

# Integrated Smart Sensor and Photocell

Cat. No. ZLD1Z-I0W



## WARNINGS

- **TO AVOID FIRE, SHOCK, OR DEATH: TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT POWER IS OFF BEFORE WIRING!**
- To be installed and/or used in accordance with appropriate electrical codes and regulations.

## CAUTIONS

For indoor or outdoor applications.

DI-000-ZLD1Z-02B

## INSTALLATION INSTRUCTIONS

ENGLISH

### Product Description

The Leviton Integrated Smart Sensor and Photocell uses Bluetooth™ 5.0 technology for configuration. It is designed for use with Switching or 0-10V LED Drivers and Fluorescent Ballasts and uses Passive Infrared (PIR) detection technology to monitor a space for occupancy using advanced lenses. The specialized lenses provide extended Field-of-View (FOV) for low-mid bay and mid-high bay applications.

Leviton's Integrated Smart Sensors combine multiple sensors and technology to provide lighting control automatically and efficiently. Occupancy sensors turn the lights ON—and keep them ON—while the space is occupied and turns them OFF when the space is vacant, and the delayed-off timer has expired. Photocell detects natural light and dims lighting up or down as needed for additional energy efficiency and occupant comfort benefits. The sensor continually analyzes and adjusts to ensure adequate lighting under varying conditions.

### For Optimal Performance:

The ZLD1Z-I0W sensor lenses establish dozens of zones of detection. The sensor is sensitive to the heat emitted by the human body. In order to trigger the sensor, the source of heat must move from one zone of detection to another. The device is most effective in sensing motion across its field-of-view, and less effective sensing motion directly towards or away from the sensor. Keep this in mind when selecting the installation location. Note that occupancy sensors respond to rapid changes in temperature, so care should be taken NOT to mount the device near a climate control source (i.e., radiators, air exchanges, and air conditioners). Hot or cold drafts will register as body motion to the device and will trigger it if the unit is mounted too close. It is recommended to mount the occupancy sensor at least 6 ft away from a climate control source.

### Tools Needed:

- Wire Stripper
- Cutters
- #0 Slotted Screwdriver

### Parts Included:

- Fixture Sensor (1)
- Low/Mid Bay Lens (1)
- High Bay Lens (1)
- Gasket/Rubber Flat Washer (1)
- Lock Nut (1)
- Aisleway Mask Cover (2)

SPECIFICATIONS	
<b>Input Voltage/Frequency</b>	120-277 VAC, 50/60 Hz
<b>Input Current</b>	
Max	15 mA
Standby	8 mA
<b>Load Ratings</b>	
LED, Electronic Ballast, General Use @ 120V	6.7 A
LED, Electronic Ballast, General Use @ 230V	5.0 A
LED, Electronic Ballast, General Use @ 277V	5.0 A
Resistive, Tungsten @ 120V	800 W
Resistive, Tungsten @ 230V	1,150 W
Resistive, Tungsten @ 277V	1,400 W
Motor @ 120 - 277V	1/3 hp
0 - 10V Dimming Control	50 mA MAX (sinking)
<b>Terminal Torque Rating</b>	2.6 lb.-in. (0.3 Nm)
<b>Environmental Rating</b>	IP66* (Type 3R)
<b>Network Connections</b>	Bluetooth 5.0
<b>Operating Temperature</b>	-40 °F to 167 °F (-40 °C to 75 °C)
<b>Storage Temperature</b>	-40 °F to 185 °F (-40 °C to 85 °C)
<b>Relative Humidity</b>	0% to 90% RH, Non-Condensing
<b>Purpose of Control</b>	Energy Management Equipment
<b>Pollution Degree</b>	2
<b>Impulse Voltage</b>	4,000V
<b>Action Control Type</b>	1
<b>Dimensions</b>	Width: 1.39 in. (35.3 mm) Length: 3.75 in. (95.3 mm) Depth: 0.91 in. (23 mm)

\* When installed in an appropriate IP66 rated enclosure/fixture.

