WaveLinx PRO Control of Somfy Shading

Overview

Controllable shading solutions are becoming more common as commercial buildings are designed or retrofitted for increased efficiency and comfort. Shading solutions may provide energy savings by reducing heating and cooling costs associated with solar gain. They may also improve occupant satisfaction and productivity by allowing occupants to adjust shades in their workspace to reduce glare.

Cooper Lighting Solutions WaveLinx PRO Connected Lighting System offers a comprehensive control solution when interfaced with Somfy Shading. Automatically control Somfy Shading using WaveLinx PRO schedules and occupancy sensing, or manually control shading from WaveLinx PRO Wallstations and Touchscreens.

This application note outlines:

- How WaveLinx PRO connects to the Somfy Shading system and how the connection works
- How to perform the initial WaveLinx PRO setup for Somfy Shade control
- How to determine the control strategy, add shade control to scenes, or control shading using zone commands
- How to add scene or zone commands to WaveLinx PRO Wallstation buttons
- Special considerations with the use of raise/lower buttons
- How to add or remove shade control from occupancy sensor response and time schedules
- Application examples: Private Office, Conference Room, Open Office

How does WaveLinx PRO connect to the Somfy Shading system?

The WaveLinx PRO Connected Lighting System uses a WaveLinx PRO Universal Dimming Switchpack to connect to a Somfy SDN 0-10V Interface which in turn connects to the Somfy Digital Network™ (SDN).

WaveLinx PRO Universal Dimming Switchpack

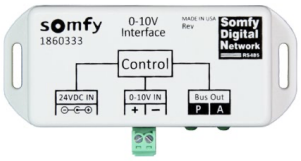
Supported Models

- WSP-MV-010
- WSP-UV-010
- WSP-UV-010-EM

Somfy SDN 0-10V Interface

Supported Models

- 1860333
- 1870489



Model WSP-CA-010 is not supported in this application.

- The Somfy SDN 0-10V Interface does not require programming. It passes the received signal to all shade motors on the connected SDN Data Bus. All connected motors operate as one group (maximum 20 SDN tubular motors or 45 SDN Bus Power Units).
- If more than one shade control group is required, the shading components for each group must connect to a unique SDN Data Bus. Each SDN Data Bus must have its own SDN 0-10V Interface and WaveLinx PRO Switchpack.
- The WaveLinx PRO Switchpack is powered from a branch circuit. Refer to the installation instructions for the WaveLinx PRO Switchpack model being used for the supported voltage range for that product.
- The WaveLinx PRO Switchpack's switched wire lead (red wire) is not used and should be safely capped.

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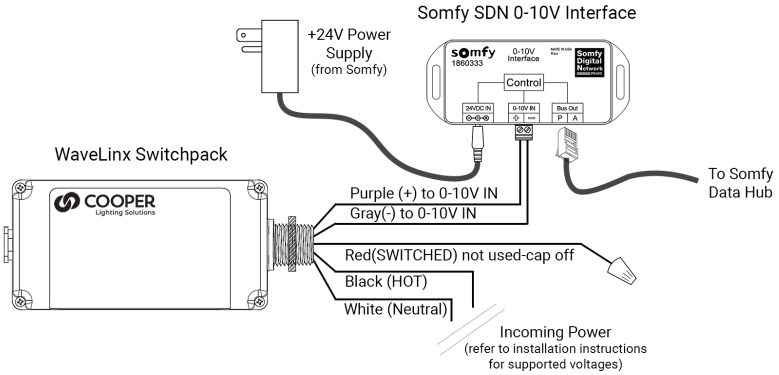
- The WaveLinx PRO Switchpack's purple and gray wiring leads connect to the Somfy SDN 0-10V Interface 0-10V IN terminal block. Observe polarity (18AWG, maximum 100 feet).
- The Somfy SDN 0-10V Interface requires +24V power from a Somfy provided power supply and connection to the Somfy SDN Network, typically through a Somfy Data Hub.



How does the connection between the WaveLinx PRO Switchpack and the Somfy Interface operate?

Somfy shade motors connected to the SDN network will change shade position based on the voltage on the SDN 0-10V Interface's 0-10V IN terminal. By raising and lowering the WaveLinx PRO Switchpack's 0-10V signal, the SDN 0-10V Interface will command shading to go to the position associated with the voltage seen on its 0-10V IN terminal.

There are two currently supported models of Somfy SDN 0-10V Interface. The SDN 0-10V Interface model number should be printed on the top panel. The WaveLinx PRO Switchpack will be programmed to operate in a White Tuning zone. Use the charts below to determine the optimal WaveLinx PRO Kelvin level to use in the WaveLinx Mobile Application to achieve the required shade position.

