



SENSORWORX®

ADVANCED WIRELESS LOAD CONTROLLER WITH 0-10 DIMMING

INSTALLATION & OPERATION INSTRUCTIONS

CATALOG NUMBERS	DESCRIPTIONS
SWX-970-D1	ADVANCED WIRELESS LOAD CONTROLLER w/ 0-10V DIMMING (CLASS 1)
SWX-970-D2	ADVANCED WIRELESS LOAD CONTROLLER w/ 0-10V DIMMING (CLASS 2)

OVERVIEW

The **SENSORWORX** advanced wireless load controller has enhanced capabilities that enable a **SENSORWORX** wireless room to include scenes, time and astronomical based schedules, and device configurability via a mobile device application. These advanced features are in addition to the device's standard switching, dimming, and wireless capabilities. The unit utilizes Bluetooth to communicate directly with the companion **SENSORWORX** mobile application running on a Android or iOS mobile device to create and modify wireless zones, set-up custom scenes and schedules, and remotely configure device settings.

As with all **SENSORWORX** products, these devices are easy to install and incorporate features which reduce contractor labor time. An elongated chase nipple with snaps for quick installation and simple programming make for a hassle-free contractor experience. All **SENSORWORX** products are proudly made in the USA.

BASIC OPERATION

In order for a **SENSORWORX** wireless room to utilize scenes, define schedules, and be remotely configured; at least one device must be an advanced wireless load controller. Using the free **SENSORWORX** app on a mobile device (iOS or Android), the wireless advanced load controller can discover **SENSORWORX** wireless devices previously setup using the push-to-pair process, or it can be used for initial setup. When configuring a room, each load controller is assigned to a control zone. Scenes can then be created to either augment the behavior of the zone (i.e. Occupancy vs Vacancy, High/Low trim, etc.) or simply modify the lighting level. Scenes can be triggered on demand via a scene selector wall station, or set up to execute via time-of-day or astronomical clock schedules. The real-time clock and astronomical settings in the **SENSORWORX** advanced load controller are conveniently synchronized with the mobile device automatically.

FEATURES

- Expands Wireless Room Capabilities to Include Scenes run On Demand or via Time/Astronomical Schedules
- Enables Android/iOS Mobile App. Configuration of Control Zones, Scenes, Schedules, & Device Settings
- Plenum Rated (UL 2043)
- Switches Up to 16A Line Voltage Loads
- Configurable Delays and Operational Modes (e.g. Occupancy/ Vacancy)
- All Pairing & Programming Completed via Push-Button Method can be Transferred into Mobile App
- Support Daylight Harvesting, Partial On & Partial Off Operation

SPECIFICATIONS

ELECTRICAL

OPERATING VOLTAGE

120-277 VAC Single Phase,
50/60 Hz

LOAD RATINGS

(relays use zero-cross switching)

16A @ 120-277 VAC
General Purpose

16A @ 120-277 VAC
Electronic Ballast, LED Driver,
Tungsten, Magnetic Ballast

DIMMING LOAD

50mA, (0-10 VDC ballasts or drivers
compliant with IEC 60929 Annex E.2)

MOTOR LOAD

1 HP @ 250 VAC

ESD IMMUNITY

Tested to withstand electrostatic
discharge without damage or memory
loss

NON-VOLATILE MEMORY

ENVIRONMENTAL

OPERATING TEMP

32°F to 122°F (0°C to 50°C)

RELATIVE HUMIDITY

0-95% Non-Condensing
Indoor Use Only

CODE COMPLIANCE

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

WIRELESS (SENSORWORX)

RANGE

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

FREQUENCY

915 MHz ISM Band

WIRELESS (BLUETOOTH)

RANGE

up to 150' w/o obstructions

FREQUENCY/STANDARD

2.4 GHz/Bluetooth Low Energy (BLE)

SECURITY

All Wireless Data is Encrypted

PHYSICAL

SIZE

3.00" H x 2.25" W x 1.88" D
(7.62 cm x 5.72 cm x 4.78 cm)

WEIGHT

6.00 oz.

