



# WIRELESS WALL SWITCH & LOAD CONTROLLER

LINE VOLTAGE



**SENSORWORX**®

## OVERVIEW

The **SENSORWORX** wireless wall switch load controller links to remote occupancy sensors, photocells, and switches without low voltage wiring in order to provide automatic lighting control. Designed with contractors in mind, the unit is significantly shallower than typical wall controllers, resulting in less crowded wall boxes. Additionally, versatile wiring enables usage with or without a neutral connection and never requires a minimum load. This switch also matches the **SENSORWORX** family of wall switch occupancy sensors and 0-10V dimming wall switch sensors. All **SENSORWORX** products are proudly made in the USA.

## FEATURES

### ELECTRICAL FEATURES

- Accommodates Neutral (3-Wire) and No-Neutral (2-Wire) Installations
- Electronically Timed Switching Ensures Long Relay Life
- No Minimum Load or External Load Capacitor (MLC) Requirements
- Meets Regulatory Guidelines for Current Leakage

### PHYSICAL FEATURES

- Enclosure is 25-40% Shallower than Other Wall Controllers (< 1" Depth into Wallbox)
- Self-Grounding Mounting Strap
- Modern Look and Intuitive Easy-Tap Button

### OPERATIONAL FEATURES

- Pairs in Seconds with Wireless Sensors & Remote Wall Stations
- Configurable Time Delays and Operational Modes (e.g. Occupancy, Vacancy, Switch Disable)
- Configurable Photocell Modes
- Blue Locator LED when Lights are Off
- Settings are Adjustable Without Removing Cover Plate
- Links with up to 30 sensors and/or switches

## SPECIFICATIONS

### ELECTRICAL

#### OPERATING VOLTAGE

120-277 VAC, Single Phase, 50/60 Hz

#### LOAD RATINGS

MAX: 800W @ 120VAC  
1200W @ 277VAC

MIN: None

#### LOAD TYPES

LED Driver/Lamps  
CFL, Electronic/Magnetic Ballasts (Fluorescent)  
Tungsten (Incandescent)

#### ESD IMMUNITY

Tested to withstand electrostatic discharge without damage or memory loss.

#### SURGE IMMUNITY

Tested to withstand surge voltages without damage or loss of operation.

#### NON-VOLATILE MEMORY

Saves all settings even if power is disrupted.

### ENVIRONMENTAL

#### OPERATING TEMP

32°F to 122°F (0°C to 50°C)

#### RELATIVE HUMIDITY

0-95% Non-Condensing, Indoor Use Only

### OPERATION

#### OPERATING MODES

Occupancy  
Vacancy  
Switch Disable  
On/Off/Inhibit Photocell

#### TIME DELAY OPTIONS

1, 5, 10, 15, 20, 30 min.

### WIRELESS

#### RANGE

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

#### FREQUENCY

915 MHz Band

#### WIRELESS LINKING

Simple 3 sec. Push Button Process

#### SECURITY

All Wireless Data is Encrypted

### PHYSICAL

#### SIZE

2.74" H x 1.68" W x 1.39" D  
(6.96 x 4.27 x 3.53 cm)  
<1" Wallbox Mounting Depth

