

Basic, Single Output, and Dual Output Occupancy Sensors for use with Luminaires

SLSPIP210, SLSPIP210CT, SLSPIP211 and SLSPIP212 for use with Luminaires

INTRODUCTION

Figure 1: SLSPIP210 and SLSPIP210CT Basic Occupancy Sensor

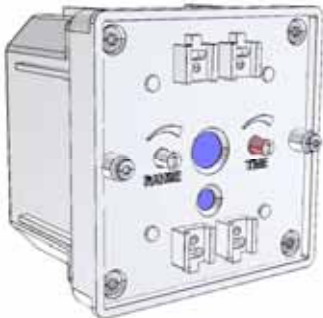


Figure 2: SLSPIP211 Single Output Occupancy Sensor



Figure 3: SLSPIP212 Dual Output Occupancy Sensor



The SLSPIP210, SLSPIP210CT, SLSPIP211 and SLSPIP212 Occupancy Sensors work with a single HID (high intensity discharge) luminaire to reduce the lamp wattage by approximately 50% and then return the lamp wattage to 100% when occupancy is detected in an aisle or room. Motion is detected using passive infrared (PIR) technology.

The Occupancy Sensor is compatible with single magnetic HID luminaires. Compatible luminaires must have constant wattage auto transformer ballast architecture, and a dual-section capacitor. Sensors cannot be used for ganged control of multiple HID luminaires.

Features

All models have the following features:

- Compatible with HID luminaires rated between 120 and 480VAC/60Hz, without adding taps or jumpers.
- Includes a user-adjustable 1 to 15 minute activity timer.
- Includes a user-adjustable range dial to customize PIR sensitivity.
- Available with interchangeable aisle and area lenses.
- Lamp always starts on high to provide full rated HID lamp life, even after AC power bumps or loss of fiber optic signals.
- Includes a manual test switch for self diagnostics that assist with installation and debugging networks.

The SLSPIP210CT is designed for use in cold temperatures and has the following additional features:

- Gaskets in the sealed housing to prevent moisture from entering.
- An internal self-heater for operation in cold temperatures.

Contents of the Box

Item	Quantity
Occupancy Sensor Unit SLSPIP210 or SLSPIP210CT or SLSPIP211 or SLSPIP212	1
Area Lens (attached to the Sensor)	1
Aisle Lens	1
Pinch Bracket	1
Mounting Screws (attached to the bracket)	4
Tilting Screws (attached to the bracket)	2
Yoke (attached to the Sensor)	1
1/2 inch Lock Ring (attached to the Sensor)	1
Instruction Bulletin	1

SAFETY PRECAUTIONS

This section contains important safety precautions that must be followed before attempting to install or maintain electrical equipment. Carefully read and follow the safety precautions below.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must be installed and serviced by qualified electrical personnel.
- Turn off all electrical power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm that power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow these instructions will result in death or serious injury.

DIFFERENCE BETWEEN THE OCCUPANCY SENSORS

The Occupancy Sensors are available in basic sensors (SLSPIP210 and SLSPIP210CT), single output sensors (SLSPIP211), and dual output sensors (SLSPIP212).

Basic sensors are used in sensor per fixture configurations. There are no twist and lock connectors to send or receive fiber optic signals.

Single output sensors include a blue and a black twist and lock connector to send and receive fiber optic signals respectively. The single output sensors provide signal loop-through, and are commonly used in daisy chain configurations.

The dual output sensors have two blue twist and lock connectors that only send fiber optic signals. They are commonly used in configurations that interleave switch packs and sensors.

Common Configurations

Figure 4: SLSPIP212 Sensor in a five-fixture zone with Four SLSPSP101 Single Input Switch Packs

KEY:

- A. SLSPSP101: Single Input Switch Pack (not included)
- B. SLSPIP212: Dual Output Occupancy Sensor

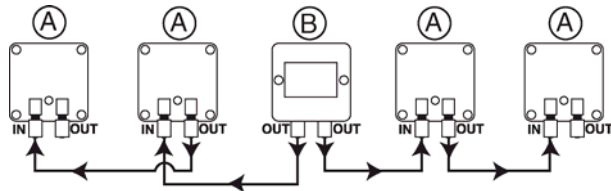
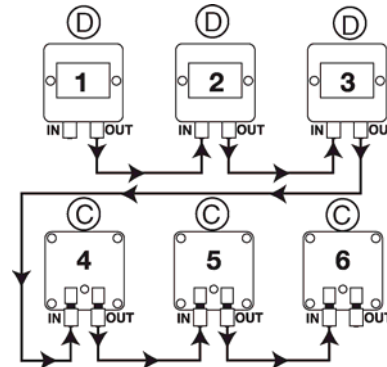


