

MODEL #	PIR	ACOUSTIC	PHOTOCELL	DEFAULT MODE
ILC-SWX-101-D- xx*	•			000
ILC-SWX-103-D-xx	•			VAC
ILC-SWX-104-D-xx	•			VAC
ILC-SWX-111-D-xx	•		•	000
ILC-SWX-113-D-xx	•		•	VAC
ILC-SWX-121-D-xx	•	•		000
ILC-SWX-123-D-xx	•	•		VAC
ILC-SWX-124-D-xx	•	•		VAC
ILC-SWX-131-D-xx	•	•	•	000
ILC-SWX-133-D-xx	•	•	•	VAC
* xx = color (WH, IV, LA, G)	(, RD, BK)	ADDITIONA	AL UNIT OPTIONS	t

OVERVIEW

INTELLIGENT LIGHTING CONTROLS dimming wall switch sensors detect movement in the infrared energy that radiates from occupants as they move within the devices field-of-view. Once occupancy is identified, the sensor's internal relay switches power on to the connected lighting. Units can also be configured to operate in Vacancy Mode (e.g., require lights be manually switched on). Once lights are on and if equipped with passive dual technology (PIR/Acoustic), the unit's microphone is enabled to further enhance detection. An internal timer is set to keep lights on during brief periods of inactivity and is reset every time occupancy is signaled by either the passive infrared or acoustic detection technologies. Ambient daylight detection can also be enabled in the unit so that lights are held off in rooms with sufficient light contribution from windows or skylights.









PHYSICAL FEATURES

- Enclosure is 25-40% Shallower than Other Sensors (< 1" depth into wallbox)
- Unique Bat-Wing Shaped Lens Provides Enhanced Peripheral Detection
- Self-Grounding Mounting Strap
- Modern Look and Intuitive Easy-Tap Button for On/Off, Raise, & Lower
- Rugged Vandal Resistant Lens
- Settings are Adjustable Without Removing Cover Plate

LINE VOLTAGE WALL SWITCH SENSORS w/ 0-10V DIMMING

INSTALLATION & OPERATION INSTRUCTIONS

SPECIFICATIONS

ELECTRICAL

OPERATING VOLTAGE 120/277 VAC, 50/60 Hz

MAX: 800W @ 120VAC 1200W @ 277VAC MIN: None

LOAD TYPES

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

DIMMING CAPABILITY

0-10 VDC ballasts or drivers compliant with IEC 60929 Annex E.2

DIMMING LOAD

- 50 mA (sink only)

PHYSICAL

SIZE 2.74"H x 1.68"W x 1.39"D (6.96 x 4.27 x 3.53 cm) Not Including Mounting Strap

WEIGHT 4.5 oz

MOUNTING Single Gang Switch Box

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

CODE COMPLIANCE

Wall Switch sensors can be used to meet many requirements of ASHRAE 90.1(2016), IECC (2015), and Title 24 (2016). In particular, Manual On (e.g., Vacancy) operation is prescribed for many building spaces.



OPERATIONAL FEATURES

US LISTED

- Wall-To-Wall Passive Infrared Small Motion Detection
- Passive Acoustic Detection (Optional) -Prevents False Offs when No Motion is Present
- 100% Passive Detection Methods -No Interference Potential from External Devices
- Configurable Dimming Parameters including High/Low Trims, Turn on Levels, and Curve Types
- Ambient Daylight Override Mode Increases Energy Savings
- Blue Locator LED when Ligths are Off



FEATURES

ELECTRICAL FEATURES

- Interchangeable Line & Load Wires -Impossible to Wire Backwards
- Accommodates Neutral (3-wire) and No-Neutral (2-Wire) Installation
- Electronically Timed Switching Ensures Long Relay Life
- Compatible with LED, Fluorescent and Incandescent Lighting
- Meets NEC 404.2(c) & 404.22 Guidelines Regarding Powering Over Ground & Current Leakage