COLOR

Blue

MOUNTING

1/2" Knockout

TEST / PROGRAMMING BUTTON

LED STATUS INDICATOR

Bi-color White & Blue



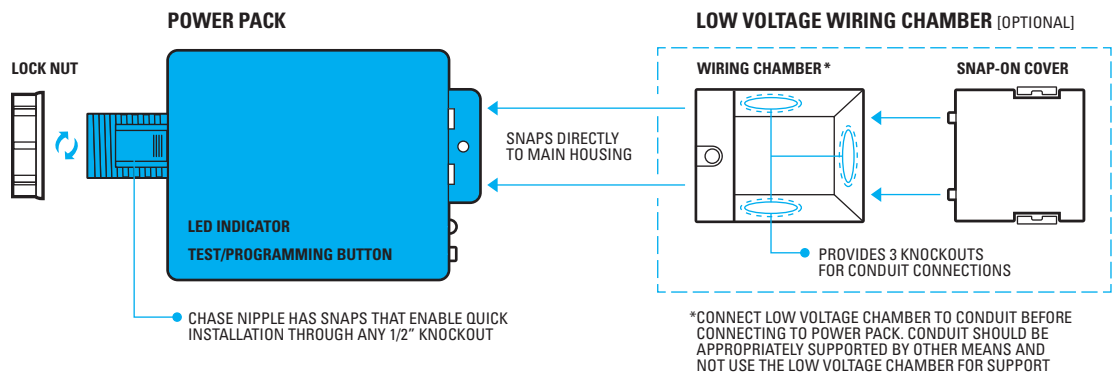
INSTALLATION INSTRUCTIONS

MOUNTING INSTRUCTIONS

Power Packs are designed to attach to electrical enclosures with 1/2" knockouts. Do not mount unit inside a metal junction box.

INSTALLATION NOTES

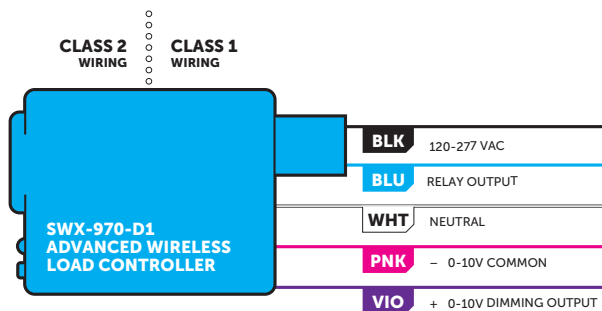
- 1 For supply connections, use 14 AWG (90°C) or larger wires. Wire all circuits exiting chase nipple as Class 1 circuits.
- 2 Suitable for plenum use.
- 3 Risk of Electric Shock - More than one disconnect switch may be required to de-energize the equipment before servicing.



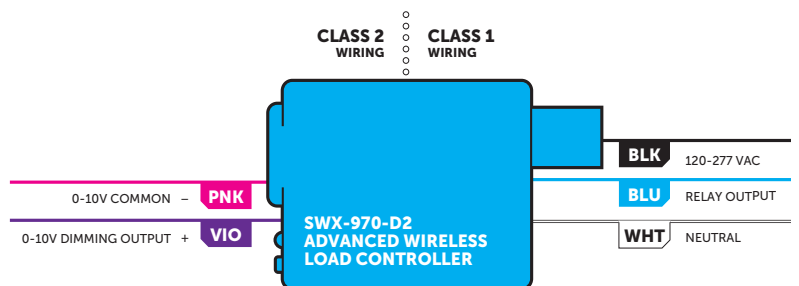
WARNING: TURN POWER OFF AT THE CIRCUIT BREAKER BEFORE WIRING

WIRING

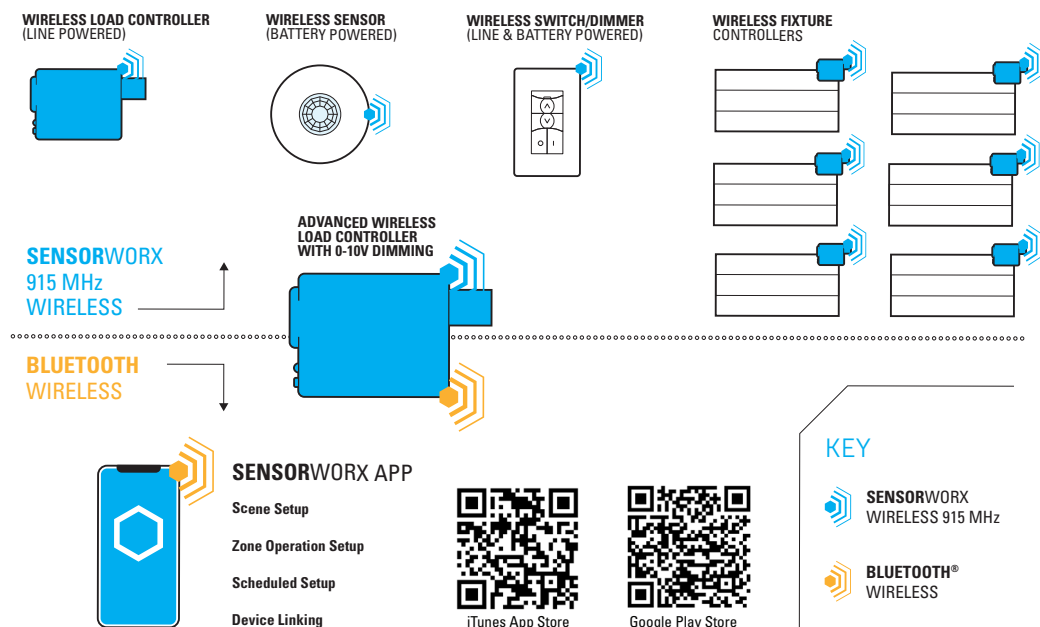
MODEL #: SWX-970-D1



MODEL #: SWX-970-D2



APPLICATION DIAGRAM



TESTING & TROUBLESHOOTING

TESTING CONNECTED LIGHTING

To test the unit's control of connected lighting, press and release the push button (located next to LED) one time. Lights should toggle if the unit is operating and wired to lighting properly.

