 ft² (186 m²)	180° – 360°	Ceiling

-R: Relay models. These models provide normally open (NO) and normally closed (NC) relay contact wired connections.
-U: BAA, Buy America Act compliant models.

* 1- and 8-minute timeouts are achieved through advanced button presses. See page 12 **Sensor Adjustments**.

LUTRON SPECIFICATION SUBMITTAL Page

Job Name:	Model Numbers:
Job Number:	

Specifications

Regulatory Approvals

- UL and cULus listed
- NOM
- CE/UKCA
- IEC
- CA Title-24
- RoHS Compliant

Power

- Operating voltage: 15–24 V⎓, IEC PELV/NEC® Class 2
- Operating current: 35 mA max
- Control output: 15–24 V⎓ active high logic control signal with short-circuit protection, open collector when unoccupied
- 10-year power failure memory: restores settings to state prior to power interruption

Environment

- Temperature: 32 °F to 104 °F (0 °C to 40 °C)
- Relative humidity: less than 95%, non-condensing
- For indoor use only

Warranty

- Limited Warranty. For additional warranty information, please visit: www.lutron.com/warranty or call 1.844.LUTRON1 (USA/Canada) or +1.610.282.3800 (Others) for a printed copy

Timeout Options

- 5, 15, 20 or 30 minutes
- Timeouts of 1- and 8-minutes are accessible through advanced button presses

Sensor Coverage Test

- Front-accessible test button
- Lens flashes orange or green for 4 seconds in response to motion during test mode
- Orange: infrared motion detected
- Green: ultrasonic motion detected

Housing

- Rugged, high-impact, injection-molded plastic
- Color-coded leads 6 in (15 cm)

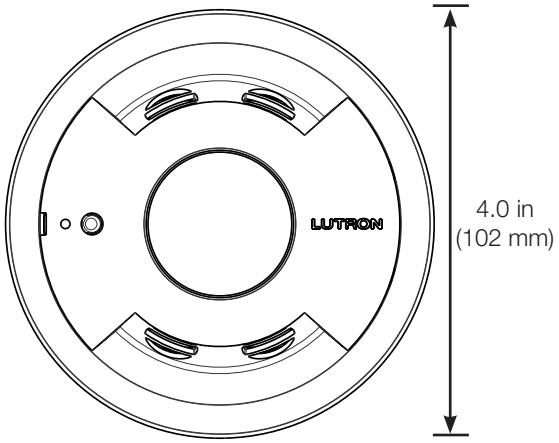
Contact Rating (-R, Relay Models only)

- SPDT 500 mA rated at 24 V⎓ isolated relay

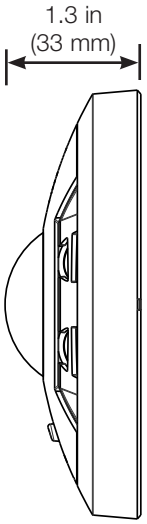
Ambient Light Detection

- Prevents light from turning on when there is sufficient natural light*
- Sensitivity threshold: Adjustable **(Default Off)**

Dimensions



Front View



Side View

* **NOTE:** Light level is evaluated only at the time of an occupancy state change. If the room is already occupied and lights are on due to low ambient light, they will remain on even if natural light increases.

Job Name:	Model Numbers:
Job Number:	

Power Supply and Input Wiring Requirements

The LOS2-series of Lutron wired occupancy sensors can be integrated into many Lutron lighting control solutions. Multiple sensors can be connected into the same input, but will share the same signal and act as one zone (they are not individually addressable). If more than three sensors are to be connected to the same input, you must use the relay-based sensor model in order for the signal to function.