Figure 5: SLSPSP101 Switch Packs and SLSPIP211 Sensors

KEY:

- C. SLSPSP101: Single Input Switch Pack (not included)
 - D. SLSPIP211: Single Output Occupancy Sensor
- NOTE: Upstream Sensors Cannot Hear Downstream Sensors



SWITCHING THE LENS

The Occupancy Sensor comes with two lenses: an area lens (green decal) and an aisle lens (red decal). The area lens comes installed on the unit.

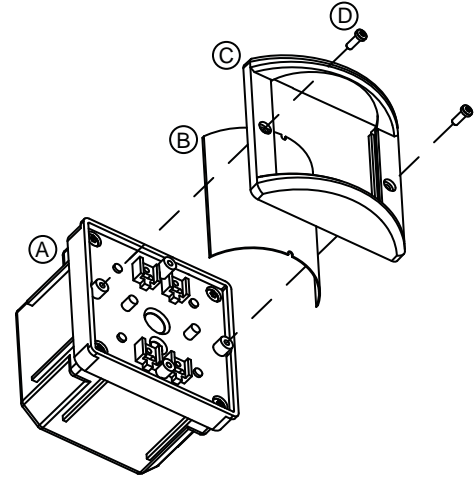
To switch the lens:

1. Unscrew the lens holder from the Sensor. Refer to the "Removing the Lens Holder and Lens from the Sensor" figure.

Figure 6: Removing the Lens Holder and Lens from the Sensor

KEY:

- A. Sensor
- B. Lens
- C. Lens Holder
- D. Screws



2. Push the front sides of the lens to remove from the lens holder. Refer to the "Removing the Lens" figure.
3. Hold the new lens by the sides and gently bend to curve. The smooth surface is the outside of the lens, and the small notches indicate the top and bottom of the lens. Refer to the "Inserting the Lens" figure.
4. Push the lens holder back into the sensor until it snaps.

Figure 7: Removing the Lens

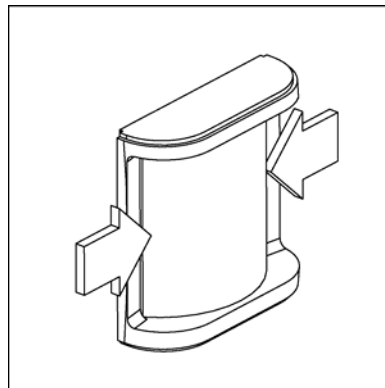
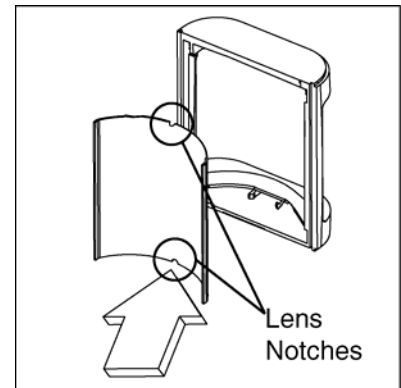