Model: 1860333 Default Operation

Shade Position[1]	Expected Voltage Range	Optimal WaveLinx Level[2]
Fully Opened	Below .8V	3000K
11% Closed	0.9 - 1.8V	3200K
22% Closed	1.9 – 2.8V	3400K
33% Closed	2.9 – 3.8V	3600K
44% Closed	3.9 – 4.8V	3800K
55% Closed	4.9 – 5.8V	4000K
66% Closed	5.9 – 6.8V	4200K
77% Closed	6.9 – 7.8V	4400K
88% Closed	7.9 – 8.8V	4600K
Fully Closed	Above 8.9V	5000K

Model: 1870489 Default Operation

Shade Position[1]	Expected Voltage Range	Optimal WaveLinx Level[2]
Fully Opened	Below .85V	3000K
10% Closed	0.9 - 1.4V	3200K
20% Closed	1.5 – 2.3V	3400K
30% Closed	2.4 – 3.3V	3600K
40% Closed	3.4 – 4.3V	3800K
50% Closed	4.4 – 5.2V	4000K
60% Closed	5.4 – 6.2V	4200K
70% Closed	6.3 – 7.1V	4300K
80% Closed	7.2 – 8.1V	4500K
90% Closed	8.2 – 8.7V	4700K
Fully Closed	Above 8.7V	5000K

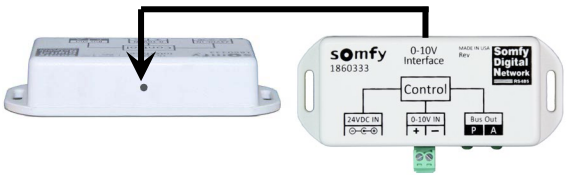
[1] The shade position shown is the default operation of the Somfy 0-10V Interface. The Interface has an onboard reverse button. If pressed for 1 second, the shade position behavior is reversed. See the next page for further details on the behavior from reverse button use.

[2] For optimal operation, the WaveLinx Switchpack should be set for white tuning operation and be assigned to a white tuning zone with the supported Kelvin range of 3000K to 5000K. This allows for proper operation of shading. The level shown may not account for site-specific installation factors. If level shown does not trigger the desired shade position, adjust in 100K increments until the shade responds as desired.

SDN 0-10V Interface Reverse Button

Recommendation: Avoid the use of the reverse button. If the SDN 0-10V Interface operation is reversed, the shade position shown in the default operation table will change. In the shade position column, substitute the word “Closed” for “Opened” and “Opened” for “Closed” to determine reversed operation.

Press and hold the reverse button for 1 second, to place in reverse operation or to return reverse operation back to default mode.



Initial WaveLinx PRO Setup for Somfy Shade Control

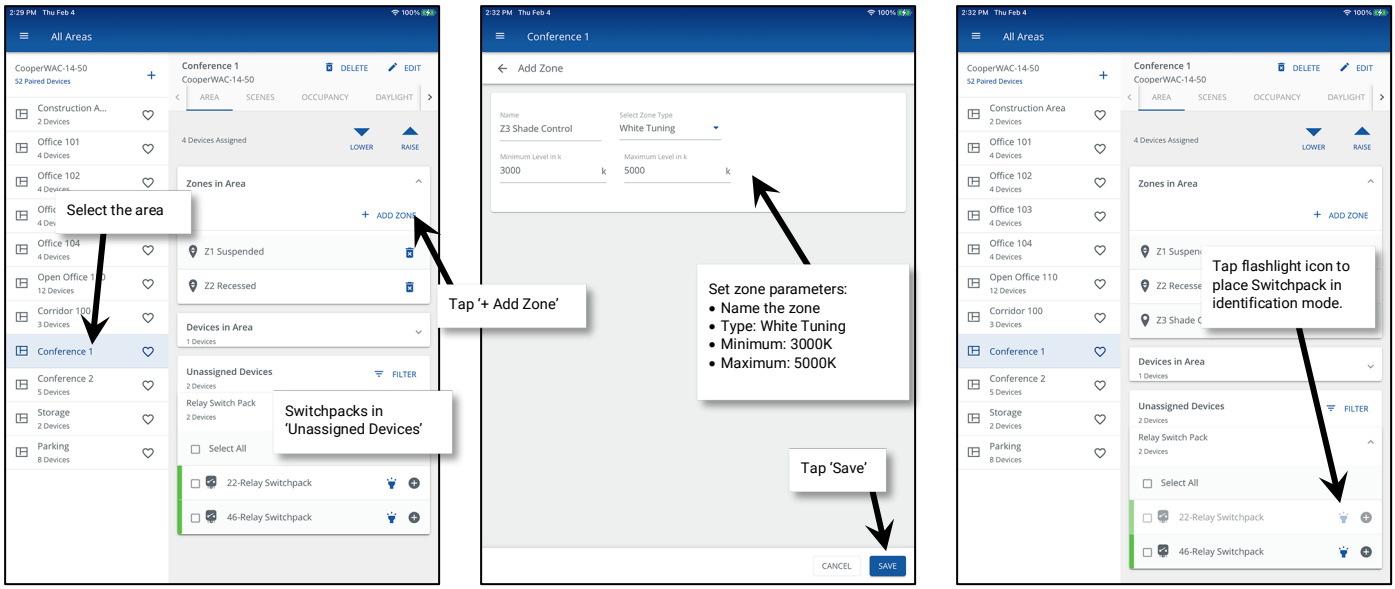
This document assumes that all Somfy components have been installed and are operational and that shade lower and upper end limits have been set. Refer to Somfy installation guides for how to perform these functions before proceeding with the WaveLinx PRO setup.