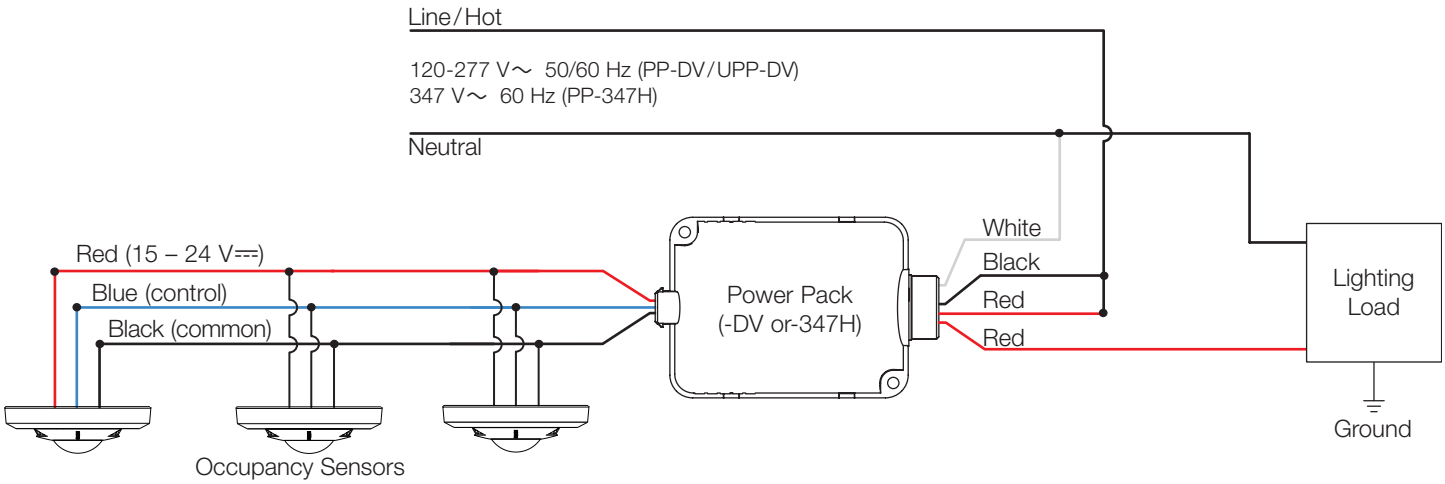
Supporting Hardware	Number of Inputs	Power Supply for Sensors
Energi Savr Node (models with sensor landing points)	4	Powers 1 sensor per input
Energi Savr Node DALI Universal (CCI)	1	None (use PP-DV or similar)
QSM	4	Powers 1 sensor per input Each sensor consumes 2 PDUs from the QS Link (see PDU specifications)
QSE-IO (CCI)	5	None (use PP-DV or similar)
seeTouch (CCI)	2	None (use PP-DV or similar)
RMJS-OT-DV	1	Powers up to 3 sensors
Other (CCI)	–	None (use PP-DV or similar)

Job Name:	Model Numbers:
Job Number:	

3691244a 4 07.21.25

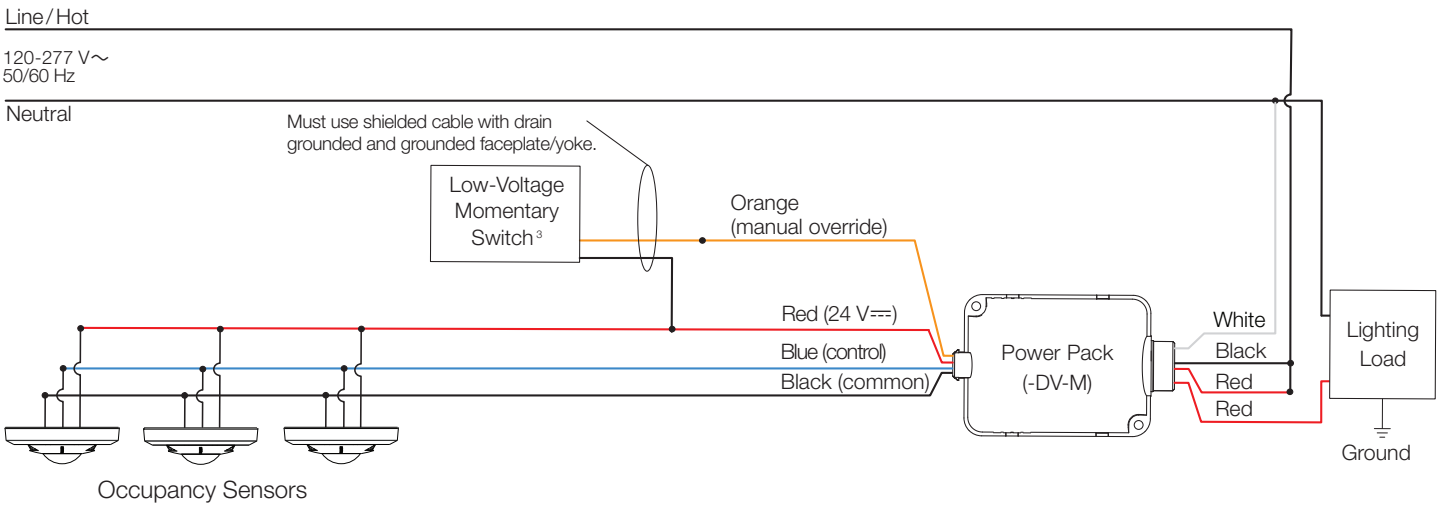
Wiring Stand-Alone Control

Occupancy: 1 to 3 Sensors with Power Pack (PP-DV, UPP-DV or PP-347H)



NOTE: Maximum 3 occupancy sensors can be used with PP-DV/UPP-DV or PP-347H

Vacancy: 3 Sensors with Power Pack (PP-DV-M, UPP-DV-M)[1,2]