Figure 8: Inserting the Lens



COVERAGE PATTERNS

Figure 9: Coverage Pattern for Aisle Lens

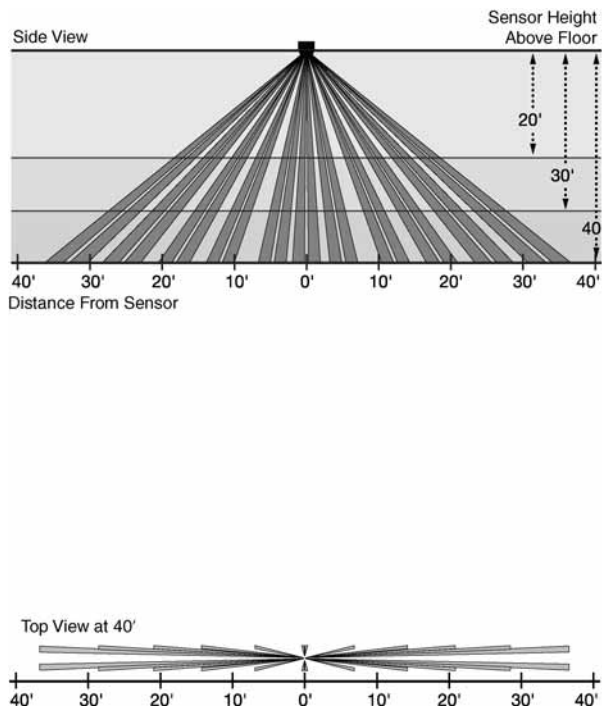
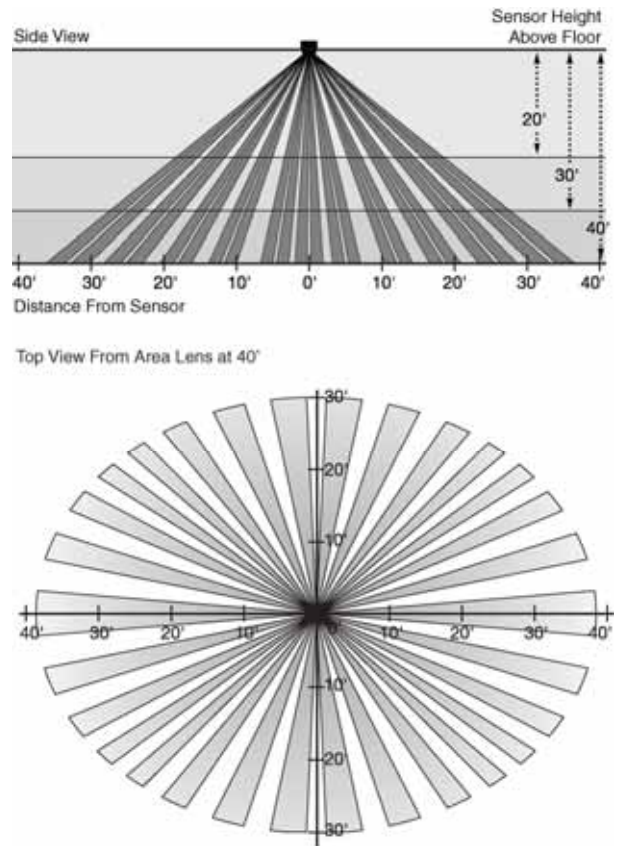
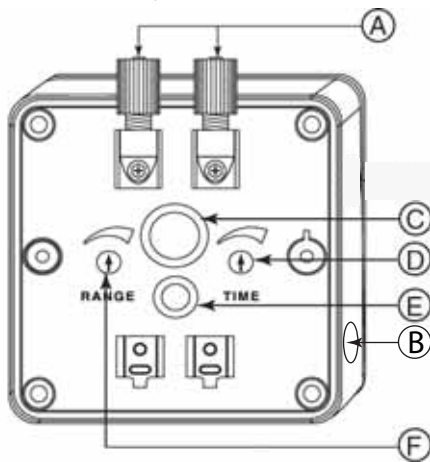


Figure 10: Coverage Pattern for Area Lens



INSTALLATION

Figure 11: Occupancy Sensor Components



The Occupancy Sensor can be mounted in a variety of configurations, and using various installation methods because of its compatibility with many different types of luminaires. Consider the ballast housing used and specific installation circumstances, such as location on the luminaire, when selecting a mounting method.

NOTE: The Occupancy Sensor does not work with HID luminaires equipped with electronic ballasts.

NOTE: The dual capacitor inside the luminaire determines the lamp wattage in the dimmed step. This wattage is unaffected by the Occupancy Sensor.

NOTE: The Occupancy Sensor does not work with a regulated lag ballast incorporating power factor correction.