FEATURES



COVERAGE

- 30" to 48' (0.76 1.22 m) recommended mounting height
- Wall to wall (~180 degree) coverage
- Small motion (e.g., hand movement) detection up to 20 ft (6.10 m), ~625 ft²
- Large motion (e.g., walking) detection greater than 36 ft (10.97 m), ~ 2025 ft²
- Overlapping acoustic detection of occupants over entire coverage area
- Advanced signal processing filters out nuisance noises while not effecting overall sensitivity
- As an added safety convenience, the acoustic detection is left active for 10 seconds after sensor turns the lights off to allow for voice reactivation

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 (see diagram below).
- The White wire (or Green/Yellow wire underneath the removable sleeve) MUST be connected to neutral (or Ground if sleeve is removed) for the unit to operate.
- The all Green wire is just for safety.
- Never connect Violet or Gray wire to line voltage.
- The unit's two black wires are interchangeable (e.g., one connects to line power, one connects to load).
- For supply connections, use 14 AWG (90° C) or larger wires
- It is recommended that wiring the unit's ground connection be done first.
- After wiring and mounting, install wall plate (not included) before turning back on power at the circuit breaker



STANDARD WIRING



NEUTRAL TO GROUND WIRE CONVERSION DETAIL



NOTE: This product is UL listed and meets NEC 404.2(c) & 404.22 guidelines regarding powering over ground & current leakage. Powering over ground is permitted for replacement / retrofit only.



TWO SENSORS IN PARALLEL

- Only one sensor can be model with 0-10V Dimming
- Both sensors must time out for lights to turn off (or both buttons must be switched)
- Recommended for Automatic On (Occupancy) applications only



WARNING: TURN POWER OFF AT THE CIRCUIT BREAKER BEFORE WIRING

INSTALLATION CONT.

MOUNTING

- Designed to mount in 1-gang wall box with 3.28" hole spacing
- Units also can share multiple gang wall boxes with other devices



** SENSOR FACE IS FIELD REMOVABLE IN ORDER TO CHANGE COLORS. CONTACT FACTORY FOR ADDITIONAL FACES

DIMMING APPLICATION OVERVIEW

MODEL #	DETECTION TYPE		DEFAULT OPERATING MODE 1,2	
WUDEL#	PIR	ACOUSTIC	NAME	DESCRIPTION
ILC-SWX-101-D	•		Partial On	Auto-On to 50%
ILC-SWX-103-D	•		Vacancy	Manual On to Last Level
ILC-SWX-111-D	•		Partial On	Auto-On to 50%
ILC-SWX-121-D	•	•	Partial On	Auto-On to 50%
ILC-SWX-123-D	•	•	Vacancy	Manual On to Last Level
ILC-SWX-131-D	•	•	Partial On	Auto-On to 50%

DIMMING APPLICATION TABLE

1. ALL MODES ARE ENERGY CODE COMPLIANT 2. MODES ON ALL UNITS ARE FIELD CONFIGURABLE

CONFIGURATION SETTINGS

CONFIGURATION PROGRAMMING

- 1 From the lists of Configuration Functions below, note the Button Position and number (#) of the Function to be changed. For example, HIGH TRIM setting is the Right Button, #3.
- 2 Enter programming mode by pressing and holding the CENTER button until the blue LED begins rapid flashing, then release.
- 3 Press and release the applicable button the number of times for the chosen function. For example, press the RIGHT button 3 times for the HIGH TRIM setting.
- 4 The LED will flash back white the number of times equal to the current setting number as it appears in each function's detailed table of values. For example, the default HIGH TRIM is setting #2 (10V). Following a short pause, this blink back sequence will repeat.
- 5 Interrupt blink back by pressing the applicable button the number of times corresponding to the new setting #. For example, RIGHT button 3 times (for 9V).
- 6 The LED will flash back the new setting number as confirmation.
- 7 To Save and Exit programming mode, press and hold the function's applicable button again until the LED changes to White, then release. The LED will then blink white twice as confirmation of success. Note: To Exit without saving during any step, wait until unit double flashes blue.

NOTE IF THE LED DOUBLE FLASHES TWICE BLUE AT ANY POINT, REPEAT THE ABOVE PROCEDURE.