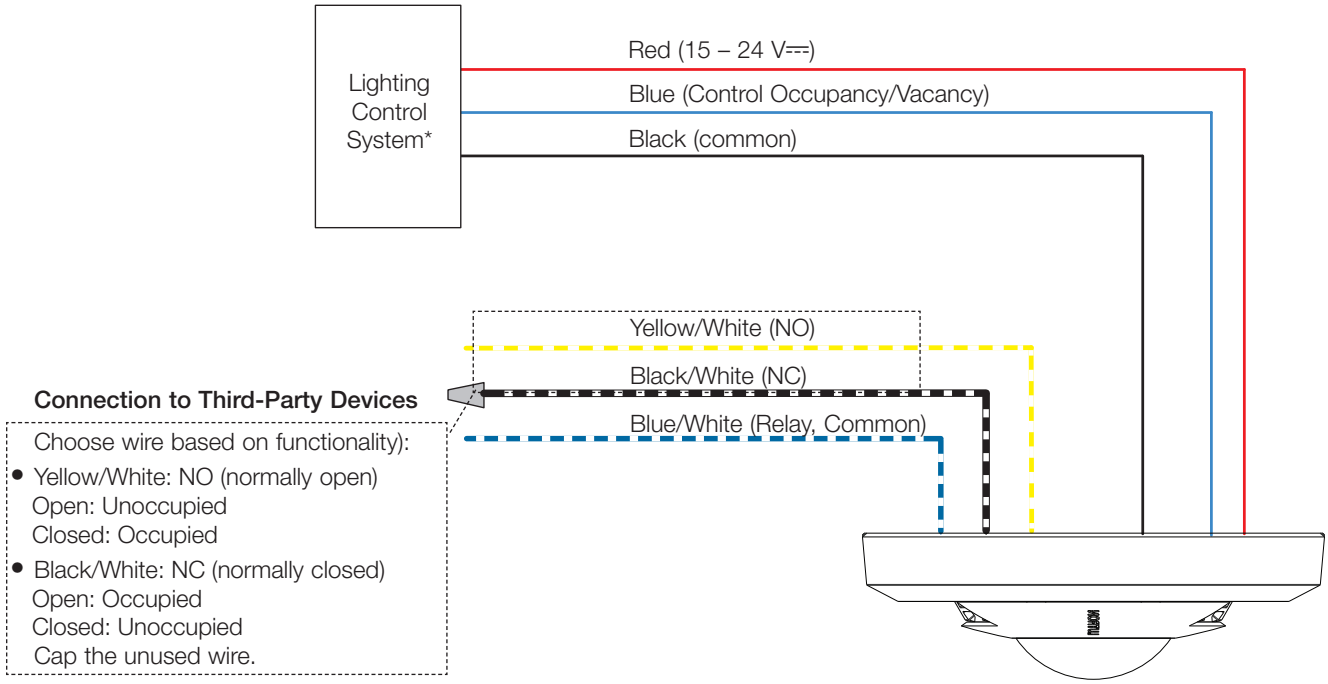
1 Maximum 3 devices (excluding low-voltage momentary switches) can be used with PP-DV-M/UPP-DV-M.
2 The PP-DV-M cannot be used for occupancy functionality. It is a vacancy ONLY solution. For occupancy functionality, use the PP-DV.
3 NTRCS-1 (Nova T☆ momentary switch) or any low voltage momentary switch rated for at least 24 V⎓, 100 mA.

Job Name:	Model Numbers:
Job Number:	

Wiring Stand-Alone Control *(continued)*

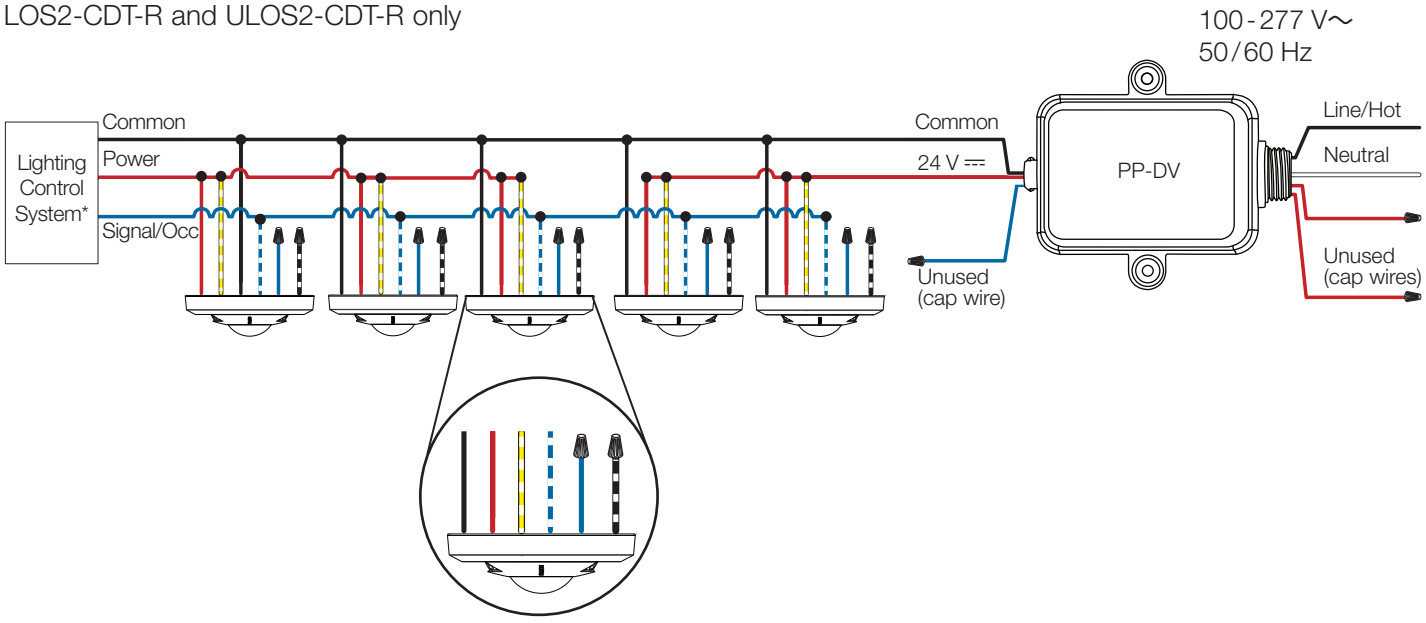
Relay Model Option for Connection to Third-Party Devices