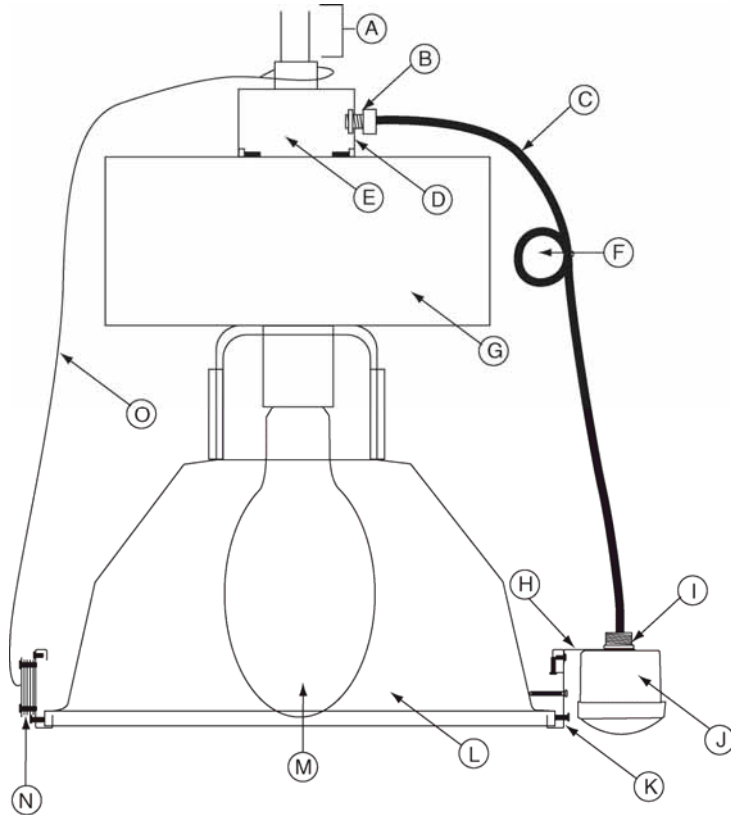
KEY:

- A. Twist and Lock Connectors
- B. "Test Switch Here" Decal
- C. Sensor
- D. Time Dial
- E. LED
- F. Range Dial

Figure 12: Sensor with Luminaire and Components

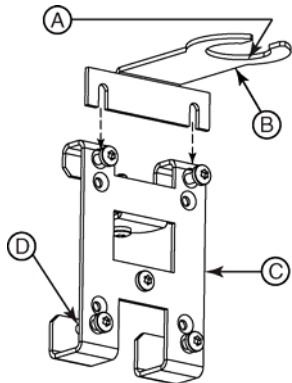
KEY:

- A. Mounting Stem
- B. Cord Grip
- C. Wire Harness
- D. Access Door
- E. Wiring Box
- F. Excess Cord Loop
- G. Ballast Housing
- H. Yoke
- I. Threaded Nipple
- J. Sensor
- K. Pinch Bracket
- L. Reflector
- M. Lamp
- N. Counterweight
- O. Safety Wire



NOTE: Mounting the Occupancy Sensor below the reflector may cause discoloration to the Sensor's housing.

Figure 13: Attaching the Yoke to the Pinch Bracket



KEY:

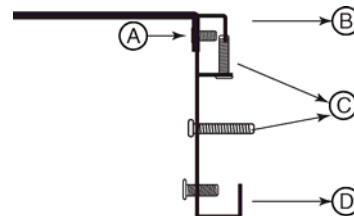
- A. Attach sensor to yoke and secure with lock nut
- B. Yoke
- C. Pinch Bracket
- D. Attach pinch bracket to reflector and tighten

1. Turn OFF the circuit breaker supplying power to the luminaire. Use a properly rated sensing device to verify power is OFF.
2. Punch out the access door knockout on the side of the wiring box, or drill a hole to accommodate the cord grip.
3. Insert the cord grip and wire harness through the wiring box. Use a strain relief mechanism (not provided) at the point where the wire harness enters the wiring box.
4. Wire the sensor to the dual capacitor. Refer to the wiring diagram(s).
5. Screw the yoke to the pinch bracket. Refer to the "Attaching the Yoke to the Pinch Bracket" figure.
6. Use the screws on the bracket to attach the sensor to the rim of the reflector. The mounting bracket is reversible: Use the end of the bracket that fits the thickness of the reflector rim. Refer to the "Pinch Bracket with Screws" figure.

Figure 14: Pinch Bracket with Screws

KEY:

- A. Screw here to connect yoke and claw bracket.
- B. Use this end of the claw bracket to attach sensor to a thick reflector.
- C. Tilting screws
- D. Use this end of the claw bracket to attach sensor to a thin reflector.



NOTE: Over-tightening the mounting bracket screws on an acrylic reflector can cause stress cracks to form months after installation.