#### WEIGHT

4.5 oz

#### MOUNTING

Single Gang Switch Box

#### LED STATUS INDICATOR

Bi-color White & Blue

### CODE COMPLIANCE

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



# ORDERING INFO

SAMPLE MODEL # SWX-851-WH

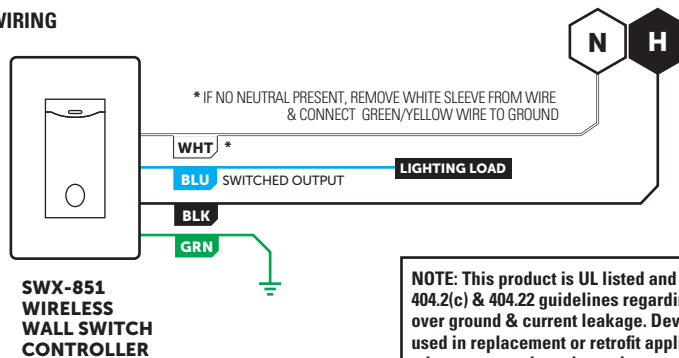
PRODUCT DESCRIPTION	COLOR*	PACKAGE COUNT
<b>SWX-851</b> Wireless Wall Switch & Load Controller	White - <b>WH</b> Ivory - <b>IV</b> Black - <b>BK</b>	Single Pack - <b>Blank</b> 10 Pack** - <b>J10</b>
*WALLPLATE NOT INCLUDED		
ACCESSORY PART #	COLOR	PACKAGE COUNT
<b>SWX-199</b> Single Gang Wall Plate	White - <b>WH</b> Ivory - <b>IV</b>	10 Pack** - <b>J10</b>

\*\* THE CONTRACTOR PACK OPTION (-J10) REDUCES JOB SITE WASTE AND INVENTORY TIME

## WIRING

- Unit works both in installations where Neutral connection is available as well as installations where only Ground connection is present.
- If no neutral is present, remove the white sleeve from the wire & connect the now green/yellow wire to Ground.
- Note, either the white wire or green/yellow wire must be connected. The all green wire is just for safety.

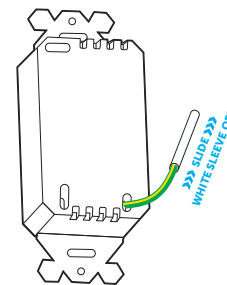
### BASIC WIRING



**NOTE:** This product is UL listed and meets NEC 404.2(c) & 404.22 guidelines regarding powering over ground & current leakage. Device may be used in replacement or retrofit applications when no neutral conductor is present.

### NEUTRAL TO GROUND CONVERSION DETAIL

- The white wire has a removable sleeve which reveals a green/yellow wire



## APPLICATIONS

### SMALL SPACES

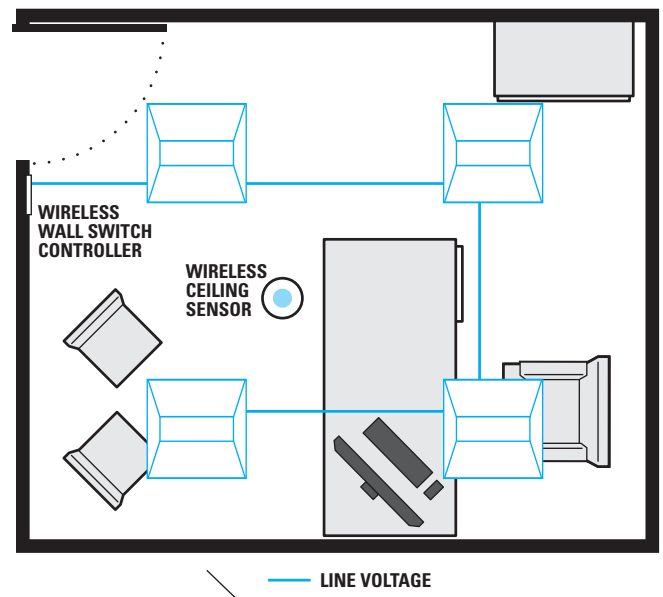
For control of small spaces like a private office, a wireless wall switch controller linked to a single wireless PIR ceiling sensor (**SWX-201-B**) or PIR/Acoustic dual technology ceiling sensor (**SWX-221-B**) is recommended (see diagram on right). Both occupancy (auto-on) and vacancy (manual-on) operation are achievable in order to meet energy code requirements.