LOS2-CDT-R and ULOS2-CDT-R only



Relay Model Option for Connecting More Than 3 Sensors Using Power Packs**

LOS2-CDT-R and ULOS2-CDT-R only



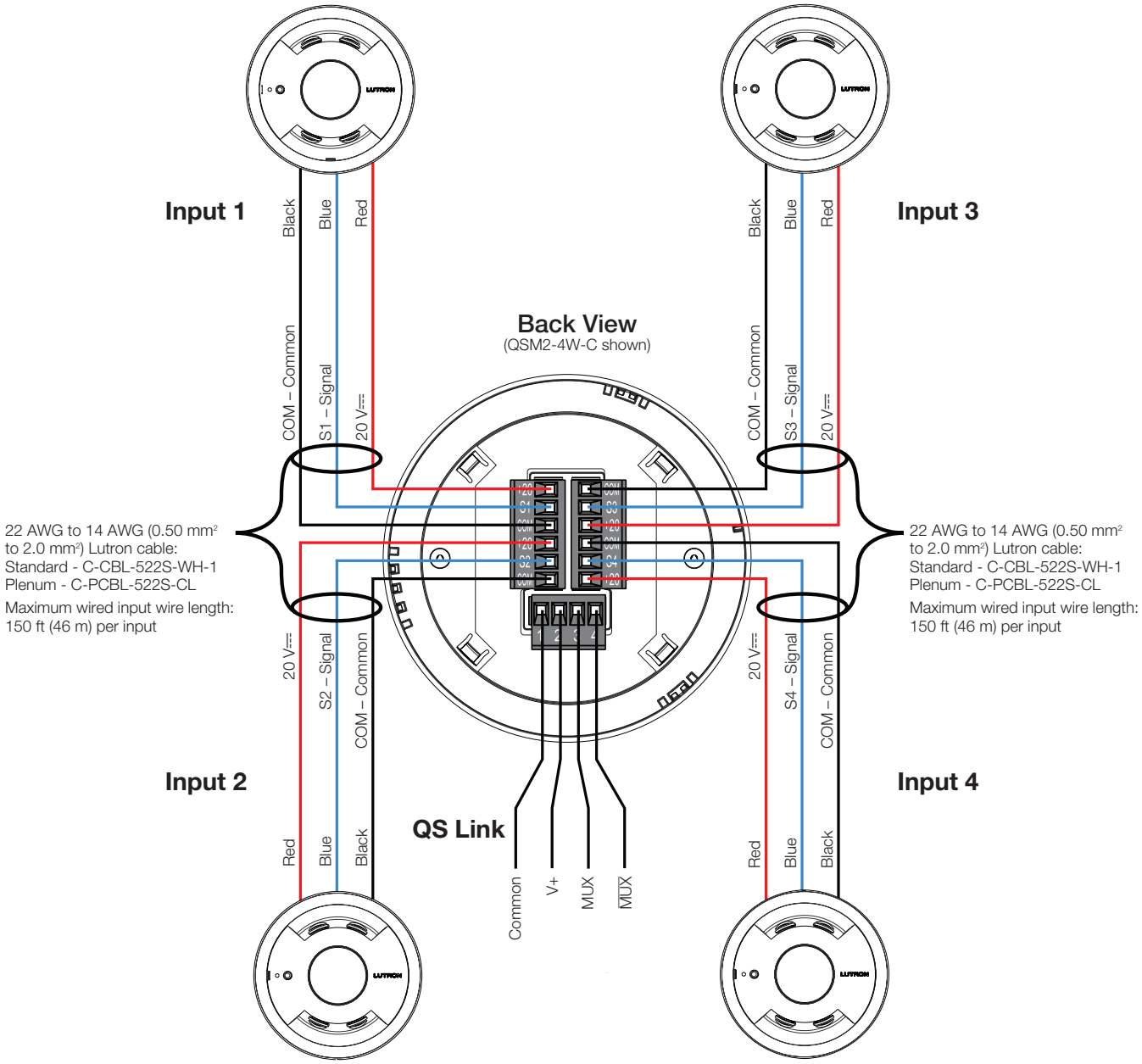
* May require a power pack.