For best results and optimal operation in the WaveLinx PRO system, the WaveLinx PRO Switchpack will be set for a white tuning type and assigned to a white tuning zone. The white tuning zone type will allow shading to:

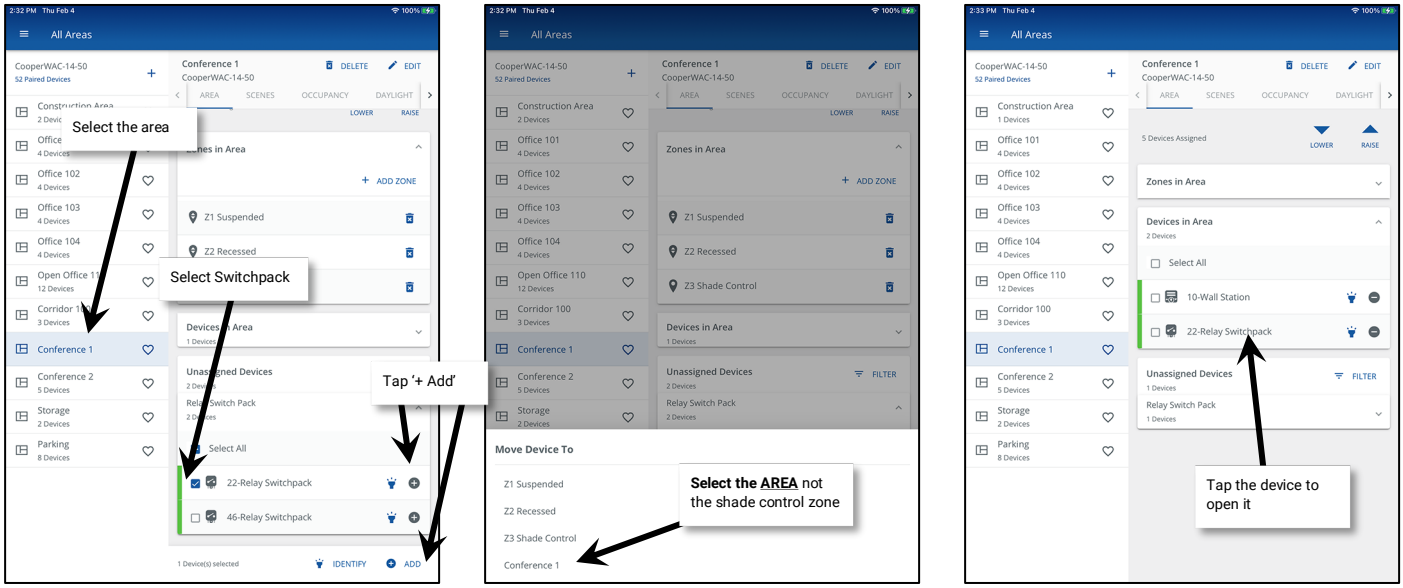
- Automatically be excluded from daylight sensor control and demand response.
- Ignore wallstation raise and lower commands that are programmed to command ‘ALL’ or ‘AFFECTED’ zones, preventing the shading from changing position when lighting intensity is adjusted.

This section discusses the steps to perform the required setup of the WaveLinx PRO Switchpack connected to the Somfy 0-10V Interface. It is assumed that other WaveLinx PRO devices have already been paired and assigned to areas/zones as described in the WaveLinx PRO User Guide.

