



# WIRELESS CEILING MOUNT DAYLIGHT HARVESTING PHOTOCELL

BATTERY POWERED

## OVERVIEW

The **BL2 SYSTEMS** wireless daylight harvesting photocell is a simple, yet reliable battery powered control solution. Preferred by contractors for their flexible mounting methods, **BL2 SYSTEMS** wireless photocells greatly reduce total installation time and wireless pairing fuss. Requiring just a few seconds per device, **BL2 SYSTEMS** wireless photocells can be linked to one or more wireless load controllers (such as the **BL2-851** wireless wall switch, or a **BL2-950** series wireless power pack). Additionally, these units provide an auto-setpoint selection mode that assists with choosing the controlled light level for a space.

## BASIC OPERATION

**BL2 SYSTEMS** daylight harvesting sensors measure and transmit a space's overall illumination to wirelessly connected load controllers. The load controllers then process these light level measurements and adjust light levels according to the configured setpoint and operational modes. For example, a connected dimming power pack load controller will gradually lower controlled lighting during times of high daylight contribution to a space. During times of no or low daylight contribution, controlled lighting will increase back up to its maximum level. A connected power pack or wall switch load controller can also be configured to switch lighting off completely in maintained high daylight conditions.

Auto-set-point calibration, where the unit determines its ambient light threshold (e.g., setpoint) based on the measured amount of light it is controlling, is initiated from the wireless photocell. The connected load controllers also provide the option of selecting from a range of preset values of ambient light thresholds (e.g., setpoints).



## FEATURES

- Links in Seconds with Wireless Controllers
- Auto-Setpoint Selection Mode
- Daylight Harvesting and/or On/Off Photocell Control
- Multi-zone Configuration Ability
- 10 Year Battery Life Design
- Compact Size and Matte Finish
- Four Contractor Friendly Mounting Methods
- Mounting Nipple Attachment with Integrated Hole Saw

## SPECIFICATIONS

### ELECTRICAL & WIRELESS

#### BATTERY TYPE

Requires one CR123(A) Lithium Battery

#### BATTERY LIFE

Designed for 10 Year Life  
(under default settings)  
Non-Volatile Memory (saves all settings regardless of battery state)  
Blink Warning @10% Life

#### RANGE

80' line of site w/o obstruction (walls)  
40' with obstruction (walls/floors)

#### FREQUENCY

915 MHz ISM Band

#### WIRELESS LINKING

Simple 3 sec. Push Button Process

#### SECURITY

All Wireless Data is Encrypted

### ENVIRONMENTAL

#### OPERATING TEMP

32°F to 122°F (0°C to 50°C) - Standard  
-40° F/C (with -HE Option)

#### RELATIVE HUMIDITY

0-95% Non-Condensing,  
Indoor Use Only



### PHYSICAL

#### SIZE

4.00" Diameter x 1.25" H  
(10.16 x 3.17 cm)

#### WEIGHT

4.75 oz

#### COLOR

White

#### LED INDICATION

Wireless Linking (Pairing)

### OPERATION

#### OPERATING MODES

Daylight Harvesting  
On/Off Photocell Control  
Modes Configured in Linked Controller