** Power Packs can provide power for up to 3 devices. See Lutron specification submittal P/N 369544 at www.lutron.com for more details.

Job Name:	Model Numbers:
Job Number:	

Wiring System

System with Wired QSM Models Only



NOTE: See QS Sensor Module specification submittal (P/N 369242) for more details.

Job Name:	Model Numbers:
Job Number:	

Installation

Sensor Setup

- Sensor setup is available as a service by Lutron. For more information see the **Sensor Layout and Tuning** service document (Lutron P/N 3601235) at www.lutron.com.

Sensor Placement

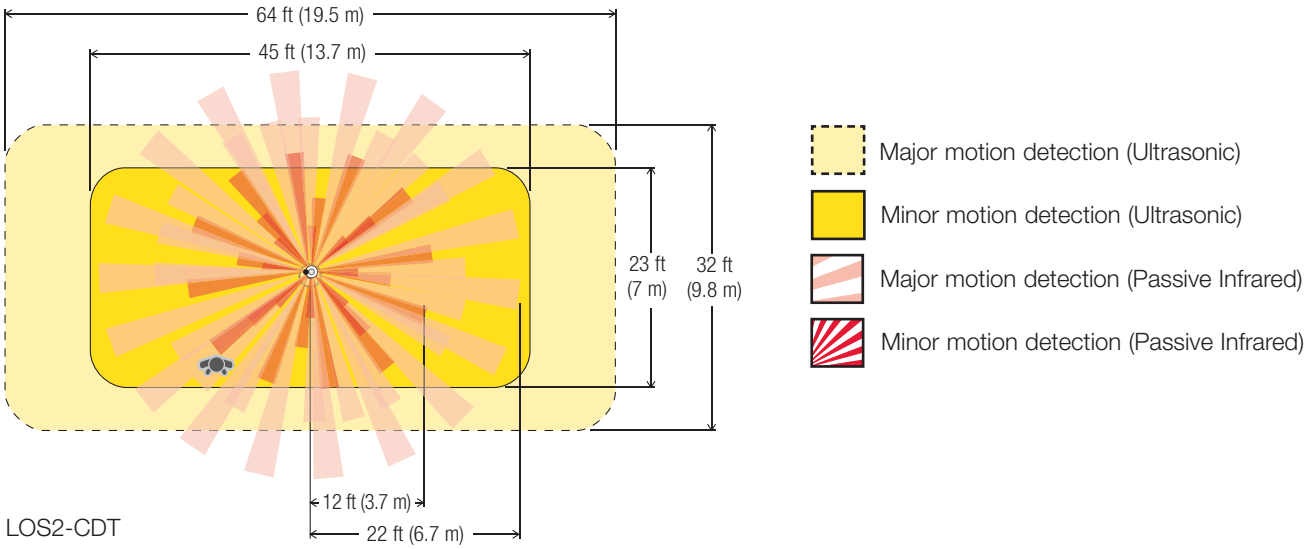
- To trigger occupancy, the PIR sensor requires line-of-sight of room occupants. The sensor must have an unobstructed view of the room. **DO NOT** mount behind or near tall cabinets, shelves, hanging fixtures, ceiling fans, etc. The sensor cannot see through glass objects.
- For better ultrasonic sensing performance, mount the sensor so the grilles face the open portion of the room and are not facing a nearby wall, window, or other obstructing object. Utilize the ultrasonic senor mode adjustments if needed.
- Hot objects and moving air currents can affect the performance of the sensor. **DO NOT** place the sensor within 6 ft (1.8 m) of air vents, air handlers, windows, fans, etc., as this may cause false triggering.
  - The PIR performance depends on a temperature differential between the ambient room temperature and that of room occupants. Warmer rooms may reduce the ability of the sensor to detect occupants. Consider the effects of elevated room temperatures, heat sources, or poor thermal contrast when installing the sensor.
  - The ultrasonic performance can be affected by air currents and moving objects. Consider the effects of fans, HVAC vents, open windows, or moving objects when installing the sensor.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (e.g., person taking a half-step) at a greater distance than it can detect minor motion (e.g., writing at a desk or reading a book).
- Decrease total coverage area by 15% for “soft” rooms (e.g., heavy draperies or thick carpeting).
- Devices emitting radio frequency (RF) energy can affect the performance of sensors. To ensure proper operation, sensors should be mounted at least 4 ft (1.2 m) away from devices that emit radio waves (e.g., microwave ovens, wireless routers, or other non-Clear Connect wireless devices). When using Clear Connect-Type X lamps or fixtures, ensure sensor is mounted at a distance of 2 ft (0.6 m) or greater from the lamp or fixture.
- For additional information on placing sensors, please see the Occupancy/Vacancy Sensor Design and Application Guide (P/N 3683197) located at www.lutron.com.