7. Use the arrows on the lens cover to orient the lens to the walkway below if using the aisle lens.
8. Use the long screws in the pinch bracket to adjust the angle of the sensor and provide additional gripping of the reflector's rim.
9. An optional counterweight may be purchased separately and mounted to the opposite side of the luminaire reflector to balance the assembly. Use a safety wire to secure the counterweight to the ballast housing.
10. Bundle excess wire harness wire into an excess cord loop and tie so that the wire does not touch the hot reflector.

Dual-Section Capacitor

The luminaires must either come equipped with a dual-section capacitor intended for bi-level dimming or be retrofitted with a dual-section capacitor prior to the Occupancy Sensor installation. The dual-section capacitor must meet voltage and capacitance recommendations of the luminaire or ballast manufacturer.

Capacitors inside the dual section capacitor do not have equal ratings. Refer to the illustrations in the "Wiring Guidelines" and "Parallel or Series Switching Configurations" sections of this bulletin.

Wiring Guidelines

Figure 15: Wiring for Metal Halide Luminaire with Pulse Start Ignition

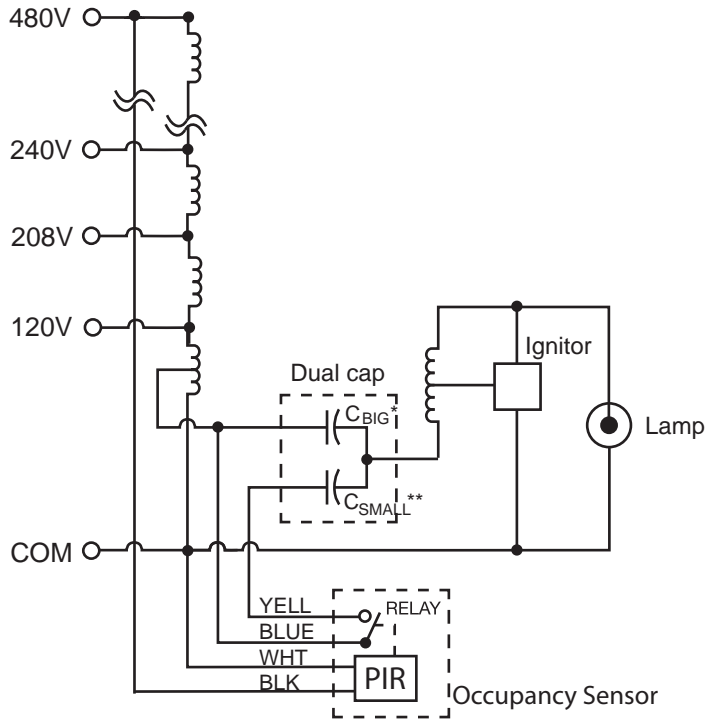
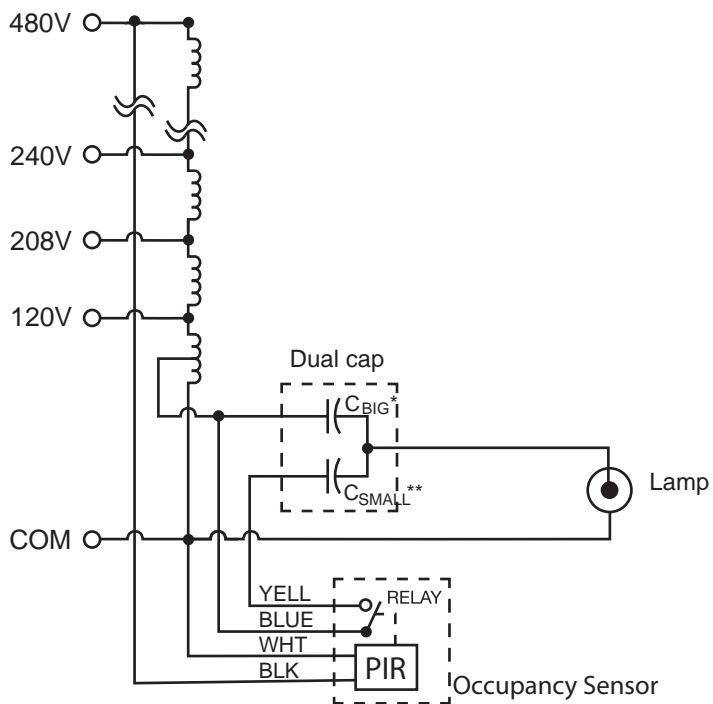


Figure 16: Wiring for Probe Start Metal Halide or High Pressure Sodium Luminaire



* C BIG = the capacitor with the higher microfarad rating.