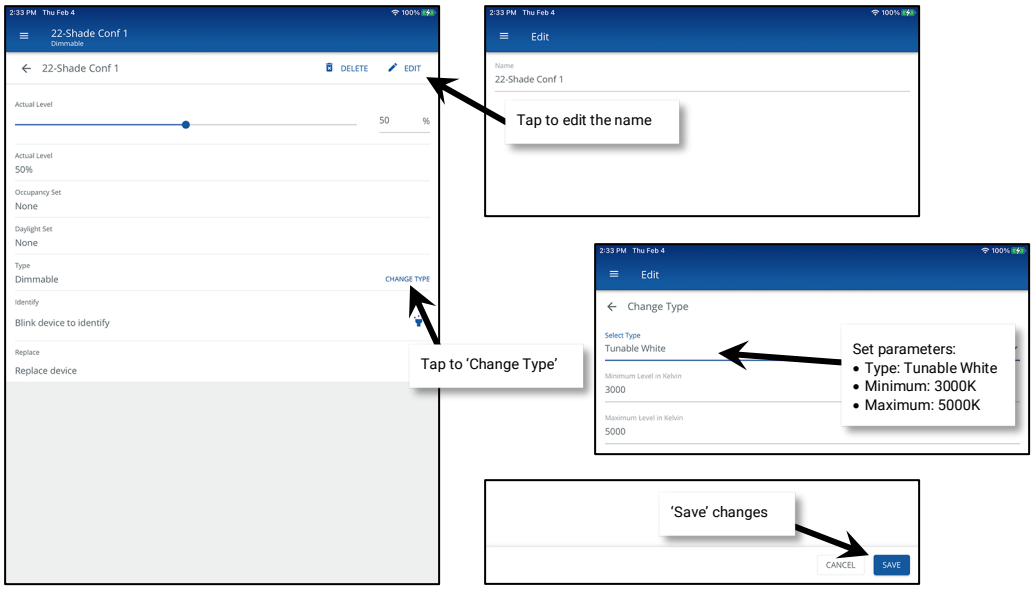
1. Pair the WaveLinx PRO Switchpack with the WaveLinx Area Controller per the instructions in the WaveLinx PRO User Guide. Once paired, the Switchpack should show as a device in the Construction Area and will appear as a Relay Switch Pack in the ‘Unassigned Devices’ list.
2. In the WaveLinx Mobile App, open the area created for the space. Tap ‘+ Add Zone’ to create a new zone. Set the following parameters and then tap ‘Save’.
    - **Name**: Add an easy to recognize name for the shade control zone
    - Zone Type: **White Tuning**
    - Minimum Level: **3000K**
    - Maximum Level: **5000K**
3. Next, identify the WaveLinx PRO Switchpack that is connected to the shade control interface. In the ‘Unassigned Devices’ section, expand the ‘Relay Switch Pack’ category. Tap the flashlight icon ‘ to place a Switchpack into identification mode. In identification mode, the controlling Switchpack should cause connected shading to wiggle, shifting slightly up and down for 15 seconds. If the expected shading does not respond, continue this process with remaining Switchpacks until the controlling Switchpack is found.



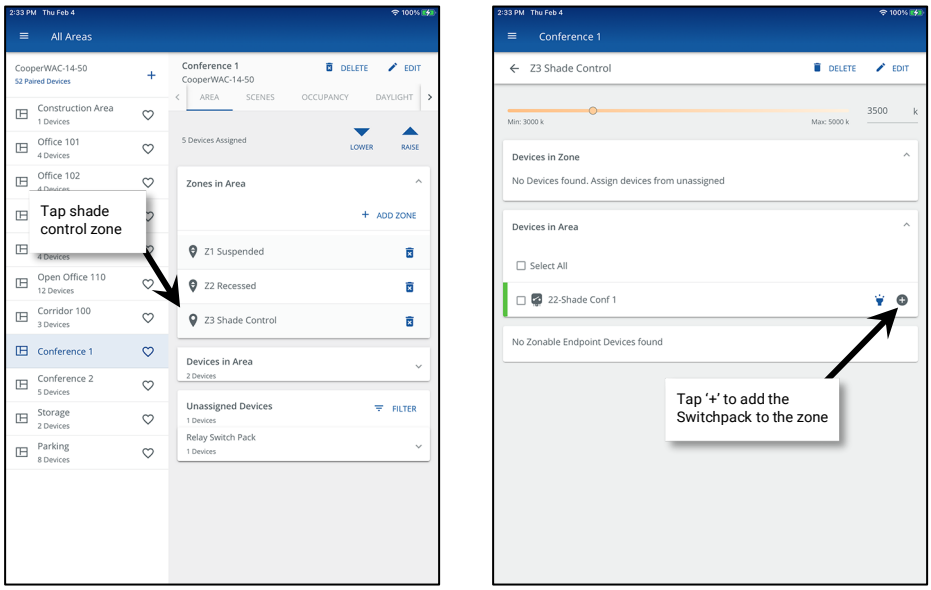
4. Manually select the Switchpack (make sure it is the only device selected) and then tap the '+' icon or '+ Add' option. When prompted, select to add the device **to the AREA** (not the shading zone). Locate the assigned Switchpack in the 'Devices in Area' section, and then tap the device to open it.