Job Name:	Model Numbers:
Job Number:	

Installation *(continued)*

Range Diagrams (for reference only)

Top View



LOS2-CDT

Definitions

Major motion: Movement of a person entering or passing through an area.

Minor motion: Movement of a person occupying an area and engaging in small activities (e.g., reaching for a telephone, turning the pages of a book, opening a file folder, picking up a coffee cup).

Fine Motion: Movement of a person occupying an area and engaging in very small activities (e.g., reading a magazine).

Very Fine Motion: Movement of a person occupying an area and engaging in minimal activities (e.g., typing on a keyboard).

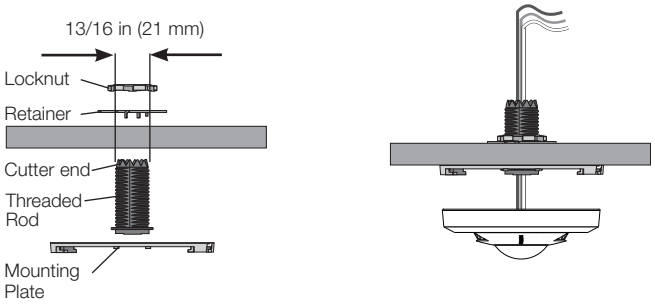
NOTE: Range diagrams are applicable for ceilings heights up to 12 ft (3.66 m).

Job Name:	Model Numbers:
Job Number:	

Mounting

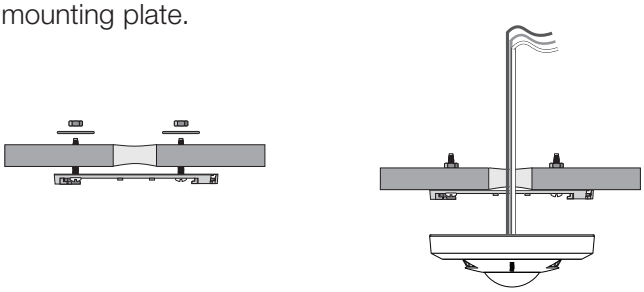
Drop Ceiling (Compressed Fiber Ceiling Tile) Mounting

Twist and lock threaded mounting post onto the mounting plate. Drill through the ceiling tile with the assembly, using the cutter end of the threaded mounting post or drill a 13/16 in (0.8125 in [21 mm]) hole. Secure with retainer and locknut.

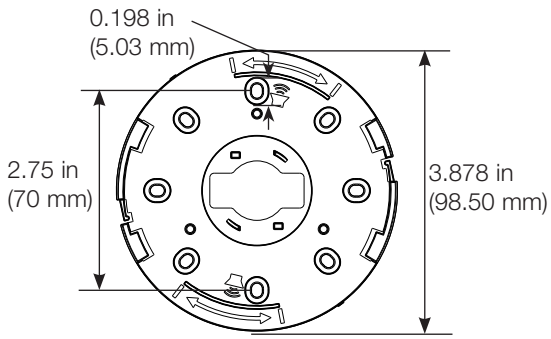


Mounting to Non-Standard Ceiling or Fixture

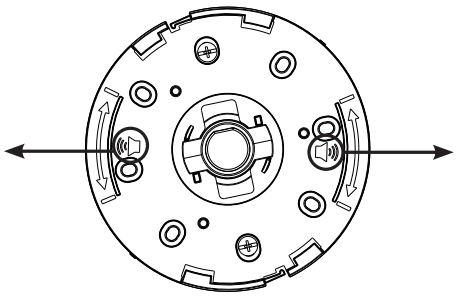
Mount twist-lock mounting plate using the mounting screws, nuts, and washers (included). Drill/punch the wire routing hole through the ceiling tile at the center of the mounting plate.