## Installation

### 1. WARNING:

**TO AVOID FIRE, SHOCK, OR DEATH, TURN OFF POWER** at circuit breaker or fuse and test that power is off before wiring!

### 2. Prepare and connect wires.

Refer to the appropriate wiring diagram. **For 0-10V Control Wiring:** Connect the VIOLET wire to the 0-10V DIM (+) terminal and the GRAY or PINK wire to the 0-10V DIM (-) terminal using Class 1 or Class 2 wiring methods as indicated in these instructions, ballast/fixture/driver instructions, or ballast/fixture/driver label markings. Observe all requirements of any authority having jurisdiction with respect to wire type, sleeving, isolation methods, and the like.

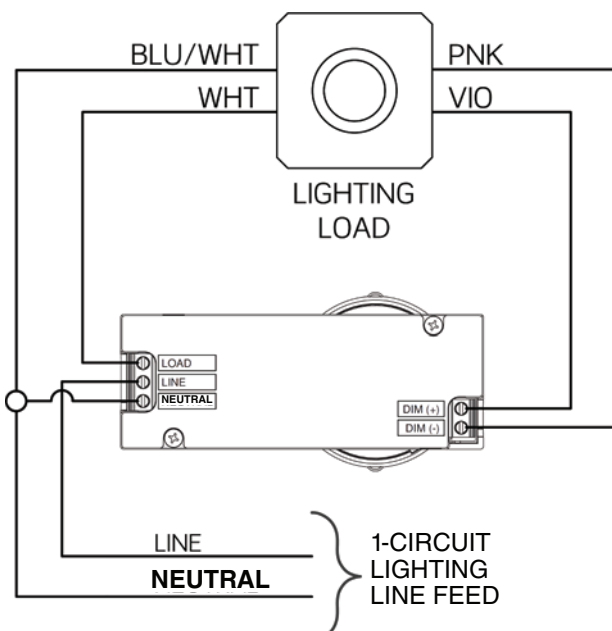
### 3. Install the sensor.

- The sensor is designed to be installed through a 1.3 in. diameter hole in material up to 0.125 in. thick. Use lock nut to further secure controller, if needed.
- Remove the nut from the lens tube.
- Install sensor through hole and tighten nut to no more than 15 lb.-in.
- Install lens by lining up the mark on the lens 45° counterclockwise from the near end of the sensor and rotating it 45° clockwise to lock it in place.
- Install optional mask (if required) by aligning the marks on the lens and mask and rotating the mask.
- Restore power at circuit breaker or fuse.

### NOTES:

- Allow approximately 30 seconds for start-up. If the lights turn ON and the LED blinks when a hand is waved in front of the lens, then the sensor was installed properly. If the operation is different, refer to the Troubleshooting section.
- The sensor is preset to work without any adjustments. If you would like to change the factory settings, refer to the Configuration section.

## Wiring Diagram



FIELD OF VIEW			
Mounting Height (Ft.)	Field of View Lens	Major (Sq. Ft.)	Minor (Sq. Ft.)
8	Low Bay	2050	900
15	Low Bay	1750	750
20	Low Bay	1850	350
20	High Bay	2300	1050
30	High Bay	5300	800
40	High Bay	8250	550

WEBVISION

## Operation

### Occupancy Operation

**Occupancy Mode:** The Occupancy mode and associated settings are configured using the Leviton Smart Sensor App. These configuration options define how the sensor responds to occupancy.

- **Occupancy (DEFAULT):** In this mode, motion detection by the infrared sensor will turn the lights ON as well as keep them ON.
- **Photocell-Only (Occupancy Disabled):** When in Photocell-Only mode, the Occupancy Sensor is disabled, and the sensor ignores motion. In this mode the lights are ON and the sensor performs daylighting/daylight harvesting only.

### Photocell Operation

**Daylight Mode:** The Daylight mode and associated settings are configured using the Leviton Smart Sensor App. These configuration options define how the sensor responds to ambient lighting conditions.