LED BLINKOUT BEHAVIORS

LED BEHAVIOR	DESCRIPTION	NOTES/REMEDY
Continuous WHITE blinking "heartbeat"	Normal operation	
Repeating sets of 5 Blue flashes	Power present on both relay wires	Check wiring going to the blue relay wires on the power pack. Specifically, ensure there is not line power present on both wires when power pack is disconnected.
Repeating sets of 8 Blue flashes	Missing daylight sensor	Indicates that a daylight sensor has been previously paired, but is no longer detected. To clear, disable daylight/photocell mode or ensure previously paired daylight sensor is within range and transmitting.
Alternating WHITE / BLUE flashing	Wireless Learn Mode (Pairing)	To exit learn mode, press the button one time and release. The LED should return to continuous WHITE "heartbeat".
Alternating WHITE / BLUE flashing with periodic sets of WHITE blinks	Wireless Learn Mode w/ Linked Device Count	The number of periodic WHITE blinks reflects the number of linked devices. To exit learn mode, press the button one time and release. The LED should return to continuous WHITE "heartbeat".
Repeating sets of 4 Blue flashes, with 1 second pause between sets	Linked sensors have stopped communicating	Check sensor battery and install location.
Double BLUE flash every 15 seconds	Photocell is overriding lights OFF	Normal operation during times of high daylight.
Steady BLUE flash	Photocell is transitioning lights ON or OFF	Normal operation when photocell operation is enabled.

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 & dimmer devices are transmit only devices and therefore must be linked to a load controller for switching and/or dimming 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-852-2-xx	Remote Line Powered Switch (On/Off), <xx = color>	Transmit	120-277 VAC
SWX-852-2P-B-xx	Wireless Remote 2-Zone On/Off Wall Station, <xx = color>	Transmit	Battery
SWX-854-B-xx	Remote Dimming Switch (On/Off, Raise/Lower), <xx = color>	Transmit	Battery
SWX-854-2-xx	Remote Line Powered Dimming Switch (On/Off, Raise/Lower), <xx = color>	Transmit	120-277 VAC
SWX-854-2P-B-xx	Wireless Remote 2-Zone Dimmer Wall Station, <xx = color>	Transmit	Battery
SWX-854-4S-B-xx	Wireless Remote 4/Scene Dimmer Wall Station, <xx = color>	Transmit	Battery
SWX-874-ELV-xx †	Phase Dimming Load Controller - Reverse (default) or Forward Phase, <xx = color>	Transmit & Receive	120 VAC
SWX-950*	Power Pack Load Controller, 20A	Transmit & Receive	120/277 VAC
SWX-951-D1 †	Fixture Controller, 1A@, 0-10V Dimming	Transmit & Receive	120-277 VAC
SWX-950-D1 (D2) *	Power Pack Load Controller, 20A, 0-10V Class 1 Dimming (Class 2 model)	Transmit & Receive	120/277 VAC

