intelligent
lighting controls

MODEL #	PIR	ACOUSTIC	PHOTOCELL	DEFAULT MODE
ILC-SWX-101-1-(MS)-xx*	•			OCC
ILC-SWX-103-1-xx	•			VAC
ILC-SWX-104-1-xx	•			VAC
ILC-SWX-111-1-xx	•		•	OCC
ILC-SWX-113-1-xx	•		•	VAC
ILC-SWX-121-1-(MS)-xx	•	•		OCC
ILC-SWX-123-1-xx	•	•		VAC
ILC-SWX-124-1-xx	•	•		VAC
ILC-SWX-131-1-xx	•	•	•	OCC
ILC-SWX-133-1-xx	•	•	•	VAC

* xx = color (WH, IV, LA, GY, RD, BK)

ADDITIONAL UNIT OPTIONS
- **HE:** High Humidity Environment

OVERVIEW

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 signals a connected power/relay pack to switch on the connected lighting. All stand alone 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 equipped units so that lights are held off in rooms with sufficient light contribution from windows or skylights. A Multi-Switch/Sensor option is also available to achieve more advanced control applications.

SPECIFICATIONS

ELECTRICAL

OPERATING VOLTAGE
12-24 VAC/VDC

CURRENT DRAW
2mA (PIR model)
10mA (Dual Tech. models)

OUTPUT
Logic High VDC (Occupied Mode)

RECOMMENDED POWER PACK
ILC-SWX-900 (for Stand Alone apps.)
ILC-SWX-900-AX (for Multi-Way apps.)

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
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

CODE COMPLIANCE

This wall switch sensor can be used to meet many requirements of ASHRAE 90.1 (2016), IECC (2015), and Title 24 (2016).

- Occupancy Operation: Auto On/Auto Off
- Vacancy Operation: Manual On/Auto Off

ASHRAE®
STANDARD 90.1 - 2016

IECC®
2015 STANDARD

TITLE LISTED 20   TITLE COMPLIANT 24

BAA COMPLIANT   TAA COMPLIANT   MADE IN THE USA   RoHS COMPLIANT LEAD FREE

FEATURES

PHYSICAL FEATURES

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

OPERATIONAL FEATURES

- **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 Sensor Settings Including Time Delays and Occupancy/Vacancy Operating Modes**
- **Blue Locator LED when Lights are Off**
- **Optional Wiring Connections for Multi-way or Multi-Sensor Applications**
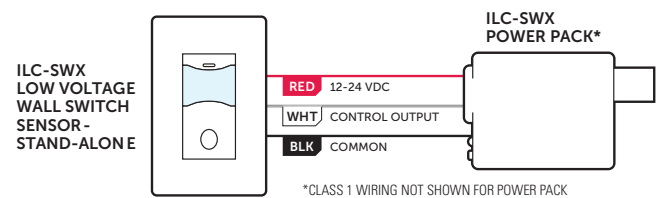
COVERAGE

- 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 ft^2
- Large motion (e.g., walking) detection greater than 36 ft (10.97 m), ~ 2025 ft^2
- 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
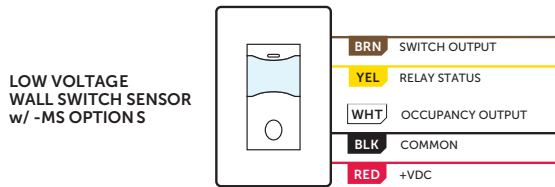
SIDE VIEW