- **Ambient Light Hold OFF Mode (Daylighting):** This mode is used for ON/OFF applications to hold lights OFF when ambient light level exceeds a set threshold. When little or no daylight is available, the sensor will turn ON the load. As daylight contribution increases and crosses a configured threshold, the sensor will hold the load OFF. If light level drops below the threshold for the duration of the Daylight Response Time (default 5 minutes), the hold is released, and the load is turned ON. Ambient Light Hold OFF Threshold is derived by the calibration routine when the photocell is in the Closed Loop mode. The daylight sensor levels and response time can be adjusted using the Smart Sensor app.
- **Daylight Harvesting Mode (Default):** Daylight Harvesting adjusts the light levels in the space through the full dimming range to maintain a Target Light Level based on the amount of ambient light. When no daylight is available, the sensor allows the load to operate at its maximum level. As daylight level increases in the space, the sensor dims the load. The user can configure the lower dimming limit for Daylight Harvesting, including dim to OFF. If dim to OFF is enabled, when the minimum dim level is reached and the measured light level remains above target, the sensor will hold the lights off until the light level drops below target for the duration of the Daylight Response Time (default 5 minutes). As the daylight level decreases in the space, the sensor will increase the light output until the target is reached. As the light levels change, the sensor will reduce or increase the light output to maintain the target. The light level change occurs with a user configurable fade rate to make the light level transition unnoticeable to occupants. The Target Light Level and other Daylight Harvesting settings are configured in the Smart Sensor App.
- **Ambient Light Match Mode (Reverse Daylight Harvesting):** This mode adjusts the light levels in the space through the full dimming range based on the amount of ambient light in Open Loop mode and using a bi-level method in Closed Loop mode. When no daylight is available, the sensor allows the load to operate at a defined partial level or lower limit. As daylight level increases in the space, the sensor increases the light output. As the daylight level decreases in the space, the sensor will decrease the light output until the lower limit is reached. As the light levels change, the sensor will reduce or increase the light output to minimize the visual transition for drivers or pedestrians entering or exiting an enclosed artificially lit structure. The light level change occurs with a user configurable rate to make the light level transition unnoticeable to occupants. The Target Light Level and other Daylight Harvesting settings are configured in the Smart Sensor App.

**NOTE:** The Motion Indicator light will blink RED twice (2x) (once per second) for 2 seconds each time motion is detected.

### Configuration

The ZLD1Z-I0W Sensor is designed to work out of the box in default settings. Changes to these settings and additional product configuration can be performed using the Leviton Smart Sensor App, downloadable from Google Play™ or the Apple App Store®, using any Bluetooth™ enabled Android™ or iOS Device.

#### To pair to device using the Leviton Smart Sensor App:

- Power ON the device.
- Open the Leviton Smart Sensor App and select "Fixture Mount Sensors."
- The device can be found by scanning for nearby devices. Devices can be identified in the app to confirm you are connected to the right sensor.

#### Use the Leviton Smart Sensor App to:

- Set photocell mode to Daylight Harvesting (0-10V Dimming, default), Daylighting (ON/OFF Control), Ambient Light Match (Reverse Daylight Harvesting), or OFF.
- Calibrate the photocell manually or with Auto-Calibration. Auto Calibration and Daylight Harvesting are ON by default and the Auto Calibration process will begin immediately when the device is powered on, or after a hard reset.
- Adjust the sensitivity of the sensor to increase or decrease field-of-view coverage area, based on desired coverage area.
- Adjust time-outs (amount of time before lights/load will turn OFF after occupancy is no longer detected).
- Dimming configuration, including partial ON and partial OFF levels and time-outs.
- Set a security code to lock configuration.
- See Leviton Smart Sensor App for additional settings and other programming options.