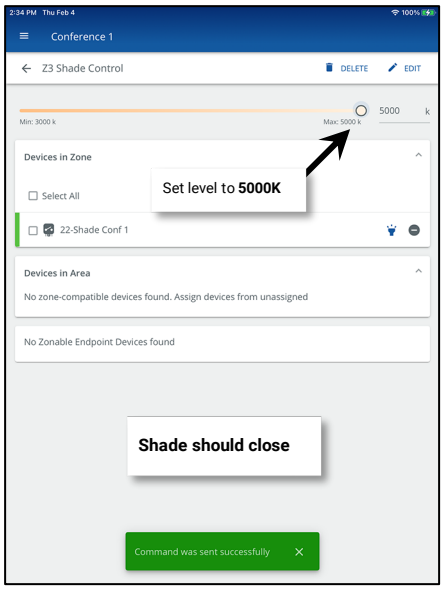
5. (Optional) Tap '✎ Edit' and add an easy to recognize **name** for the shade control zone. Save the name.
6. (Required) Tap 'Change Type' and set the following parameters, saving when completed:
   - Type: **Tunable White**
   - Minimum Level: **3000K**
   - Maximum Level: **5000K**

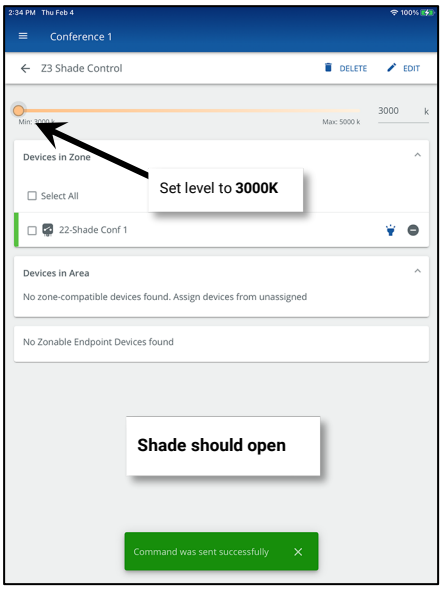


7. Tap the previously created shade control zone. The Switchpack should show as an available device in 'Devices in Area'. Tap on the '+' icon to move the Switchpack to 'Device in Zone'.



8. Once the device is assigned, test the shade operation by using the zone adjust bar.
   - Move the adjustment bar to 5000K. The shade should move to the Fully Closed position.
   - Move the adjustment bar to 3000K. The shade should move to the Fully Opened position.





Proceed with programming the shade control strategy.

Determining the Control Strategy

The most common control commands issued in the WaveLinx PRO system are scene commands and zone commands.

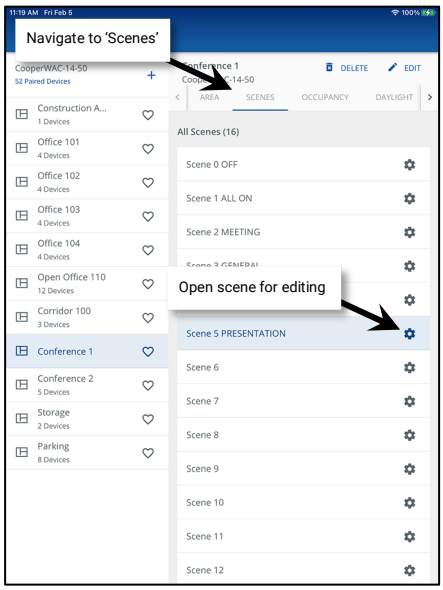
- **Scene** commands are used to recall a pre-defined set of light levels in the space. Scenes typically include light levels for multiple zones in the area.
- **Zone** commands are used to control a specific zone within an area. Zone commands can be sent to issue a specific level or to raise and lower the light level.