- Small Offices
- Copy Rooms
- Private Restrooms

### MEDIUM SIZE SPACES

For control of medium size spaces like a conference room or small classroom, a wireless wall switch controller linked to a wireless PIR wide view sensor (**SWX-401-B**) or PIR/Acoustic dual technology wide view sensor (**SWX-421-B**) provides an excellent solution. Linking additional sensors is also an option if necessary. Switching from a second location (e.g. 3-way) is achieved by linking a remote wireless wall switch (**SWX-852**) to the wireless switch controller.

- Small Classrooms
- Conference Rooms
- Short Hallways
- Break Rooms



# APPLICATIONS (CONT.)

## COMPATIBLE WIRELESS DEVICES

The below chart lists the devices that can be used in a **SENSORWORX** wireless application. Note that sensors, photocells, and remote switch devices are transmit only devices and therefore must be linked to a load controller for switching of lighting.

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

## WIRELESS LINKING (PAIRING)

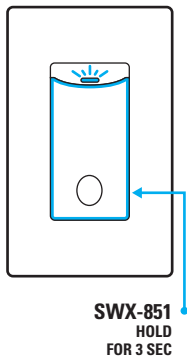
Linking a wall switch controller with a sensor, photocell, power pack, dimmer, or another wall switch controller is quickly done via the following procedure:

- Step 1.** Enter learn mode by holding down the wall switch's button for 3 seconds until the LED starts alternating blue and white, then release.
- Step 2.** At the sensor (or other remote device), hold down the programming button for 3 seconds until the LED starts alternating blue and white. Releasing will link the sensor with the switch in learn mode (see note 1 below).
- Step 3.** Repeat step 2 to link another sensor or device.
- Step 4.** When all devices have been linked, exit learn mode on the wall switch controller by pressing the button 1 time. Learn mode will also be automatically closed after 15 minutes of no new devices being linked.

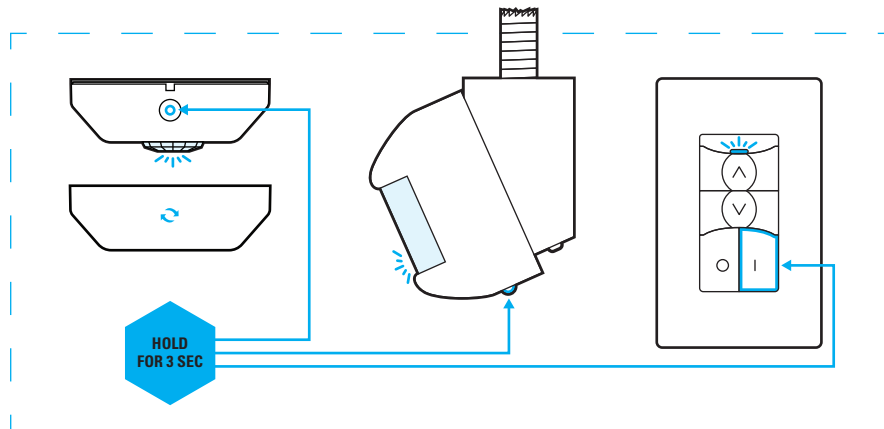
**Note 1:** Once a device(s) is linked, the alternating LED colors on the wall switch controller will periodically pause and blink out total number of linked devices. There will be no blinks during the pause until after the first device is linked.

**Note 2:** Linking two wall switch controllers (or one wall switch controller and one wireless power pack) can be done by putting each device in learn mode first (i.e. Step 1 above) before continuing to Step 2 for each device. After Step 2 has been completed for each device, continue to Step 3 for each device.