CONFIGURATION FUNCTIONS



• LEFT BUTTON

DIMMING FUNCTION NAME

FUNCTION NAME	BUTTON POSITION	FUNCTION #
Turn Off Scheme	Left	2
Low Trim	Left	3
Fade Off Time	Left	4

CENTER BUTTON

FUNCTION NAME	BUTTON POSITION	FUNCTION #
Time Delay	Center	2
Operating Mode	Center	3
Photocell Setpoint	Center	4
Auto-on Sensitivity	Center	5
Microphone	Center	6
LED	Center	7
Factory Reset	Center	8

RIGHT BUTTON

DIMMING

FUNCTION NAME	BUTTON POSITION	FUNCTION #
Turn On Dimming Level	Right	2
High Trim	Right	3
Fade On Time	Right	4
Dimming Curve Type	Right	5

CONFIGURATION SETTINGS CONT.

DETAILED FUNCTION TABLES FOR NON-DIMMING FEATURES

FUNCTION #2 TIME DELAY

CENTER BUTTON

Lights are held on following all occupancy events for the selected period.

SETTING # DESCRIPTION FUNCTION

 1	Test Mode	Temporary 5 sec time delay, reverts after 10 min
2	30 Sec	
3	5 Min	
4	10 Min	Default for all models
5	15 Min	
6	20 Min	
7	30 Min	

EXTENDED TIME DELAYS**

SETTING #	DESCRIPTION
8	1 hr
9	2 hr
10	4 hr
11	8 hr

** EXTENDED TIME DELAYS GREATLY REDUCE ENERGY SAVINGS

FUNCTION #3 OPERATIONAL MODES

Several pre-programmed operational modes are available to accommodate both preferences and applicable energy codes.

SETTING #	DESCRIPTION	
2	Vacancy Mode	(default for models SWX-1x3-D & SWX-1x4-D)
3	Occupancy Mode	(default for SWX-1x1-D models)
4	Automatic On with Exit Time	
5	Overide Off Mode	
6	Disabled Switch Mode	
7	Presentation Mode	
8	Disable Sensor (Toggle Swite	ch Mode)

2 Vacancy Mode (Manual On / Automatic Off)

This mode provides increased energy savings but requires the user to initially turn on the lights by pressing the button. Lights can also be switched off manually. Models SWX-103, SWX-104, SWX-113, SWX-123, SWX-124, and SWX-133 default to Vacancy mode.

3 Occupancy Mode (Automatic On / Automatic Off)

Automatic On and Automatic Off operation. If lights are switched off manually, the Automatic On functionality is disabled for ~10 seconds to allow the occupant time to leave the room before returning to Automatic On operation. The LED will blink white during this period. If during the last 5 seconds of this period the sensor detects that the occupant remained in the space, the unit will stay in a manual on state until the switch is pressed again. Otherwise the unit will return to Automatic On operation and the blue locator LED will turn on. This mode is the default operation of SWX-101, SWX-111, SWX-121, and SWX-131 models. Not available for models SWX-104 and SWX-124.

4 Automatic On w/ Exit Time Mode (Automatic On/Automatic Off)

If lights are switched off manually, the Automatic On functionality is disabled for a fixed 30 seconds to allow a person time to leave the room. Not available for SWX-104 and SWX-124 models.

5 Override Off Mode

Automatic On and Automatic Off operation until lights are switched off manually, at which point Automatic On functionality is disabled until the button is pressed again. Not available for SWX-104 and SWX-124 models.

6 Disabled Switch Mode

Automatic On and Automatic Off operation only. Switch functionality to manually turn on/off lights is disabled. Not available for SWX-104 and SWX-124 models.

7 Presentation Mode

If lights are switched off manually, the Automatic On functionality is disabled until the space becomes unoccupied and the sensor's time delay expires.

8 Disable Sensor (Toggle Switch Mode)

The unit will not automatically turn on or off connected lighting. Lighting is toggled only when button is pushed.

CONFIGURATION SETTINGS CONT.

FUNCTION #5 AUTO ON SENSITIVITY

CENTER BUTTON

This setting indicates the sensor's PIR sensitivity when the lights are off. Typically, this setting should be FULL, but if reflective surfaces (like windows) are causing false-ons the REDUCED setting should be used. Note that the unit returns to full sensitivity after initial detection.