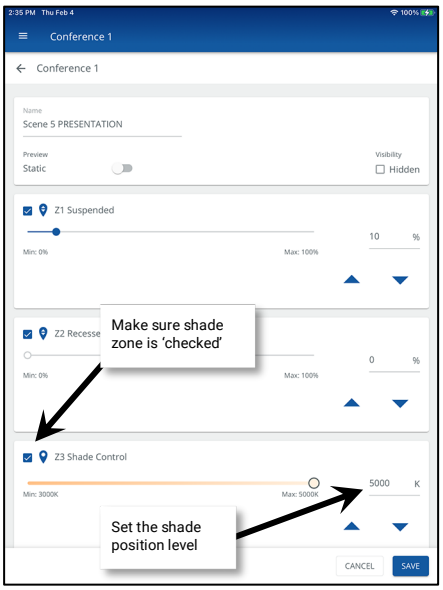
When implementing these commands with shade control, first determine whether shading needs to operate with lighting as part of a scene, or, if shading needs to operate separate from lighting using zone commands. Both scene commands and zone commands can be issued by wallstations, occupancy sensors and time schedules making it easy to apply the strategy once it is determined.

Adding Shade Control to Scenes

For simple control strategies, lighting intensity and shade control can be combined into scenes for easy recall. For instance, in a conference room, the presentation scene might dim the lighting and close the shades while other lighting scenes return the shades to some variation of the open position.

For a scene that requires both lighting and shading response, edit the scene. Make certain that the shade zone is included in the scene (checked). Program the required light levels and add the shade zone's level for the desired shade position. Refer to the shade position chart on page 2 for the optimal WaveLinx PRO level.



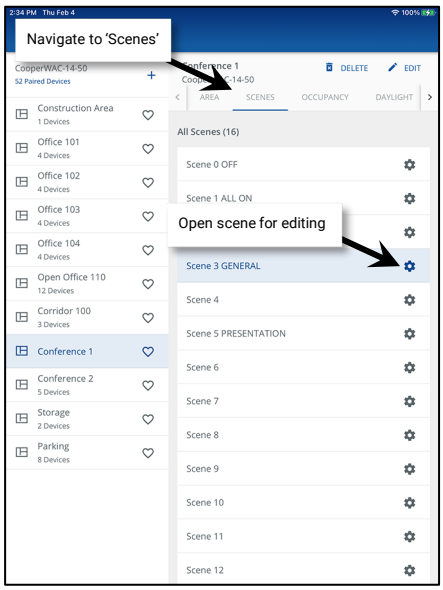


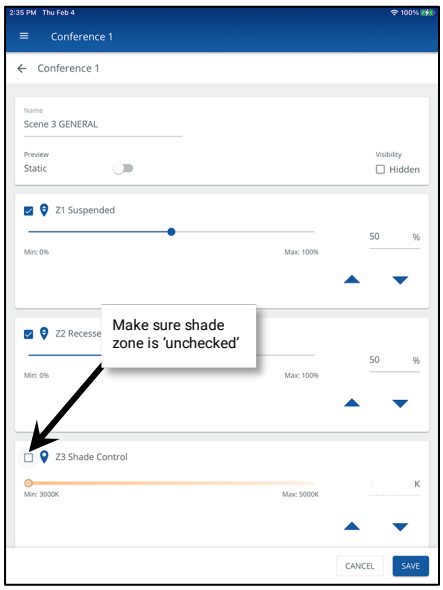
Repeat this process for all scenes that require a shading response.

Removing Shade Control from Scenes

For sites controlling light intensity separately from shading by using separate controls, the shade control zone should be ignored from all scenes. For a mixed strategy where some scenes should cause shade response while others should not, the shade control zone can be ignored from selected scenes.

To ignore the shade zone from a scene, open the scene for editing, and make sure that the shade zone is unchecked (ignored).





Repeat this process for all scenes that should not cause a shading response.

Control Shading Using Zone Commands

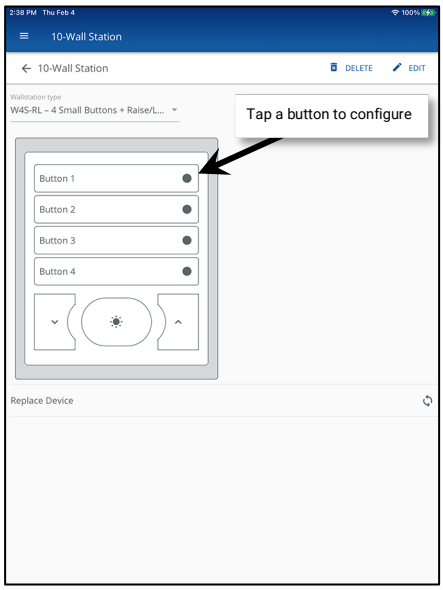
To command shading separately from lighting, use a zone level command. When sending a zone level command to a shade control zone, enter the Kelvin level for the desired shade position. Refer to the shade position chart on page 2 for the optimal WaveLinx PRO level.