* UNITS MANUFACTURED WITH DATE CODES 241115 OR HIGHER

† UNITS MANUFACTURED WITH DATE CODES 250701 OR HIGHER

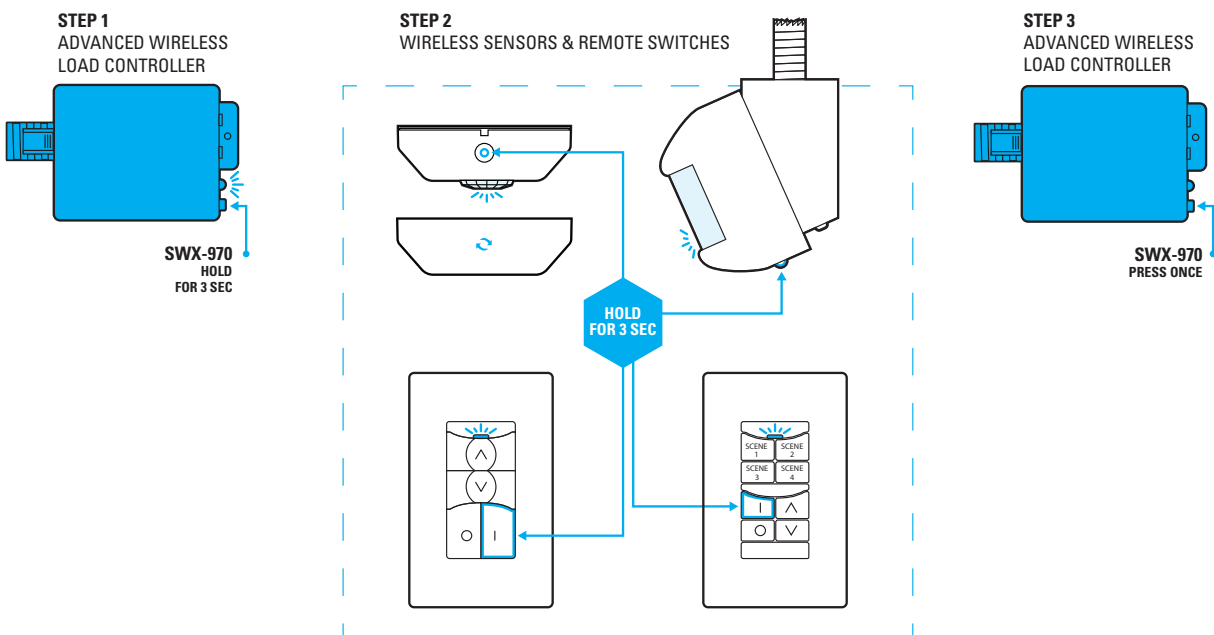
LOCAL WIRELESS LINKING (PAIRING)

Linking a wireless power pack to a wireless sensor, photocell, or remote wall station is quickly done via the following procedure:

- Step 1.** Enter learn (pairing) mode by holding down the power pack's button for 3 seconds until the LED starts alternating white then blue, then release.
- Step 2.** At the sensor, photocell, or remote wall station, hold down the programming button for 3 seconds until the LED starts alternating white then blue. Releasing will link the device with the wireless power pack in learn mode (see note 1 below). The lighting load being controlled will also be toggled off/on as a visual indication of success.
- Step 3.** Repeat step 2 to link additional devices.
- Step 4.** When all devices have been linked, exit learn mode on the power pack 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 power pack 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.

Note 2: All wireless pairing and programming completed using the push-button method can be transferred into the **SENSORWORX** Mobile App.



APPLICATION & OPERATION NOTES

SENSORWORX APP



Manual

ADVANCED WIRELESS LOAD CONTROLLER OPERATION

- The **SENSORWORX** App is available for iOS and Android.
- The App works in conjunction with the Push-to Pair settings allowing for familiar setup procedures.
- Scenes can either change the behavior of the zone (occupancy, timers, high/low trims, etc.) or modify the light level.
- Scenes can have a duration, allowing them to revert to the Zone Operation settings automatically.
- The real-time clock is automatically synchronized with the mobile devices for time-of-day, month/day/year, and daylight savings.
- Any deviations from the photocell Auto-Setpoint and pairing can be configured via the Push-to-Pair.
- The **SENSORWORX** App can provide a print-out of the configuration for commissioning reports.

OPERATION NOTES (CONT.)

PHOTOCELL OPERATION

- The **Ambient Setpoint** (Advanced Function #2) and **Photocell Operating Mode** (Advanced Function #1) are settings stored within the wall switch controller. For all photocell applications (e.g. daylight harvesting), the power pack controller receives the light level readings being transmitted every 15 seconds by wirelessly linked photocells. The controller will then dim, turn off, or turn 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 power pack controller by selecting from a list of values.
- The wireless power pack 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** (Advanced Function #1) is set to Daylight Harvesting to Off, 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 power pack controller will be slowly blinking blue.
- When the unit's **Photocell Operating Mode** (Advanced Function #1) is set to Daylight Harvesting to Off or 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 power pack controller will be slowly blinking blue.
NOTE: if the power pack controller is put into test mode (via a sensor), the 5 minute On-to-Off transition time is shortened to 30 seconds to facilitate quicker testing.
- Whenever lights are being held off due to the photocell, the blue LED will double blink every 15 seconds.
- Dimming from high trim to low trim (or in reverse) due to daylight harvesting requires ~1.5 minutes.

DIMMING OPERATION

- There are always 20 equal steps of dim level (voltage) adjustment from high trim to low trim (or reverse) when using a **SWX-854-B** wireless remote dimmer. Rapid button presses may result in misses.
- For areas such as stairwells, the **SWX-970-D1** and **SWX-970-D2** unit can be used to achieve **Partial Off** operation where lighting is at the full bright level when occupied and dropped to the 50% (level is configurable) during unoccupied periods.
- **Partial On** operation can be achieved by the **SWX-970-D1** and **SWX-970-D2** unit. In this configuration 0-10V lighting is turned on to a configurable **Partial On Level** when triggered from an occupancy sensor or switch. Lighting can then be adjusted to any level via a wirelessly linked **SWX-854-B** remote dimmer. Alternatively, if the ON button is pushed on a wirelessly linked **SWX-852-B** or **SWX-854-B** remote switch, lighting will be stepped up to 100% (level is user configurable). Lighting can be turned off manually via an OFF switch press on either the **SWX-852-B**, **SWX-854-B** wireless remote switch (or single button push on a **SWX-851** switch controller).
- Configurable dimming parameters include **Turn On / Partial On Level**, **Turn Off Scheme**, **Fade On/Fade Off Rates**, and **High/Low Dimming Trim Levels**.