TOP VIEW
4 ft Mount
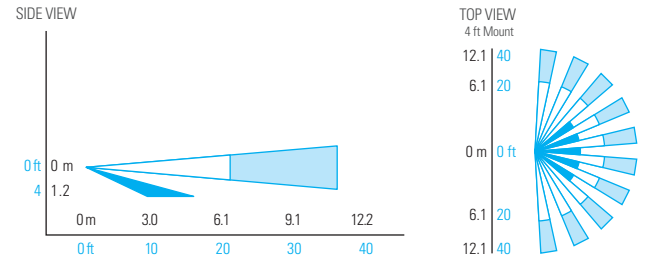
WIRING

STAND-ALONE SENSOR WIRING

It is not recommended to connect a second low voltage sensor to the stand-alone model low voltage wall switch sensor as the second sensor will override the switches on/off button when occupied. For multi-sensor applications, models with the **-MS** option should be utilized.
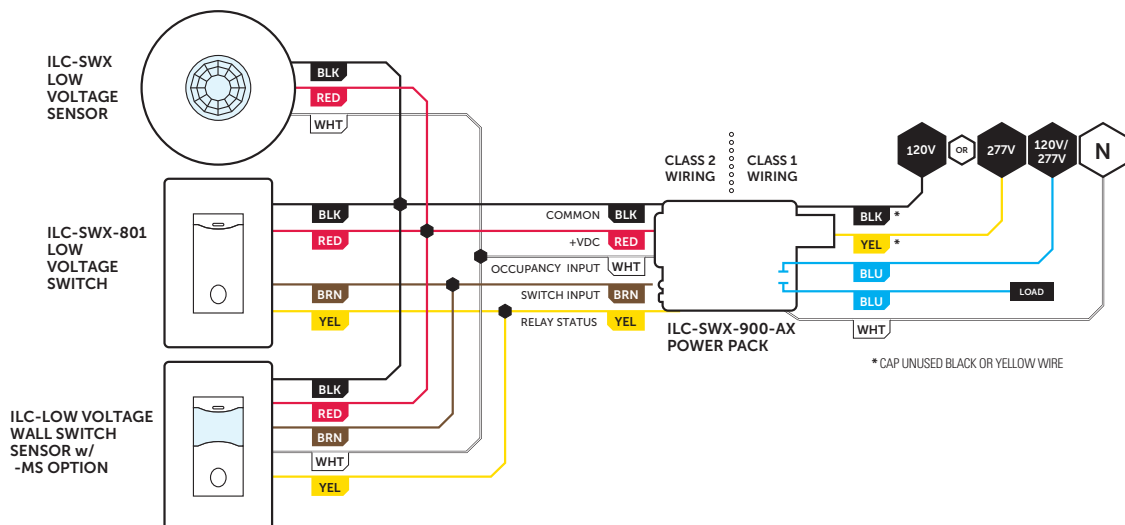
ILC-SWX
LOW VOLTAGE
WALL SWITCH
SENSOR -
STAND-ALONE

ILC-SWX
POWER PACK*

RED — 12-24 VDC
WHT — CONTROL OUTPUT
BLK — COMMON

*CLASS 1 WIRING NOT SHOWN FOR POWER PACK

BASIC -MS VERSION WIRING
(MODELS: ILC-SWX-101-1-MS / ILC-SWX-121-1-MS)

LOW VOLTAGE
WALL SWITCH SENSOR
w/ -MS OPTIONS

BRN — SWITCH OUTPUT
YEL — RELAY STATUS
WHT — OCCUPANCY OUTPUT
BLK — COMMON
RED — +VDC

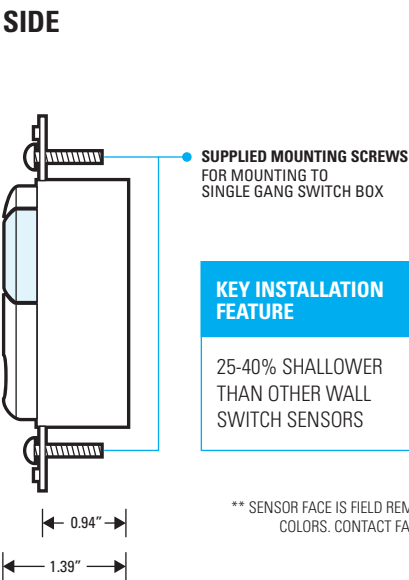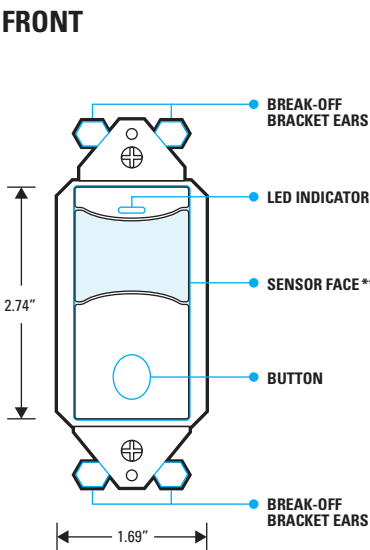## MULTI-SWITCH AND MULTI-SENSOR APPLICATIONS

- Multi-Switch applications include one or more low voltage wall switch sensors (**-MS** option required) and/or one or more low voltage switches (ILC-SWX-801).
- It is recommended that all low voltage switches be within the line-of-sight of the sensor.
- Multi-Sensor applications include one or more low voltage wall switch sensors (**-MS** option required) and/or one or more low voltage sensors (e.g. ILC-SWX-201-1).
- ILC-SWX-900-AX model power packs should always be used with sensors with multi-switch/multi-sensor (**-MS)** option. Note that vacancy (manual on) operation is configured at the power pack and not at the wall sensor.