### Troubleshooting

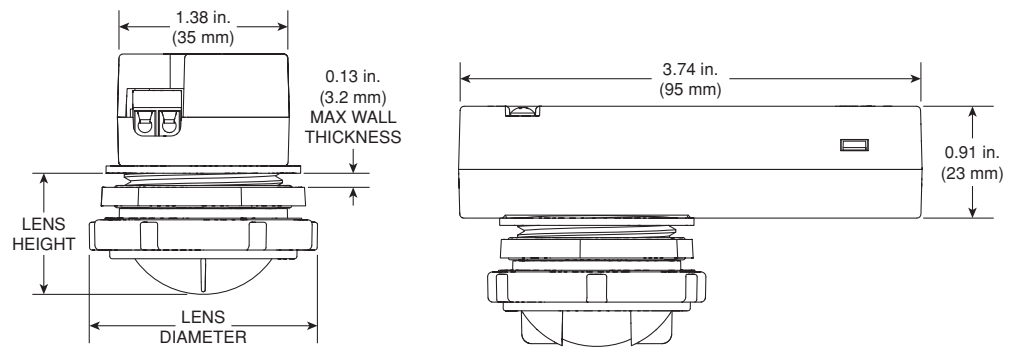
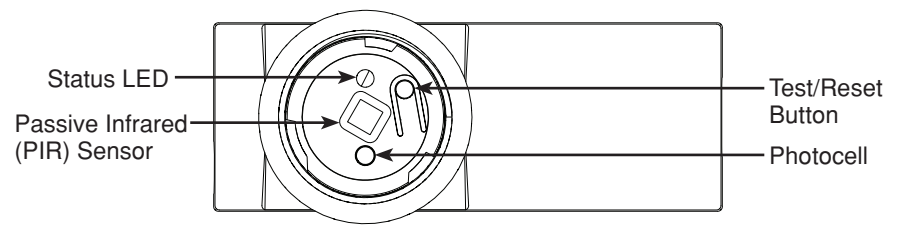
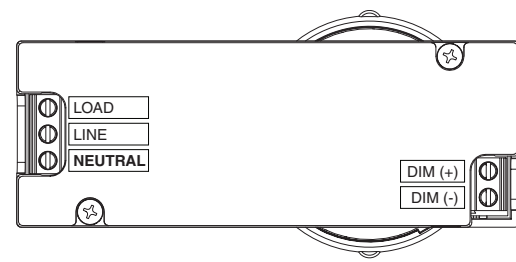
- If sensor does not trigger when entering the room or space, increase the sensitivity level of the sensor and/or check the daylighting settings (increase the daylighting level).
- To test the sensor's Field Of View (FOV), use Walk Test mode in the Smart Sensor App. The Walk Test mode will temporarily reduce the timeout of the sensor to 15 seconds.
  - **NOTE:** Photocell Auto-Calibration will be paused while in Walk Test mode.
- To exit Walk Test mode:
  - Disable it from the Smart Sensor App.
  - Power Cycle the device.
  - Walk Test mode will automatically time-out after 15 minutes. After exiting Walk Test mode, normal Operation and/or Auto-Calibration will resume.
- If the lights constantly stay ON even when room is unoccupied:
  - Check the Time-Out setting and confirm set to desired time.
  - Try lowering the sensor sensitivity; if problem persists, try lowering again.
  - Check for reflected heat/motion, as sensor may be seeing motion through a window.
  - Check for adjacent HVAC and/or heater ducts.
- If you are unable to connect to the sensor from the App, resetting or restarting the device may resolve connectivity issues.
  - **Soft Reset:** To restart the sensor, press and hold the RESET/TEST button for 2 to 5 seconds. After 10 to 15 seconds, the LED will blink BLUE five times (5x) to indicate that the reset was successful.
  - **Hard Reset:** To reset the sensor and return to factory defaults, press and hold the RESET/TEST button for 20 to 25 seconds. If you exceed 25 seconds, no action will be taken. The LED will blink BLUE at 20 seconds. After 10 to 15 seconds, the LED will blink BLUE five times (5x) to indicate that the reset was successful.
- Where do I get help on App features?
  - Contextual help is provided within the Leviton Smart Sensor App. For additional support, please reach out to our Technical Service Team.
- If the LED on the sensor is flashing PURPLE, this indicates that the devices' health check failed. This is usually a hardware related problem. Disconnect power from the device for 30 seconds. If the problem persists after cycling power, please contact the Leviton Technical Service Team at 1-800-824-3005.