** C SMALL = the capacitor with the lower microfarad rating.

Parallel or Series Switching Configurations

The Occupancy Sensor is designed for parallel switching. It may be used for series switching, but the current rating of the internal switching device will limit the use of series switching mode to 250 watt luminaires and smaller. See the "Standards and Specifications" section.

Figure 17: Parallel Switching (Preferred Method)

KEY:

- A. C BIG: The capacitor with the higher microfarad rating.
- B. C SMALL: The capacitor with the lower microfarad rating.

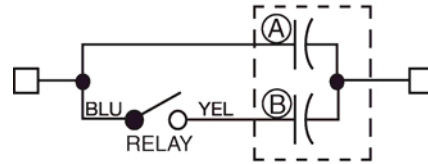
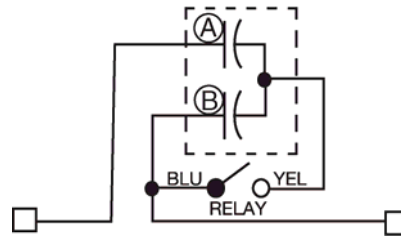


Figure 18: Series Switching (Subject to 4A RMS Maximum)

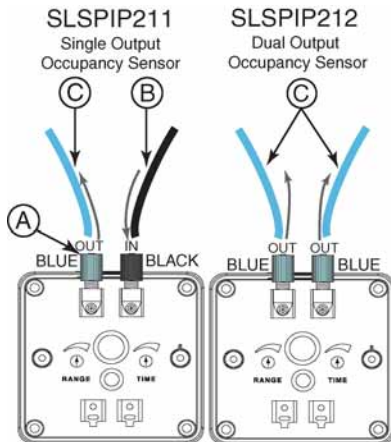
KEY:

- A. C BIG: The capacitor with the higher microfarad rating.
- B. C SMALL: The capacitor with the lower microfarad rating.



Installing the Optical Fiber

Figure 19: Attaching the Optical Fiber



KEY:

- A. Twist and lock connector
- B. Black optical fiber (receiving signal)
- C. Blue optical fiber (sending signal)

NOTE: The "Installing the Optical Fiber" section is only applicable to the SLSPIP211 single output and SLSPIP212 dual output occupancy sensors. SLSPIP210 and SLSPIP210CT basic occupancy sensors have no connectors for optical fiber.

The Occupancy Sensors have fiber optic networking capability using Mitsubishi® SH4001 Optical Fiber Cable. To connect the optical fiber to the twist and lock connectors on the Occupancy Sensor:

1. Turn the twist and lock connectors counterclockwise to open.
2. Remove the white plug from black connector(s).

NOTE: Keep either the white plug or optical fiber inserted into the black connectors. Otherwise the unit may give erratic behavior in response to stray light entering an open black connector, or through an unconnected fiber segment.

3. Insert the optical fiber until it reaches the bottom of the connector.

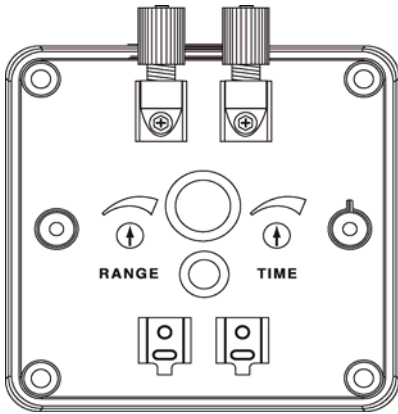
NOTE: Do not remove the protective sheath from the fiber.

4. Turn the twist and lock connector clockwise to close.

NOTE: Never connect two black connectors or two blue connectors. Only connect a black connector to a blue connector.

Adjusting the Settings

Figure 20: Under the Lens Cover of the Sensor



Settings are located behind the lens holder. Before making adjustments, unscrew the lens holder from the Occupancy Sensor.

NOTE: The SLSP1P210 and SLSP1P210CT model occupancy sensors are not shown.

Range

The range dial is set to determine the amount of movement required to trigger the sensor. The range is preset at the most common level of 50% sensitivity however sensor range is influenced by environmental factors such as the floor temperature. Turn the dial to the desired setting from 0% (fully counter-clockwise) to 100% (fully clockwise).