ILC-SWX
LOW
VOLTAGE
SENSOR

BLK
RED
WHT

ILC-SWX-801
LOW
VOLTAGE
SWITCH

BLK
RED
BRN
YEL

ILC-LOW VOLTAGE
WALL SWITCH
SENSOR w/
-MS OPTION

BLK
RED
BRN
WHT
YEL

CLASS 2
WIRING

CLASS 1
WIRING

COMMON — BLK
+VDC — RED
OCCUPANCY INPUT — WHT
SWITCH INPUT — BRN
RELAY STATUS — YEL

ILC-SWX-900-AX
POWER PACK

120V OR 277V 120V/277V N

BLK *
YEL *
BLU
BLU   LOAD
WHT

* CAP UNUSED BLACK OR YELLOW WIRE

INSTALLATION

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

FRONT

BREAK-OFF BRACKET EARS

LED INDICATOR

SENSOR FACE **

BUTTON

BREAK-OFF BRACKET EARS

2.74"

1.69"

SIDE

SUPPLIED MOUNTING SCREWS
FOR MOUNTING TO
SINGLE GANG SWITCH BOX

KEY INSTALLATION FEATURE

25-40% SHALLOWER
THAN OTHER WALL
SWITCH SENSORS

0.94"

1.39"

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

CONFIGURATION SETTINGS

There are several settings that can be modified. To change a setting, follow the below steps:

1 Press and hold the push button until blue LED begins flashing rapidly, then release.

2 Tap the button the number of times corresponding to the Function # to be changed (e.g., 2 times for Time Delay).

3 The LED will blink back white the number of times equal to the current setting (e.g., 4 times for 10 minutes). Following a short pause, this blink back sequence will repeat.

4 Interrupt blink back by pressing the button the number of times corresponding to the new setting. (e.g., 3 times for 5 minutes). The LED will blink back white the number as confirmation.

5 To exit and save, press and hold the push button 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 occurred.

FUNCTION #2
OCCUPANCY TIME DELAY SETTINGS

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

SETTING #	DESCRIPTION
1	Test Mode*
2	30 sec
3	5 min
4	10 min [Default]
5	15 min
6	20 min
7	30 min

* TEMPORARY 5 SEC TIME DELAY, REVERTS AFTER 10 MIN

CONFIGURATION SETTINGS CONT.

FUNCTION #3 OPERATIONAL MODES*

In stand alone models, users can choose from several pre-programmed operational modes that best fit their preferences and applicable energy codes.

* In multi-sensor/switch (**-MS)** models, all operational modes (including Vacancy and Occupancy) are configured at the connected ILC-SWX-900-AX power pack.

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 ILC-SWX-103-1, ILC-SWX-104-1 ILC-SWX-113-1, ILC-SWX-123-1, ILC-SWX-124-1, and ILC-SWX-133-1 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 temporarily disabled to allow the occupant a few seconds to leave the room before returning to Automatic On operation. However, if the person remains in the space, the unit will stay in a manual on state until the switch is pressed again. This mode is the default operation of ILC-SWX-101-1, ILC-SWX-111-1, ILC-SWX-121-1, and ILC-SWX-131-1 models. Not available for models ILC-SWX-104-1 and ILC-SWX-124-1.

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 ILC-SWX-104-1 and ILC-SWX 124-1 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 ILC-SWX-104-1 and ILC-SWX-124-1 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 ILC-SWX-104-1 and ILC-SWX-124-1 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.

OPERATION MODES

SETTING #	DESCRIPTION
2	Vacancy Mode
3	Occupancy Mode
4	Automatic On with Exit Time
5	Overide Off Mode
6	Disabled Switch Mode
7	Presentation Mode

FUNCTION #4 AMBIENT LIGHT OVERRIDE (PHOTOCELL)

Sensor will prevent lights from automatically turning on when measured light level exceeds selected setpoint (e.g., ambient light threshold). 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
8	50 fc
9	75 fc
10	99 fc

Settings 4–10 are Manual Setpoint Options.

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

AUTO-SETPOINT SELECTION DETAILS

A Once setting 3 "run auto-setpoint" has been selected, 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 LED will then blink back blue at an increasing rate for 15 sec. In order to provide user time to exit area in front of sensor.

C Lights will then be cycled in order for sensor to calculate the _controlled (artificial)_ 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 Setpoint selection
- If controlled level is less than 2 fc, setpoint will be set to measured level when relay is open (minimum 2 fc)
- If controlled level is greater than 75 fc, setpoint will be set to 99 fc
- If controlled level is between 2 and 35 fc, setpoint will be set to that level plus a reflectivity ratio factor.
- If controlled level is between 35 and 70 fc, setpoint will be set to 75 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 or 0)
- White LED = 1's digit (1-9 blinks or rapid blink or 0)

FUNCTION #5 AUTO ON SENSITIVITY

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
2	Full
3	Reduced

FUNCTION #6 MICROPHONE

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
2	Normal
3	Reduced
4	Disabled

FUNCTION #7 LED FUNCTIONALITY

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
2	Blue locator LED enabled
3	Blue locator LED disabled
4	Blue & White LED disabled

FUNCTION #8   FACTORY RESET

SETTING #	DESCRIPTION
3	Restore Factory Settings

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.

MICROPHONE GRACE TIMER

- As an added safety and convenience feature, a sensor with acoustic detection will keep its microphone enabled for an additional 10 secs. after lights are automatically turned off to enable voice reactivation.

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