#### FOR CANADA ONLY

For warranty information and/or product returns, residents of Canada should contact Leviton in writing at Leviton Manufacturing of Canada ULC to the attention of the Quality Assurance Department, 165 Hymus Blvd, Pointe-Claire (Quebec), Canada H9R 1E9 or by telephone at 1-800-405-5320.

#### LIMITED 5 YEAR WARRANTY AND EXCLUSIONS

Leviton warrants to the original consumer purchaser and not for the benefit of anyone else that this product at the time of its sale by Leviton is free of defects in materials and workmanship under normal and proper use for five years from the purchase date. Leviton's only obligation is to correct such defects by repair or replacement, at its option. For details visit [www.leviton.com](http://www.leviton.com) or call 1-800-824-3005. This warranty excludes and there is disclaimed liability for labor for removal of this product or reinstallation. This warranty is void if this product is installed improperly or in an improper environment, overloaded, misused, opened, abused, or altered in any manner, or is not used under normal operating conditions or not in accordance with any labels or instructions. There are no other or implied warranties of any kind, including merchantability and fitness for a particular purpose, but if any implied warranty is required by the applicable jurisdiction, the duration of any such implied warranty, including merchantability and fitness for a particular purpose, is limited to five years. Leviton is not liable for incidental, indirect, special, or consequential damages, including without limitation, damage to, or loss of use of, any equipment, lost sales or profits or delay or failure to perform this warranty obligation. The remedies provided herein are the exclusive remedies under this warranty, whether based on contract, tort or otherwise.



LENS ASSEMBLY DIMENSIONS		
DIMENSION	LOW BAY LENS	HIGH BAY LENS
Lens Diameter	1.87 in. (47.6 mm)	2.84 in. (72 mm)
Lens Height	1.09 in. (27.6 mm)	1.46 in. (37 mm)

INDICATOR LIGHT DESCRIPTIONS	
LED	Action / Definition
RED	Blinks ON twice (2x) (once per second) upon PIR Detection.
Blinking RED	Device in Bluetooth reset; it will continue until reset is complete and then stop.
Alternating BLUE/RED	Device in Installation/Test mode (Factory Only).
Blinking GREEN	Device is in Identify mode.
Alternating GREEN/BLUE	Device is in 24-Hour Daylight Auto-Calibration mode.
Blinking GREEN/BLUE (for 2 seconds every 30 seconds)	Device is in Daylighting mode.
Flashing BLUE (for 2 seconds every 30 seconds)	User Override mode is active.
BLUE	Blue LED cycles steady ON for 2 seconds and then OFF for 2 seconds while connected to BLE.
Flashes PURPLE	Device is in health check failure.

BUTTON PRESS	
ACTION	DESCRIPTION
Single Press	Toggle between 0%, 10%, 50%, 100% dimming
Hold for 2 to 5 seconds	Soft Reset
Hold for 5 to 10 seconds	FOV Test mode/Photocell Light Pipe Check mode
Hold for 20 to 25 seconds	Factory Reset

#### FCC STATEMENT:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

#### IC Statement

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions: (1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Any changes or modifications not expressly approved by Leviton Manufacturing Co., could void the user's authority to operate the equipment.

#### RF EXPOSURE AND CO-LOCATION

To ensure compliance with FCC's and ICSED Canada's RF exposure requirements, this device must be installed to provide a minimum of 20 cm. between the device and people. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

#### FCC SUPPLIERS DECLARATION OF CONFORMITY

Manufactured by Leviton Manufacturing, Inc., 201 N Service Road, Melville, NY, <http://www.leviton.com>. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

#### Trademark Disclaimer

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