CONFIGURATION SETTINGS

SWX-970 series power packs have many configurable functions depending on the specific model. All functions' setting values can be accessed and changed by pressing the unit's push-button and observing the LED feedback. The functions common to all SWX-950 series power packs are listed first below. Functions present in models with the dimming option (e.g. **SWX-970-D1** and **SWX-970-D2**) are listed on page 8 and the functions that are used in photocell and/or hybrid wireless/wired applications are listed starting on page 9.

FUNCTION #2 OCCUPANCY TIME DELAY

Unlike wired occupancy sensor systems, the time frame between when occupancy was detected last and connected lights turning off is a setting that is maintained in the power pack load controller and not the sensor itself. This arrangement enables the sensors to conserve battery life. See additional notes below for more information on wireless sensor communications to a power pack.

SETTING #	DESCRIPTION
1	Test Mode Active (entered via sensor only)
2	1 Min
3	5 Min
4	10 Min (default)
5	15 Min
6	20 Min
7	30 Min

NOTE: A 5-10 second time delay test mode can be initiated from a linked sensor in order to test coverage. Test mode will expire after 10 minutes. Any active photocell transition periods will also be shortened to 30 seconds while test mode is active.

CHANGING THE OCCUPANCY TIME DELAY

1. Read through the above list and note the number of the desired setting (e.g. 5 = 15 minutes).
2. Press and release the unit's pushbutton **2 times**, then wait 2 seconds. The white LED will blink back the number of the current setting (repeats 3x before exiting).
3. Interrupt blink back by pressing the button the number times equal to the new desired setting (e.g. 5 = 15 minutes).
4. The LED will blink back the new setting number as confirmation and will be saved after three confirmations. After the third confirmation sequence, a successful save will be indicated by two sets of rapid white flashes. If the blue LED rapid flashes twice, save was unsuccessful and process should be started over.

FUNCTION #3: OPERATIONAL MODES

Wireless power packs have several sequence of operation choices.

CHANGING THE OPERATIONAL MODE

1. Read through the above list and note the number of the desired setting (e.g. 3 = Vacancy Mode).
2. Press and release the unit's pushbutton **3 times**, then wait 2 seconds. The white LED will blink back the number of the current setting (repeats 3x before exiting).
3. Interrupt blink back by pressing the button the number times equal to the new desired setting (e.g. 3 = Vacancy Mode).
4. The LED will blink back the new setting number as confirmation and will be saved after three confirmations. After the third confirmation sequence, a successful save will be indicated by two sets of rapid white flashes. If the blue LED rapid flashes twice, save was unsuccessful and process should be started over.

SETTING #	MODE	DESCRIPTION
2	Occupancy Mode (Partial On) (default)	Lights come on automatically when an occupancy signal is received from wirelessly linked sensors (and/or wired sensors on -AX models). Lights will turn off automatically if the OCCUPANCY TIME DELAY expires prior to receiving another occupied signal from a sensor. Lights can also be switched off manually if signaled from a wirelessly linked switch (and/or wired switch on -AX models).
3	Vacancy Mode (Manual On)	A switch signal from a linked wireless switch (and/or a wired switch on -AX models) is required to initially turn lights on. Lights will turn off automatically if the OCCUPANCY TIME DELAY (Function #2) expires prior to receiving another occupied signal from a sensor. Lights can also be switched off manually if signaled from a wirelessly linked switch (and/or wired switch on -AX models).
4	Partial Off Mode	Valid on dimming models only. Lights are on at full bright (HIGH TRIM LEVEL) when wirelessly linked sensors are signaling occupancy. When unoccupied, lights are dimmed to TURN ON / PARTIAL ON(OFF) LEVEL as specified in Function #4. Note the default value is changed to 50% when the OPERATIONAL MODE is switched to Partial Off. If a wireless switch is linked, lights can be manually dropped to TURN ON / PARTIAL ON(OFF) LEVEL .
5	Occupancy Mode w/ Ignore Off Switch	Lights come on automatically when an occupancy signal is received from wirelessly linked sensors (and/or wired sensors on -AX models). On dimming models the lights will turn on to the TURN ON / PARTIAL ON LEVEL as specified in Function #4. Lights will turn off automatically if the OCCUPANCY TIME DELAY expires prior to receiving another occupied signal from a sensor. Lights <u>cannot</u> be switched off manually.
6	Partial Off Mode w/ Secondary Delayed Off	Valid on dimming models only. Lights come on automatically to full bright (HIGH TRIM LEVEL) when an occupancy signal is received from wirelessly linked sensors (and/or wired sensors on -AX models). Lights will dim down to the TURN ON / PARTIAL ON LEVEL automatically if the OCCUPANCY TIME DELAY expires prior to receiving another occupied signal from a sensor. If the additional SECONDARY TIME DELAY also expires the lights will turn off. Lights can be manually dimmed between the HIGH TRIM LEVEL setting and the TURN ON / PARTIAL ON LEVEL manually from a wirelessly linked dimmer switch.
7	Occupancy Mode w/ Ignore Off & Dim Switch	Lights come on automatically when an occupancy signal is received from wirelessly linked sensors (and/or wired sensors on -AX models). Lights will turn off automatically if the OCCUPANCY TIME DELAY expires prior to receiving another occupied signal from a sensor. Lights <u>cannot</u> be switched off or dimmed manually from a wirelessly linked switch.
8	Occupancy Mode w/ Ignore On/Off/Dim Switch	Lights come on automatically when an occupancy signal is received from wirelessly linked sensors (and/or wired sensors on -AX models). Lights will turn off automatically if the OCCUPANCY TIME DELAY expires prior to receiving another occupied signal from a sensor. Lights <u>cannot</u> be switched on, off, or dimmed manually from a wirelessly linked switch.