Time

The time dial is set to assign the length of time the luminaire stays ON after motion is no longer detected. The time is preset at 10 minutes. Turn the dial to the desired setting from 1 minutes (fully counter-clockwise) to 15 minutes (fully clockwise).

LUMINAIRE WARM-UP

After the Occupancy Sensor is installed and the line power is turned ON, the luminaire is automatically at 100% wattage for 15 minutes.

During the warm-up period, the Occupancy Sensor does not respond to motion. Refer to the "LED Blinking Patterns for the Luminaire" table for blinking pattern of the Occupancy Sensor during the warm-up period.

Upon completion of the warm-up, the Occupancy Sensor automatically returns to the low power step or to the relay state determined by the inbound optical fiber.

Refer to the "Testing the Occupancy Sensor" section to override the warm-up.

NOTE: The magnet used to test the Occupancy Sensor overrides and cancels the 15 minute warm-up period. To ensure proper warm-up, and preserve lamp-life, do not use the magnet and test the Occupancy Sensor until after the 15 minute warm up is complete.

TESTING THE OCCUPANCY SENSOR

The Occupancy Sensor has an LED that blinks three distinct patterns to indicate if motion is detected by the luminaire.

Table 1: LED Blinking Patterns for the Luminaire

Pattern	Motion Observed?	Luminaire State
Single flash	No	The luminaire is at 50% wattage
Double flash	No	The luminaire is at 100% wattage
Triple flash	Yes	The luminaire is at 100% wattage

During testing, the installer uses a magnet to toggle the Occupancy Sensor's relay and confirm proper operation. Follow the instructions below to toggle the luminaire between 100% wattage and 50% wattage.

1. Turn ON the circuit breaker that supplies power to the Occupancy Sensor's power pack.
2. Wait until the 15 minute luminaire warm-up period is complete.
3. Place a pocket magnet near the "TEST SWITCH HERE" decal on the Occupancy Sensor. Refer to the "Occupancy Sensor Components" figure. The audible click indicates the Occupancy Sensor has changed states.

NOTE: Use a magnet of sufficient strength. A pocket magnet is generally strong enough; however a flexible refrigerator magnet is not.

4. Remove and replace the magnet to change the state again. As the magnet is removed and replaced, the luminaire toggles between the high brightness and dimmed states.

For Sensor models with an input connector (a black connector) follow the steps below.

NOTE: The steps below are not necessary for Sensor models with two output connectors (two blue connectors).

5. Use a flash light, or other light source, to shine light into the fiber that is connected to the black connector.
6. The luminaire changes to 100% wattage when the fiber is illuminated.
7. Darken the fiber attached to the Occupancy Sensor's black connector by placing your thumb over the open end of the fiber.
8. The luminaire changes to 50% wattage if no motion is detected.

Wave your hand under the occupancy sensor when the luminaire changes to 50% wattage. The light increases to 100% wattage. The output fiber (blue) emits a red led light when wattage is increased. This can be seen by looking at the tip of a unconnected output fiber segment.

STANDARDS AND SPECIFICATIONS

Standards	
UL and cUL Listed	
FCC Part 15 Class B	
Specifications	
Fixture Compatibility	HID with constant wattage autotransformer ballast
Dimming Method	Relay-switched dual-section capacitor
Switching Configurations	Parallel (preferred) or series capacitors
Relay Current Rating	4 amperes RMS maximum
Maximum Fixture Wattage	1000 watts parallel mode/250 watts series mode
AC Line Voltage (white and black wires)	120/208/240/277/347/480VAC
Power Consumption	3 watts maximum
Maximum Fiber Spacing Between Nodes	200 ft.
Ambient Temperature Range	SLSPIP210, SLSPIP211, SLSPIP212: 32 to 122 °F (0 to 50 °C) non-condensing SLSPIP210CT: -10 to 122 °F (-23 to 50 °C) non-condensing
Observed Motion ON time	1 to 15 minutes (user adjustable)
Lamp Warm-up Interval	15 minutes (not adjustable)
Wire Harness	4 Conductor 18 AWG stranded copper wire
Wire Harness Length	36 inches
Dimensions (including mounting nipple)	3.25in. x 3.25in. x 3.25in. (82.56mm x 82.56mm x 82.56mm)

Contact the Customer Information Center for technical support by phone at 1-888-778-2733 or e-mail at lightingcontrol.support@us.schneider-electric.com.

You may also find helpful information on our web site at www.Schneider-Electric.us.