Mounting Plate Dimensions



Ultrasonic Sensors on the Mounting Plate



Wire Lengths

Maximum Wiring Distance			
Number of Sensors	1	2	3
22 AWG (0.25 mm²)	750 ft (230 m)	375 ft (115 m)	250 ft (75 m)
20 AWG (0.50 mm²)	1200 ft (365 m)	600 ft (180 m)	400 ft (120 m)
18 AWG (0.75 mm²)	2400 ft (730 m)	1200 ft (365 m)	800 ft (240 m)

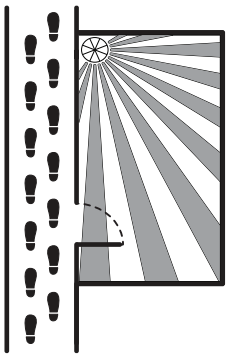
3691244a 10 07.21.25

Using the Infrared Masks

Whenever possible, the Sensor should be installed in a location where it cannot easily see into areas outside the intended space, such as hallways or adjacent rooms. If this situation cannot be avoided, portions of the lens may be covered with the provided mask to block the sensor's view of the undesired areas.

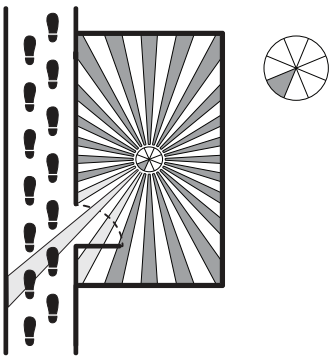
Note: Apply mask to inside of lens, paying careful attention to the orientation it will be in after snapping on the sensor cover.

Corner Ceiling Mount



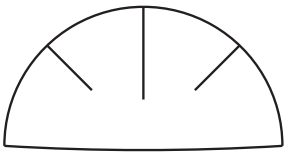
A mask isn't needed in a corner mounted sensor, the PIR sensor can't see the hallway. With the sensor in the corner, change the US channel to 180° field of coverage.

Lens Masking Option



Lens mask can be customized to block the PIR sensor's view of the hallway.

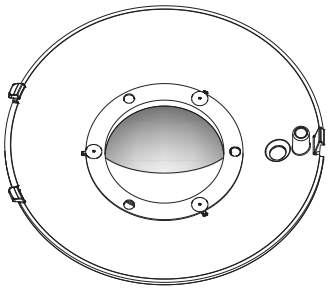
180° Mask



Two 180° masks are provided for fully customizable masking options. Customize for specific area you wish to mask using scissors.

Note: Carefully peel the mask to avoid tearing.