CONFIGURATION SETTINGS (CONT.)

SETTING #	MODE	DESCRIPTION
9	Ignore Occupancy	Wirelessly linked sensors are ignored. Lights <u>can</u> be switched on or off and <u>can</u> be dimmed from a wirelessly linked switch
10	Ignore Occupancy & Off Switch	Wirelessly linked sensors are ignored. Lights <u>can</u> be switched on and dimmed but <u>cannot</u> be switched off from a wirelessly linked switch.
11	Ignore Occupancy & Off & Dim Switch	Wirelessly linked sensors are ignored. Lights <u>can</u> be switched on but <u>cannot</u> be switched off or dimmed from a wirelessly linked switch.
12	Ignore Occupancy & On/Off/Dim Switch	Wirelessly linked sensors are ignored. Lights <u>cannot</u> be switched on or off nor be dimmed manually from a wirelessly linked switch.

ADDITIONAL NOTES ON OPERATIONAL MODES

- When in **Automatic On Occupancy Mode** (Setting #2) or **Partial Off Occupancy Mode** (Setting #4), if lights are manually switched off when there are still occupants in a space (to show a presentation for example), the Automatic On operation will be disabled until the occupancy time delay expires.
- Except when in a **PARTIAL OFF** (setting #4 and #6) mode, lights controlled by a dimming power pack will always turn on to the **TURN ON / PARTIAL ON LEVEL** as specified in Function #4.
- The value of the **TURN ON / PARTIAL ON LEVEL** is changed to 50% when the **OPERATIONAL MODE** is switched to Partial Off from another mode.
- In all modes, if the switch is pressed but no occupancy is ever sensed, the lights will come on for 1 minute and then shut off. For hybrid wired/wireless power packs, if there are no sensors wirelessly linked or wired to the unit, tie the power pack's white input wire to red (+VDC) .
- When in **Vacancy (Manual On) Mode** (Setting #3), there is a 15 second "grace" period after the sensor times out when the sensor will switch lights back on automatically. For dimming models, the lights will return to the previous level. After 15 seconds the sensor will revert to vacancy (manual on) operation.

FUNCTION #8: RESTORE FACTORY DEFAULTS / FORGET LINKED DEVICES

To return a wireless power pack to its original factory default settings or to clear the unit's list of linked wireless devices the following commands can be executed.

SETTING #	DESCRIPTION
3	Restore Complete Factory Defaults
4	Restore Factory Defaults and Forget all Linked Devices
5	Enter Forget Mode (opposite of Learn Mode)
6	Forget All Linked Devices
7	Send a "Forget Me" Message
8	Restore Factory Default for Password
12	Release all Load Controllers (This causes restore factory defaults on any load controllers that have this device as the parent. It is the same as a regular release that happens when the user deletes a zone in the mobile app.)

Note: If factory defaults are restored, auto-setpoint calibration will need to be reinitiated from any linked photocell/daylight harvesting sensors.

ENTERING A RESTORE FACTORY DEFAULTS OR FORGET LINKED DEVICES COMMAND

- Read through the above list and note the number of the desired command.
- Press and release the unit's pushbutton **8 times**, then wait 2 seconds. The white LED will blink back 2 times, pause, and repeat 3x before exiting.
- Interrupt the blink back and press the pushbutton the number times equal to the desired command (e.g. 6 times to Forget all Linked Devices).
- The LED will flash back the command number as confirmation and will be executed after three confirmations. After the third confirmation sequence, a successful save is indicated by a two sets of rapid white flashes. If the blue LED rapid flashes twice, save was unsuccessful and process should be started over.