SETTING #	DESCRIPTION	NOTES
2	Full initial PIR sensitivity	Default for all models
3	Reduced PIR sensitivity for initial turn-ons in order to eliminate false on's caused by reflective surfaces like windows. Full sensitivity after initial turn-on.	

FUNCTION #7 LED FUNCTION

CENTER BUTTON

By default, the sensor's LED will be solid blue when the unit's relay is in the open/ off state. This serves as a switch locator. Once the lights are on, the LED will blink white whenever the sensor detects PIR motion. A unit with dual technology will also blink the LED white when it acoustically detects occupancy. The blue and/or white LED functionality can also be disabled.

SETTING #	DESCRIPTION	NOTES
2	White LED for occupancy, blue locator LED enabled	Default for all models
3	White LED for occupancy, blue locator LED disabled	
4	All LED functionality disabled.	
5	White LED for PIR, blue LED for acoustic detection. Blue locator LED enabled.	
6	White LED for PIR, blue LED for acoustic detection. Blue locator LED disabled.	

FUNCTION #4 AMBIENT LIGHT OVERRIDE (PHOTOCELL) CENTER BUTTON

Sensor will prevent lights from automatically turning on when measured light level exceeds selected setpoint (e.g., ambient light threshold). This value is user selectable (see values in table below) or can be chosen by the Auto-Setpoint function. LED blinks blue every 10 seconds when lights are being overridden. If ambient light level falls below threshold for more than 45 seconds, lights will switch on. During transition time, the LED will blink blue at an increasingly faster rate. Once on, lights will stay on until occupancy time delay expires, regardless of ambient light level.

SETTING #	DESCRIPTION
2	Disabled [Default]
3	Run Auto-Setpoint*
4	2 fc
5	5 fc
6	15 fc
7	30 fc Manual Setpoint Options
8	50 fc
9	75 fc
10	99 fc

*Instead of blinking back setting #, the value of the setpoint will be blinked back in two alternating digits:

Blue LED = 10's digit (1-9 blinks or rapid blink for 0)

White LED = 1's digit (1-9 blinks or rapid blink for 0)

FUNCTION #6 INITIAL ACOUSTIC SENSITIVITY

CENTER BUTTON

Dual technology (i.e. PIR + acoustic) sensors prevent non-occupant sounds from resetting the time delay by dynamically reducing the microphone's sensitivity at specific frequencies. In some environments, decreasing the sensitivity across all frequencies so that lights go off sooner, may be preferred. A unit's microphone can also be disabled (effectively changing sensor to a PIR only version).

SETTING #	DESCRIPTION	NOTES
2	Normal	Default for all models
3	Reduced	
4	Disabled	

FUNCTION #8 RESTORE FACTORY DEFAULTS

CENTER BUTTON

SETTING #	DESCRIPTION
3	Restore Factory Defaults

AUTO-SETPOINT SELECTION DETAILS

- A Press and hold button until LED flashes rapidly. Release and press button 4 times. Tap button 3 times to select setting 3 "run auto-setpoint", pause, then exit programming mode by pressing button until LED changes from blue to white. The sensor's LED will rapid flash white twice confirming programming change.
- **B** The sensor's LED will begin to alternate blue and white for 30 seconds. During this time user should move away from sensor.
- **C** Lights will then be cycled in order for sensor to calculate the <u>controlled (artificial)</u> light level. This is done by subtracting the light level with the lights off (relay open) from the light level with the lights on (relay closed).
- **D** A setpoint will then be chosen using the following conditions:
 - If controlled level is less than 3 fc, the application is considered open loop and the setpoint will be set to 25 fc.
 - If controlled level is between 3 and 100 fc, setpoint will be set to that level x 1.25.
 - If controlled level is greater than 100 fc the setpoint will be set to 125 fc.
- E To check auto selected setpoint, press and hold button again until LED flashes rapidly. Release and press button 4 times. Setpoint will be blinked back in two alternating digits:
 - Blue LED = 10's digit (1-9 blinks or rapid blink for 0)
 - White LED = 1's digit (1-9 blinks or rapid blink for 0)