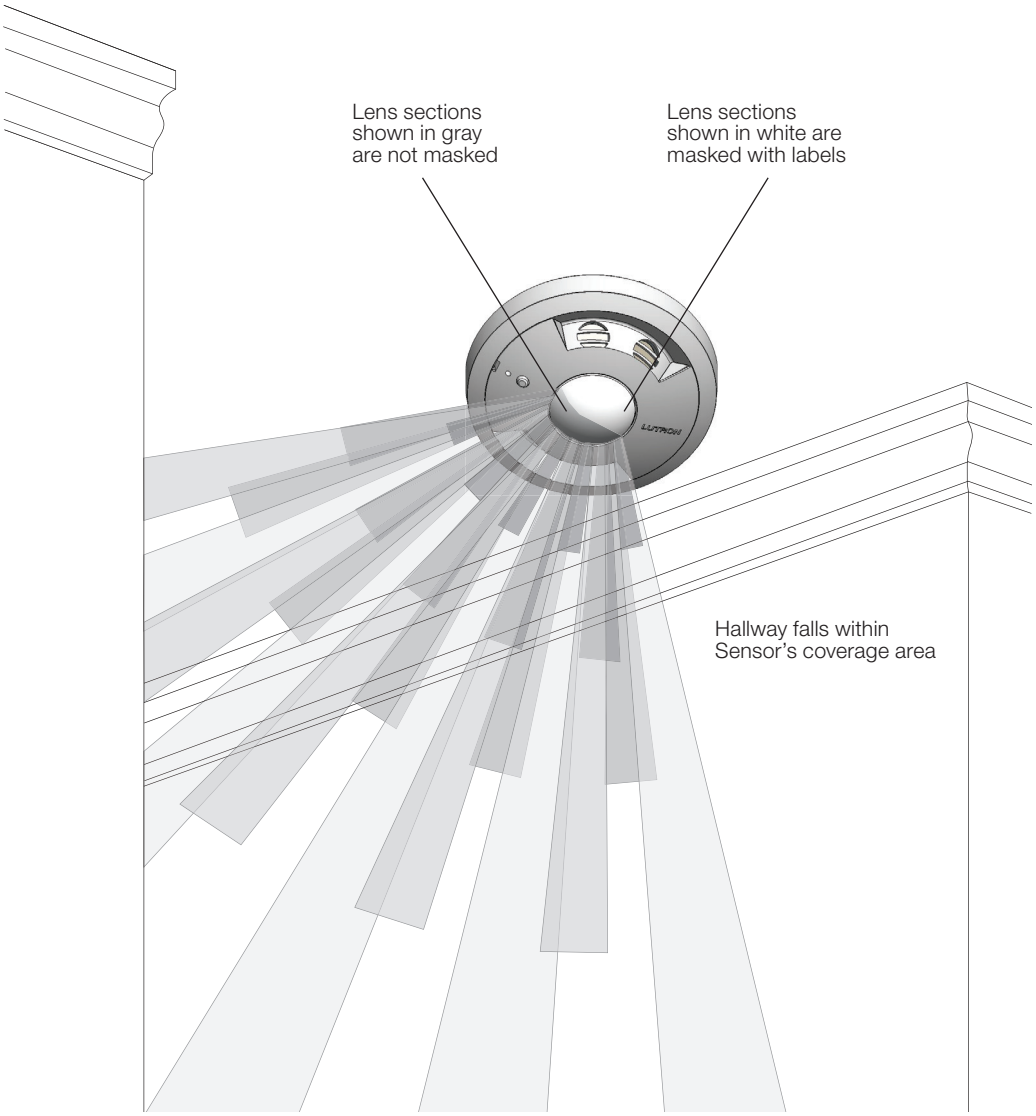
Mask on the Inside of the Lens



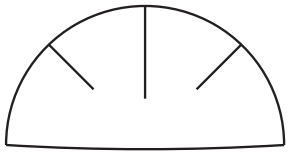
When using the 180° mask, you may want to turn off the corresponding ultrasonic sensors on the half you wish to block.

Job Name:	Model Numbers:
Job Number:	

Using the Infrared Masks *(continued)*



180° Mask



Two 180° masks are provided for fully customizable masking options. Customize for specific area you wish to mask using scissors. **Note:** Carefully peel the mask to avoid tearing.

Job Name:	Model Numbers:
Job Number:	

Sensor Adjustments

Default settings shown in bold

Minutes - Timeout

- 30 min
- 20 min
- **15 min**
- 8 min*
- 5 min
- 1 min*

* To select a 1-minute timeout, press and hold the two buttons (Minutes and ALD) for approximately 6 seconds until the bottom two indicator LEDs turn on briefly and back off indicating the 1-minute timeout has been saved. To select a 8-minute timeout, press and hold two buttons (Minutes and PIR) for approximately 6 seconds until the top two indicator LEDs turn on briefly and back off indicating the 8-minute timeout has been saved.

- Ultrasonic Sensor Modes

- **360° A + B coverage**
- 180° A only coverage
- 180° B only coverage
- Off A + B no ultrasonic detection

- Ultrasonic Sensitivity

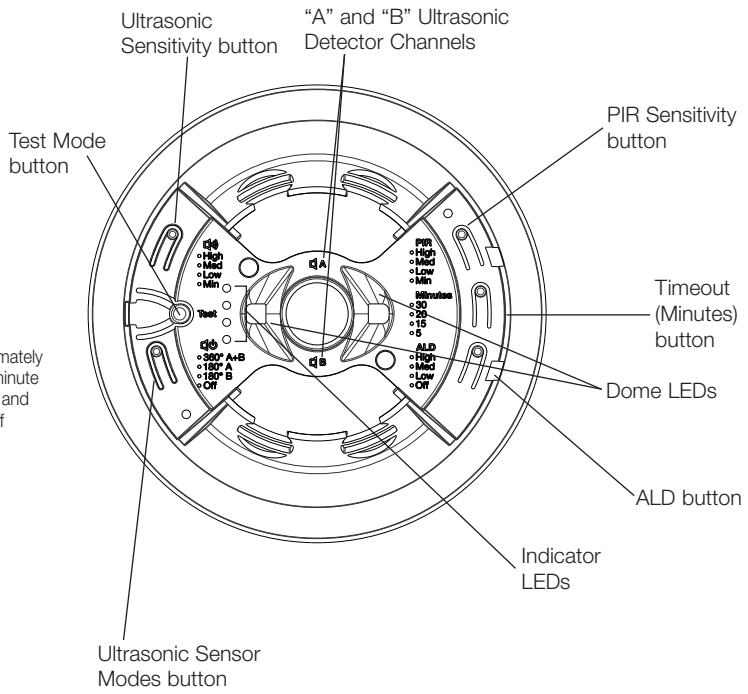
- High
- **Med**
- Low
- Min

PIR - Passive Infrared Sensitivity

- **High**
- Med
- Low
- Min

ALD - Ambient Light Detection (lights turn on only when natural light in the room is below the set threshold)*

- High: In a space with a high amount of ambient light, the sensor will not turn on the lights
- Med: In a space with a medium amount of ambient light, the sensor will not turn on the lights
- Low: In a space with a low amount of ambient light, the sensor will not turn on the lights
- **Off - Ambient Light Detection will have no effect on operation**



* **NOTE:** Light level is evaluated only at the time of an occupancy state change. If the room is already occupied and lights are on due to low ambient light, they will remain on even if natural light increases.

Job Name:	Model Numbers:
Job Number:	