DIMMING CONFIGURATION

CHANGING DIMMING CONFIGURATION SETTINGS

Several dimming parameters (listed in the tables below) can be adjusted by following the step-by-step procedure.

1. From the below tables of detailed dimming functions, note the number (#) of the function to be modified. For example, the **Turn On/Partial On Level** function is #4.
2. To enter programming mode, press and release the unit's button the number of times of the chosen function. For example, press the button 4 times to access the **Turn On/Partial On Level**.
3. The LED will flash back white the setting number of the current value as it appears in each function's detailed table below. For example, the default **Turn On/Partial On Level** is setting #3, Last User Level). Continue to the next step before the current setting is blinked back 3x).
4. To change the setting number, interrupt the blink back and press and release the button the number of times equal to the new setting #. For example, 4 times for ~30%.
5. The LED will flash back the new setting number as confirmation and will be saved after three confirmations. After the third confirmation sequence, a successful save is indicated by a two sets of rapid white flashes. If the blue LED rapid flashes twice, save was unsuccessful and process should be started over.

FUNCTION #4 - TURN ON / PARTIAL ON(OFF) LEVEL

The level the dimming output is set to upon initially turning on when in an Automatic On or Vacancy Operating Mode. Note, changes to this setting will not be observed until the lights have cycled off and back on one time. When in Partial Off Operating Mode, setting is the level to which the dimming output is dropped when an unoccupied or an off switch signal is received.

SETTING #	VALUES	NOTES
2	100%	
3	Last User Level (default)	Invalid if Operational Mode set to Partial Off.
4	~30%	
5	~40%	
6	~50%	
7	~60%	
8	~70%	
9	~80%	

Actual voltage value is calculated as the % of voltage range between high and low trim levels. Light output at each voltage level depends on driver/ballast and luminaire.

FUNCTION #5 - TURN OFF SCHEME

The actions of the power pack's dimming output and relay when an unoccupied signal or an off switch press is received.

SETTING #	VALUES	NOTES
2	Drop to Off (default)	Dimming output drops to low trim and relay opens
3	Fade to Off	Dimming output fades to low trim and relay opens
4	Fade to 0V	Dimming output fades to 0 volts (e.g. below a connected driver's electronic off level). Relay remains closed.
5	Fade to Low Trim	Dimming output fades down to low trim level. Relay remains closed.
6	Drop to Low Trim	Dimming output drops down to low trim level. Relay remains closed.
7	Drop to 0V	Dimming output drops to 0 volts (e.g. below a connected driver's electronic off level). Relay remains closed.

FUNCTION #6 - HIGH TRIM

The maximum voltage to which the dimming output is allowed. For increased energy savings or task tuning, choose a value lower than 10 VDC (100%).

SETTING #	VALUES	NOTES
2	~10 VDC (100%) (default)	Exact light output % at each voltage level depends on driver/ballast and luminaire.
3	~9 VDC (90%)	
4	~8 VDC (80%)	
5	~7 VDC (70%)	
6	~6 VDC (60%)	
7	~5 VDC (50%)	

IMPORTANT NOTICE -
After changing the high trim value, Auto-Setpoint calibration should be re-run at the linked wireless daylight sensor.

FUNCTION #7 - LOW TRIM

The minimum voltage to which the dimming output can lower lighting.

SETTING #	VALUES	NOTES
2	0 VDC	
3	~1 VDC (10%) (default)	Exact light output % at each voltage level depends on driver/ballast and luminaire.
4	~2 VDC (20%)	
5	~3 VDC (30%)	
6	~4 VDC (40%)	
7	~5 VDC (50%)	

IMPORTANT NOTICE -
After changing the low trim value, Auto-Setpoint calibration should be re-run at the linked wireless daylight sensor.

FUNCTION #9 - FADE OFF TIME

The time it takes for a dimming output to reach its final level when turning off. This setting is only active when the unit's **Turn Off Scheme** is set to one of the Fade settings.

SETTING #	VALUES
2	0.75 Sec
3	1.5 Sec (default)
4	3 Sec
5	5 Sec
6	15 Sec

FUNCTION #10 - FADE ON TIME

The time it takes for a dimming output to reach its final level when turning on.

SETTING #	VALUES
2	0.75 Sec
3	1.5 Sec (default)
4	3 Sec
5	5 Sec
6	15 Sec

FUNCTION #12 - PARTIAL OFF DELAY TIME

For load controllers in the Partial Off + Delay Off operational mode, the amount of time the lighting will be dimmed at the low trim before turning completely off (assuming the space remains unoccupied).