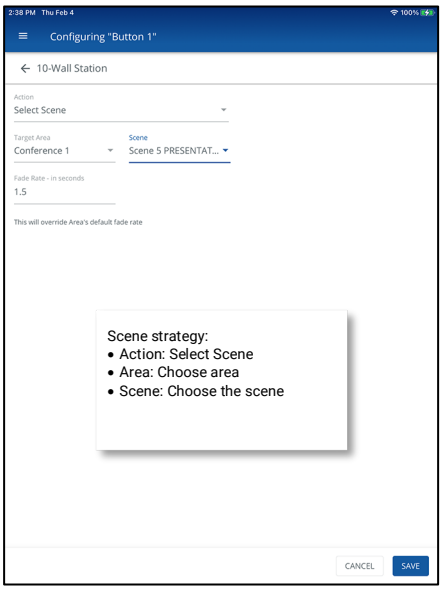
Adding Scene or Zone Commands to WaveLinx PRO Wallstation Buttons

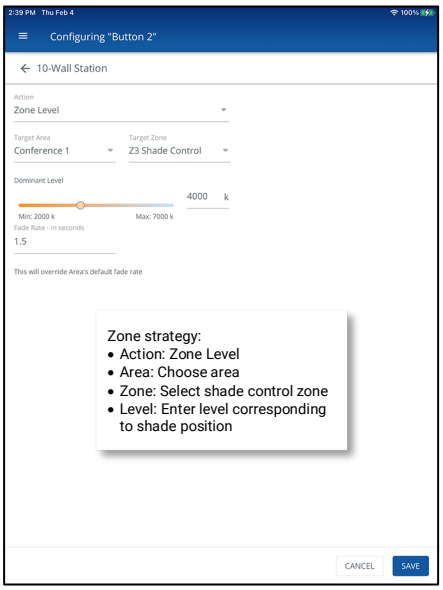
A wallstation button can be programmed to issue commands to scenes or zones as well as other specialized functions.

If using scene-based lighting and shade control strategies, once the scene is programmed, set the wallstation button to issue the desired scene command.

If separately controlling the shading, program the wallstation button to issue a zone level command to the shade control zone, selecting the appropriate Kelvin level for the desired shade position. Each button on the wallstation can be programmed for a different level to allow for transition to other shade positions.







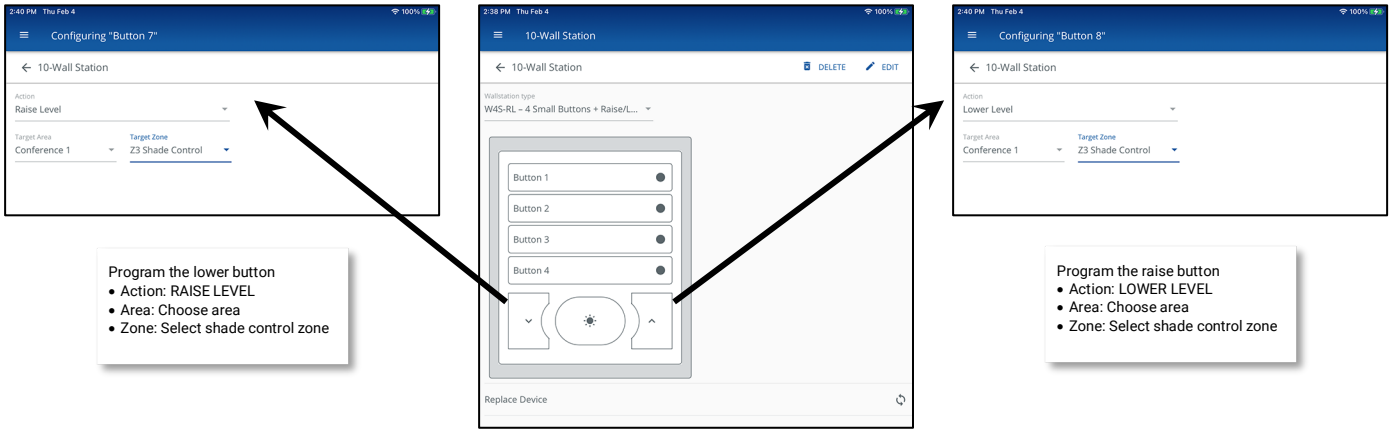
Using Raise/Lower Buttons

Shade control zones will automatically be excluded from raise and lower button control that is intended to adjust the lighting intensity, preventing raise and lower buttons from inadvertently adjusting shading when adjusting light levels. In the WaveLinx PRO system, White Tuning zones are automatically excluded from raise or lower commands issued to 'ALL' or 'AFFECTED' zones in an area.