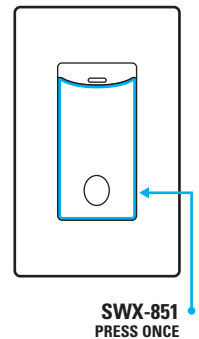
### STEP 1 WALL SWITCH



### STEP 2 & STEP 3 WIRELESS SENSORS & REMOTE SWITCHES



### STEP 4 WALL SWITCH



# OPERATION NOTES

## GENERAL WIRELESS SENSOR OPERATION

- Wireless sensors periodically transmit their PIR and/or acoustic (if equipped) occupancy status. Referred to as the sensor's "heartbeat", this period is optimized to conserve battery life.
- If a sensor transmitted "unoccupied" at its last heartbeat, any new PIR detection event will be transmitted immediately.
- Using the information received from linked sensors, wirelessly linked wall switch load controllers switch lighting accordingly.
- The wall switch load controller has a master time delay that is initially set only when a PIR occupancy transmission is received from a linked sensor. The time delay will then be reset every time a sensor reports any occupancy (either PIR or acoustic). Lights will be switched off once all linked sensors have continuously reported unoccupied for the duration of the time delay.
- To prevent lights from staying on indefinitely from just acoustic events, after ~30 minutes the load controller will stop considering acoustic events from all linked sensors until after a PIR event is received again.
- As an added safety measure after lights are switched off, acoustic detection remains enabled for 15 seconds to enable voice reactivation of lights.
- If a wall switch load controller does not receive any heartbeat transmissions from a linked sensor for 10 minutes it will blink out an error code (4 blue blinks, followed by a pause) and consider itself occupied (so as to override the lights on). If more than one sensor is linked, the sensor heartbeats from all sensors must have stopped for the error warning to begin blinking.

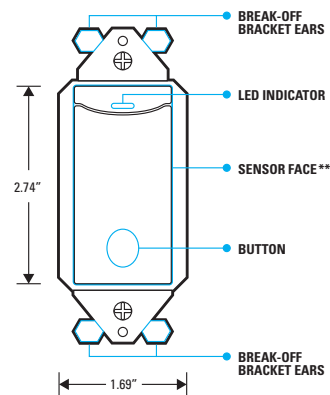
## PHOTOCELL OPERATION

- The **Ambient Setpoint** and **Photocell Operating Mode** are settings stored within the wall switch controller. For all photocell applications (e.g. on/off override), the wall switch controller receives the light level readings being transmitted every 15 seconds by wirelessly linked photocells. The controller will then turn off or on connected lighting in order to maximize energy savings while maintaining desired minimum light level.
- The setpoint value initially is established by the running the Auto-Setpoint calibration procedure that is built into the wireless photocell. Once initially determined, the setpoint can be changed at the wall switch controller by selecting from a list of values.
- The wireless wall switch controller will only listen to a single wireless photocell sensor. If more than one is wirelessly linked, the unit that last ran the auto-setpoint calibration procedure will be used.
- 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.
- When the unit's **Photocell Operating Mode** is set to On/Off Operation or Inhibit Operation, there is a 45 second transition time after the ambient light level falls below the setpoint to when the connected lighting is switched on. During this transition time, the LED on the wall switch controller will be slowly blinking blue.
- When the unit's **Photocell Operating Mode** is set to On/Off Operation, there is a 5 minute transition time after the ambient light level surpasses the setpoint to when the connected lighting is switched off. During this transition time, the LED on the wall switch controller will be slowly blinking blue.
- Whenever lights are being held off due to the photocell, the blue LED will double blink every 15 seconds.

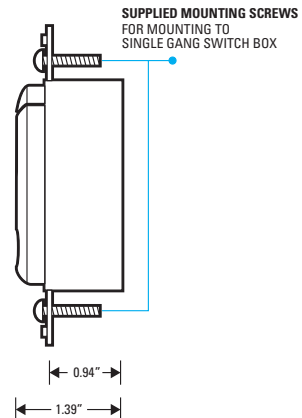
# INSTALLATION

- Designed to mount in 1-gang wall box with 3.28" hole spacing.
- Units can also share multiple gang wall boxes with other devices.
- Unit face is field removable in order to change colors. Contact factory for additional faces.

FRONT



SIDE



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## FCC INFORMATION (FCC ID: 2AVRY-SWX0001)

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-SWX0001)

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