#### WIRELESS TEST MODE

Button Toggles On/Off  
Wirelessly Linked Loads

#### SET-POINT CONFIGURATION

Auto-Setpoint Mode or  
Selection from Linked Controller

### CODE COMPLIANCE

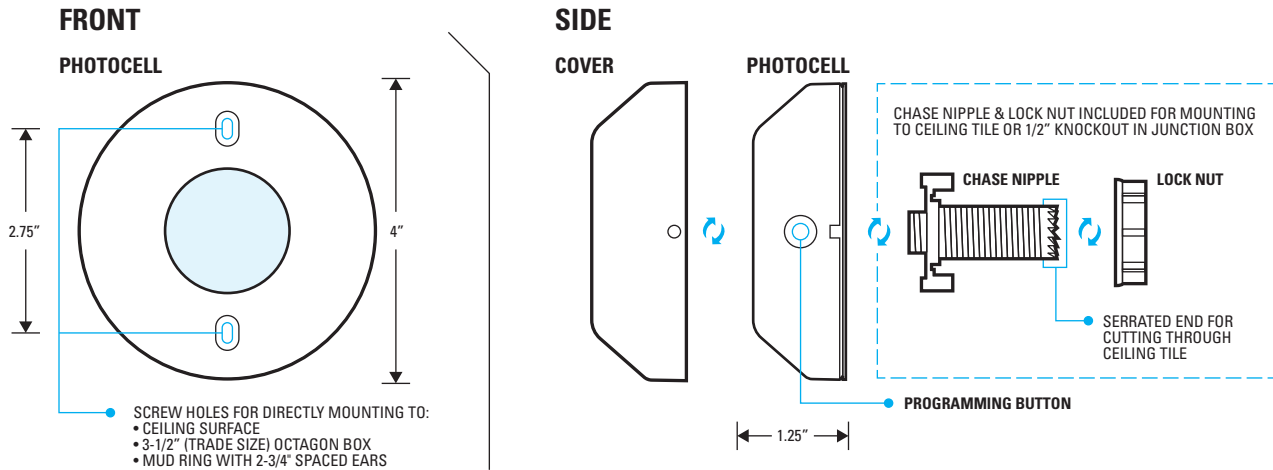
These sensors can be used to meet ASHRAE 90.1, IECC, & Title 24 energy code requirements.



# ORDERING INFO

MODEL NUMBER	DESCRIPTION
<b>BL2-250-B</b>	Wireless Ceiling Mount Daylight Harvesting Photocell, Battery Powered
<b>BL2-250-B-HE</b>	Wireless Ceiling Mount Daylight Harvesting Photocell, Battery Powered, Low Temp / High Humidity Environment
<b>BL2-299-JP</b>	Accessory Trim Ring for Mounting to Single Gang Mudring, Handy Box, or 4" Octagon Box

# INSTALLATION OPTIONS



**Note:** If mounting to a Single Gang Mudring, Handy Box, or 4" Octagon Box, a trim ring is required. Part Number: **BL2-299-JP**.

# APPLICATIONS

There are four types of photocell operation supported; DAYLIGHT HARVESTING CONTROL, DAYLIGHT HARVESTING w/ ON/OFF CONTROL, ON/OFF PHOTOCELL CONTROL, and INHIBIT PHOTOCELL CONTROL (see descriptions below). These operational modes are selected at the linked wireless power pack (**BL2-950 Series**) or wall switch controller (**BL2-851**) that is wired to the lighting load(s). A photocell sensor can be the only device wirelessly linked to a load controller or can be wirelessly linked along with wireless occupancy sensors to the same load controller(s).

## DAYLIGHT HARVESTING CONTROL

- Recommend for spaces where it is important to not distract occupants (e.g., offices, classrooms).
- Lights will gradually dim in order to maximize energy savings while maintaining desired overall lighting level.
- After dimming to low trim level by default the lights will stay at the low trim level.
- Optionally, lighting can be configured to turn off completely when sufficient daylight is present.
- Requires that the wireless photocell is linked to a wireless power pack load controller with dimming (i.e. **BL2-950-D2**).

## DAYLIGHT HARVESTING w/ ON/OFF CONTROL

- Same as Daylight Harvesting control except lights will turn off completely when sufficient daylight is present.

## ON/OFF PHOTOCELL CONTROL

- Recommended for public spaces (hallways, entryways, etc) where fully switching of lighting off and on will not cause distraction of occupants.
- Lights are switched off if ambient light level surpasses threshold and back on if level drops.
- To prevent cycling of lights back on after lighting is turned off, a "deadband" level equal to the measured level of light being controlled is continuously maintained. For lighting to turn off the ambient light level must be higher than the sum of the setpoint and the deadband.

## INHIBIT ONLY PHOTOCELL CONTROL

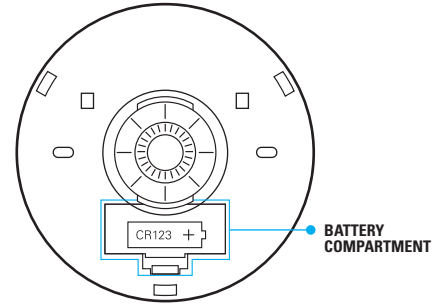
- Upon initial occupancy, lighting is inhibited (i.e. held off) if ambient light level surpasses setpoint threshold.
- Lighting will be turned on if light level drops below set-point.
- Lighting will never turn off from daylight.