DETAILED DIMMING FUNCTION TABLES

FUNCTION #2 TURN OFF SCHEME

SETTING #	VALUES	NOTES
2	Unit's relay opens immediately, switching power off to load	Default for all models.
3	Unit fades dimming output down to low trim level then opens relay.	Not for use in 3-way wired configurations.
4	Unit fades dimming output down to 0 volts (i.e. below a connected driver's electronic off level). Relay remains closed	
5	Unit fades dimming output down to low trim level. Relay remains closed	

FUNCTION #3 LOW TRIM

LEFT BUTTON

SETTING #	VALUES	NOTES
2	Saves current level as low trim	
3	0%	
4	10% (Default)	Evant output valtage lovel depends on
5	20%	Dimming Curve selected (e.g. Linear,
6	30%	Log). Light output at each level depends
7	40%	on unver/banast and luminaire.
8	50%	

FUNCTION #4 FADE OFF TIME

LEFT BUTTON

SETTING #	VALUES	NOTES
2	0.75 Sec	
3	1.5 Sec	Default for all models
4	3 Sec	
5	5 Sec	
6	15 Sec	

FUNCTION #2 TURN ON DIMMING LEVEL

RIGHT BUTTON

SETTING #	VALUES	NOTES
2	Fade on to 100% of High Trim	
3	Fade on to 50% of dimming range	Default for SWX-101, SWX-111, SWX-121, SWX-131 models
4	Fade on to last user level	Default for SWX-103, SWX-123
5	Fade on to current (custom) level	Saves unit's current dim level

FUNCTION #3 HIGH TRIM

RIGHT BUTTON

SETTING #	VALUES	NOTES
2	Saves current level as high trim	
3	100% (default)	
4	90%	Evant output valtage loval depends on
5	80%	Dimming Curve selected (e.g. Linear,
6	70%	Log). Light output at each level depends
7	60%	on driver/dallast and luminaire.
8	50%	

FUNCTION #4 FADE ON TIME

RIGHT BUTTON

SETTING #	VALUES	NOTES
2	0.75 Sec	
3	1.5 Sec	Default for all models
4	3 Sec	
5	5 Sec	
6	15 Sec	

FUNCTION #5 MANUAL DIMMING RESPONSE CURVE

SETTING #	VALUES	NOTES
2	Linear	Default for all models
3	Unused	
4	Square Log	

OPERATIONAL NOTES

TEST MODE

A test mode with a 5 second time delay is provided in order to efficiently perform walk testing. The sensor will blink White on any detected PIR event and Blue on any detected acoustic event, although its time delay will only be reset by a PIR event. While in test mode, the blue locator LED also will not be lit when the lights are off (i.e. relay open).

TO PUT A SENSOR IN TEST MODE FOR 10 MINUTES:

- Press and hold the push button until blue LED begins to rapid flash, then release
- Press sensor's pushbutton 2 times, then wait two seconds
- Press button 1 time to select Test Mode
- To exit and save, press and hold the push button again until blue LED changes to white, then release. Unit will blink white twice indicating save was successful. If LED blinks twice blue, an error condition has occurred.
- After 10 minutes, the sensor's time delay will revert to previous saved time delay

VACANCY MODE

- If sensor is configured for vacancy (manual on) operation, the ambient light override setting will be overwritten to "DISABLED" and any attempted modifications to the setting will trigger an error condition (indicated by double blue LED flash after exit/ save). The ambient light override feature (i.e. photocell) can only be enabled when the sensor is in an automatic on operating mode.
- There is a 15 second "grace" period after the sensor times out when the sensor will switch lights back on automatically. After 15 seconds the sensor will revert to vacancy (manual on) operation. The blue LED locator (if enabled) will not come on until this grace period has expired.

MICROPHONE GRACE TIMER

 As an added safety and convenience feature, a sensor with acoustic detection will keep its microphone enabled for an additional 15 seconds after lights are automatically turned off to enable voice reactivation. The LED will not be lit during this period, but once the 15 second grace timer has expired, the LED will come on solid blue (if locator functionality is enabled).