SETTING #	VALUES
1	0 min
2	1 min
3	5 min
4	10 min (default)
5	15 min
6	20 min
7	30 min

ADVANCED CONFIGURATION (DAYLIGHT HARVESTING/PHOTOCELL & OTHER)

Several advanced configuration settings including daylight harvesting/photocell related settings (listed in the tables below) can be adjusted by following the step-by-step programming procedure listed below.

CHANGING AN ADVANCED CONFIGURATION SETTING

1. Read through this entire 5 step procedure before performing step 2. Also, from the below tables of advance functions, note the number (#) of the function to be modified. For example, the **Daylight Harvesting / Photocell Operating Mode** function is #1
2. To enter advanced programming mode, press and hold the unit's pushbutton. The LED will initially be steady blue. After 3 seconds the LED will change to alternate white and blue, keep holding. After 6 seconds, the LED will change to rapid blue flashing indicating you can release the button.
3. Press and release the unit's button the number of times of the desired advanced function. For example, press the button 1 time to access the **Daylight Harvesting / Photocell Operating Mode**.
4. For functions #1, 3, 4, & 6 below the LED will flash back the setting number of the current value as it appears in each function's detailed table below. Continue to the next step before the current setting is blinked back 3x.
5. To change the setting number, interrupt the blink back and press and release the button the number of times equal to the new setting #. For example, 5 times for **Daylight Harvesting to Low Trim**.
6. The LED will flash back the new setting number as confirmation and will be saved after three confirmations. After the third confirmation sequence, a successful save is indicated by a two sets of rapid white flashes. If the blue LED rapid flashes twice, save was unsuccessful and process should be started over.

ADVANCED FUNCTION #1 - DAYLIGHT HARVESTING / PHOTOCELL OPERATING MODE

This function defines how the power pack controls the lights when it receives ambient light values from a linked photocell that are above the **SETPOINT** value.

SETTING #	VALUES	NOTES
2	Disabled (default)	Default setting on all SWX-950 series controllers. Running auto-setpoint on a linked photocell or sensor will change mode to setting to #3 or #5.
3	On/Off Operation	Automatically enabled on a SWX-950 once auto-setpoint configuration is run from a linked wireless photocell. Lights will turn off with high daylight.
4	Inhibit Only Operation	During high daylight, lights will be prevented from coming on automatically when occupancy is detected. However, lights will not never be switched off due to high daylight.
5	Daylight Harvesting to Low Trim (i.e. Auto Dimming)	Automatically enabled on a SWX-950-D2 and SWX-950-D1 once auto-setpoint configuration is run from a linked wireless photocell. As ambient light level rises, the controlled lights will be dimmed down to a minimum of the LOW TRIM value. Lights will not be turned off from high daylight.
6	Daylight Harvesting to Off	Lights will dim to low trim and then turn off from high daylight.

ADVANCED FUNCTION #2 - AMBIENT SETPOINT

The minimum overall light level that is to be maintained in a space is referred to as the "setpoint". **Note:** the **Auto-Setpoint Calibration** procedure must initially be run from a linked wireless photocell for this function to be enabled. Once run, the value calculated during the auto-setpoint calibration will be blinked back upon entering this function (i.e. after doing **STEPS 2-3** in the **Changing an Advanced Configuration Setting**). The blink back is done in two alternating digits as follows:

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

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

To change the setpoint value, follow **STEPS 5-6** in the **Changing an Advanced Configuration Setting** procedure at the top of this page and using the below value table.

SETTING #	VALUES
2	2.5 fc
3	5.0 fc
4	10.0 fc
5	15.0 fc
6	25.0 fc
7	35.0 fc
8	50.0 fc
9	+10 %
10	-10 %

Note: during the **Auto-Setpoint Calibration** procedure the controlled lights will cycle off then back on. If the photocell device does not see a change in light level during this cycle (i.e. the application is open loop), an auto-setpoint of 25.0 fc will be chosen. This situation will also occur if a flashlight is shined into the photocell continuously during the calibration process (for example in an effort to achieve a high auto-setpoint). To prevent this from occurring, switch the flashlight off and back on along with the power pack controller's relay switching off and back on. This will simulate a large ambient light change and will result in a high setpoint (e.g. 99 fc) to be stored.

ADVANCED FUNCTION #3 - MANUAL DIMMING OVERRIDE

The amount of time that user is allowed to raise the dim level of a controller that is also linked to a daylight harvesting photocell. Lowering the dim level is always allowed.

SETTING #	VALUES	NOTES
2	Disabled (default)	Dimming above the daylight harvesting level is not allowed.
3	Indefinitely	Dimming above the daylight harvesting level is always allowed.
4	1 Hour	Dimming above the daylight harvesting levels is allowed for the setting's time period after which the level will automatically return to the daylight harvesting level. Manual dimming overrides are also cancelled when ever lights switch off from occupancy sensors timing out.
5	2 Hour	
6	4 Hour	
7	8 Hour	

FCC INFORMATION

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

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