# OPERATION NOTES

- Every ~15 seconds the photocell transmits the light level it is measuring in the space.
- Dimming from high trim to low trim (or in reverse) due to daylight harvesting requires ~1.5 minutes.
- The wirelessly linked wall switch load controller and/or power pack controller compares the received light level to the setpoint and controls the connected lighting accordingly.
- Wireless load controllers will only listen to a single wireless photocell sensor. If more than one is linked, the unit that last ran the auto-setpoint calibration procedure will be used.
- To accommodate multi-zone photocell applications, power pack controllers can be configured to track according to the received daylight level, but control lights a fixed percentage brighter.
- The photocell control algorithm compensates for the contribution of the controlled lighting to the overall light level of the space. This prevents lights from cycling back on shortly after they are switched off by the photocell operation.

# BATTERY INFORMATION

- The sensor runs on one CR123(A) Lithium Battery (included).
- Install battery prior to mounting photocell. Polarity is indicated on the battery compartment door.
- If the photocell's battery life reaches 10%, all wirelessly linked load controllers will blink lights on/off/on upon initial turn on as a replacement warning.
- Replacement batteries are available at most retailers or home centers where batteries are sold or from **BL2 SYSTEMS**.

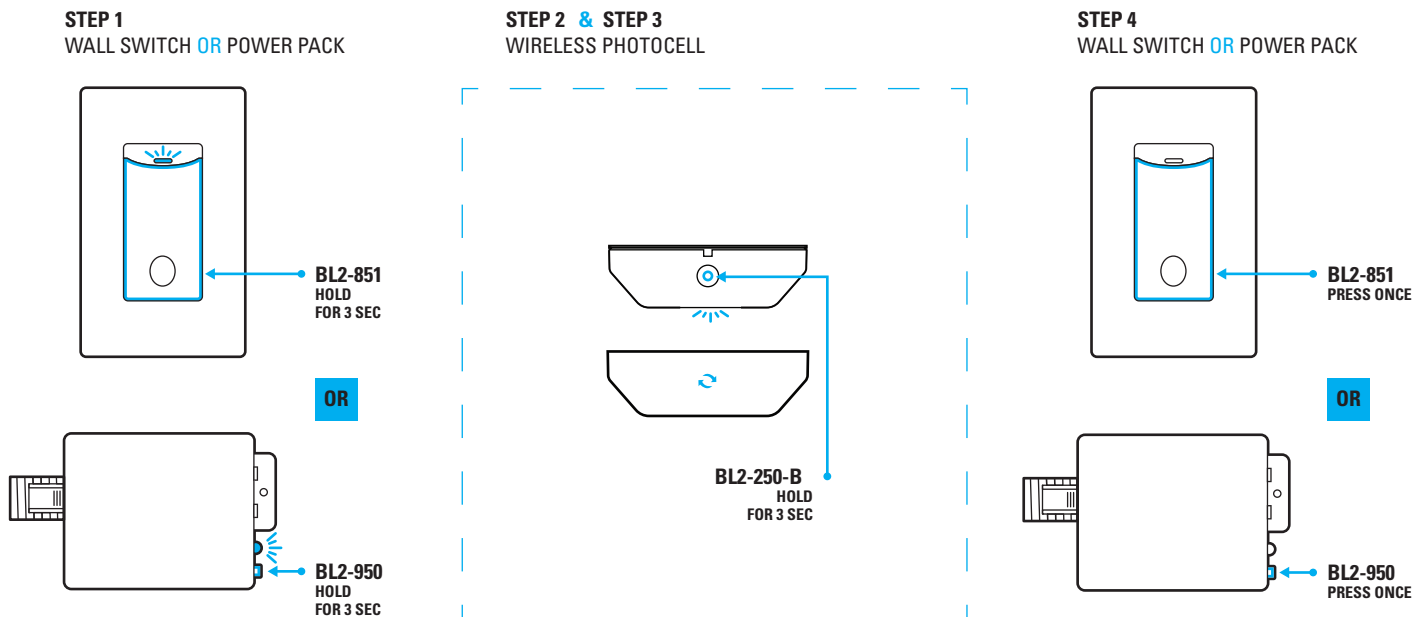


# WIRELESS LINKING (PAIRING)

Linking a wireless photocell with a wireless load controller (e.g. **BL2-950** series power pack or **BL2-851** wall switch) is quickly done via the following procedure:

- Step 1.** Enter learn mode by holding down the wireless load controller button for 3 seconds until the LED starts alternating white then blue, then release.
- Step 2.** At the photocell, hold down the programming button for 3 seconds until the LED starts alternating white then blue. Releasing will link the photocell with any device in learn mode (see note 1 below) and. The lighting load being controlled will also be toggled off/on as a visual indication of success. Once linking is complete the photocell sensor will automatically run the auto-setpoint calibration procedure.
- Step 3.** Repeat step 2 to link another sensor or device.
- Step 4.** When all devices have been linked, exit learn mode on the wireless load controller by pressing the button 1 time. Learn mode will also be automatically closed after 15 minutes of no new devices being linked.

**Note 1:** When in learn mode, the alternating LED colors on the wireless load controller will periodically pause and blink out the total number of linked devices. There will be no blinks during the pause until the first device is linked..



# COMPATIBLE WIRELESS DEVICES

The below chart lists the devices that can be used in a **BL2 SYSTEMS** wireless application. Note that photocell, occupancy sensors, and remote switch & dimmers are transmit only devices and therefore must be linked to a load controller for switching or dimming of lighting.

MODEL #	DESCRIPTION	WIRELESS TYPE	POWER TYPE
BL2-201-B	Small Motion 360° Sensor, PIR	Transmit	Battery
BL2-211-B	Small Motion 360° Sensor, PIR w/ Integrated Daylight Harvesting Photocell	Transmit	Battery
BL2-221-B	Dual Technology Sensor (PIR/Acoustic), Small Motion 360°	Transmit	Battery
BL2-401-B	Wide View Sensor, PIR	Transmit	Battery
BL2-421-B	Dual Technology (PIR/Acoustic) Wide View Sensor	Transmit	Battery
BL2-402-B	Long Range Hallway Sensor, PIR	Transmit	Battery
BL2-250-B	Daylight Harvesting & On/Off Photocell	Transmit	Battery
BL2-851-xx	Wall Switch Load Controller, No Neutral Required, <xx = color>	Transmit & Receive	120-277 VAC
BL2-852-B-xx	Remote Switch (On/Off), <xx = color>	Transmit	Battery
BL2-852-2-xx	Remote Line Powered Switch (On/Off), <xx = color>	Transmit	120-277 VAC
BL2-854-B-xx	Remote Dimming Switch (On/Off, Raise/Lower), <xx = color>	Transmit	Battery
BL2-854-2-xx	Remote Line Powered Dimming Switch (On/Off, Raise/Lower), <xx = color>	Transmit	120-277 VAC
BL2-874-ELV-xx	Phase Dimming Load Controller - Reverse (default) or Forward Phase, <xx = color>	Transmit & Receive	120 VAC
BL2-950	Power Pack Load Controller, 20A	Transmit & Receive	120/277 VAC
BL2-951-D1	Fixture Controller, 1A@, 0-10V Dimming	Transmit & Receive	120-277 VAC
BL2-950-D2 (BL2-950-D1)	Power Pack Load Controller, 20A, 0-10V Class 2 Dimming (Class 1 model)	Transmit & Receive	120/277 VAC
BL2-950-AX	Hybrid Wireless/Wired Power Pack Load Controller, 20A	Transmit & Receive	120/277 VAC
BL2-950-AX-D2	Hybrid Wireless/Wired Power Pack Load Controller, 20A, 0-10V Dimming	Transmit & Receive	120/277 VAC

## FCC INFORMATION (FCC ID: 2AVRY-SWX0002)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following 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

Changes and Modifications not expressly approved by BLP Technologies can void your authority to operate this equipment under Federal Communications Commission's rules.

In order to comply with FCC/ISED RF Exposure requirements, this device must be installed to provide at least 20 cm separation from the human body at all times.

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 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

## ISED CANADA INFORMATION (IC: 26012-SWX0002)

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-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.

In order to comply with FCC/ISED RF Exposure requirements, this device must be installed to provide at least 20 cm separation from the human body at all times.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
3. Afin de se conformer aux exigences d'exposition RF FCC / ISED, cet appareil doit être installé pour fournir au moins 20 cm de séparation du corps humain en tout temps