If a separate control station is being used for shade control, it is possible to use a raise or lower button to issue a command specifically to the shade control zone. When the zone is directly commanded to raise or lower, the white tuning zone type will respond.

IMPORTANT: If setting up raise or lower buttons for shade response, the default Somfy Interface functionality is reverse from WaveLinx PRO operation. To counter this program the buttons as indicated: [3]

- Lower button: **RAISE LEVEL**
- Raise button: **LOWER LEVEL**



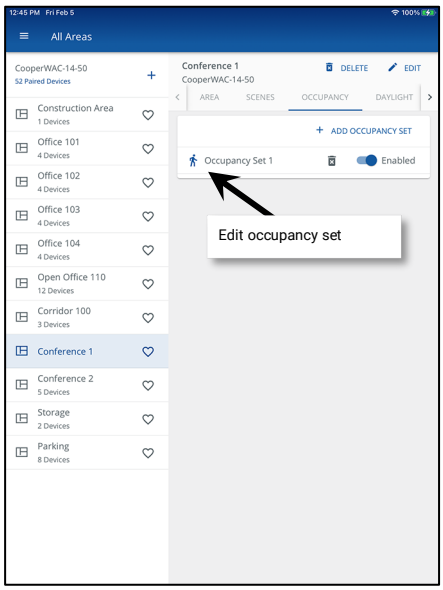
Raise/Lower buttons to adjust shading may not stop the shade when the occupant's finger is removed as the shade may be still in transition between positions. The shade will stop once the position has been executed based on the voltage seen on the 0-10V Input.

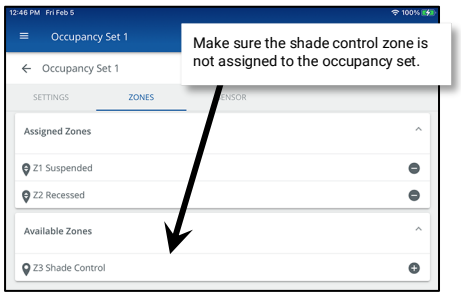
[3] Alternately, reverse the Somfy default operation using the onboard reverse button. See the details on page 3.

Adding/Removing Shade Control from Occupancy Sensor Response

Occupancy sensors typically issue scene-based commands. When determining control strategy, it is important to consider what effect, if any, occupancy status should have on the shade position.

If occupancy sensors should have no result on the shade position, make sure that the shade control zone is not assigned to the occupancy set.

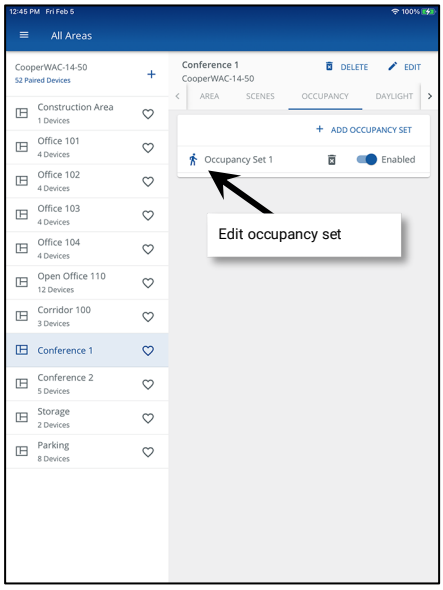


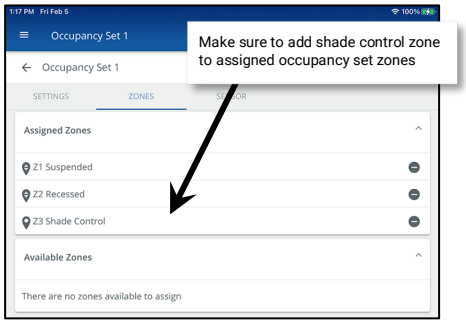


Some sites may want shading to respond to occupancy actions. For instance, the shades could open to the fully open position when the space becomes unoccupied. There may be enough daylight present the next time the space is used to leave lighting off or to reduce the level of electric lighting needed, maximizing energy savings.

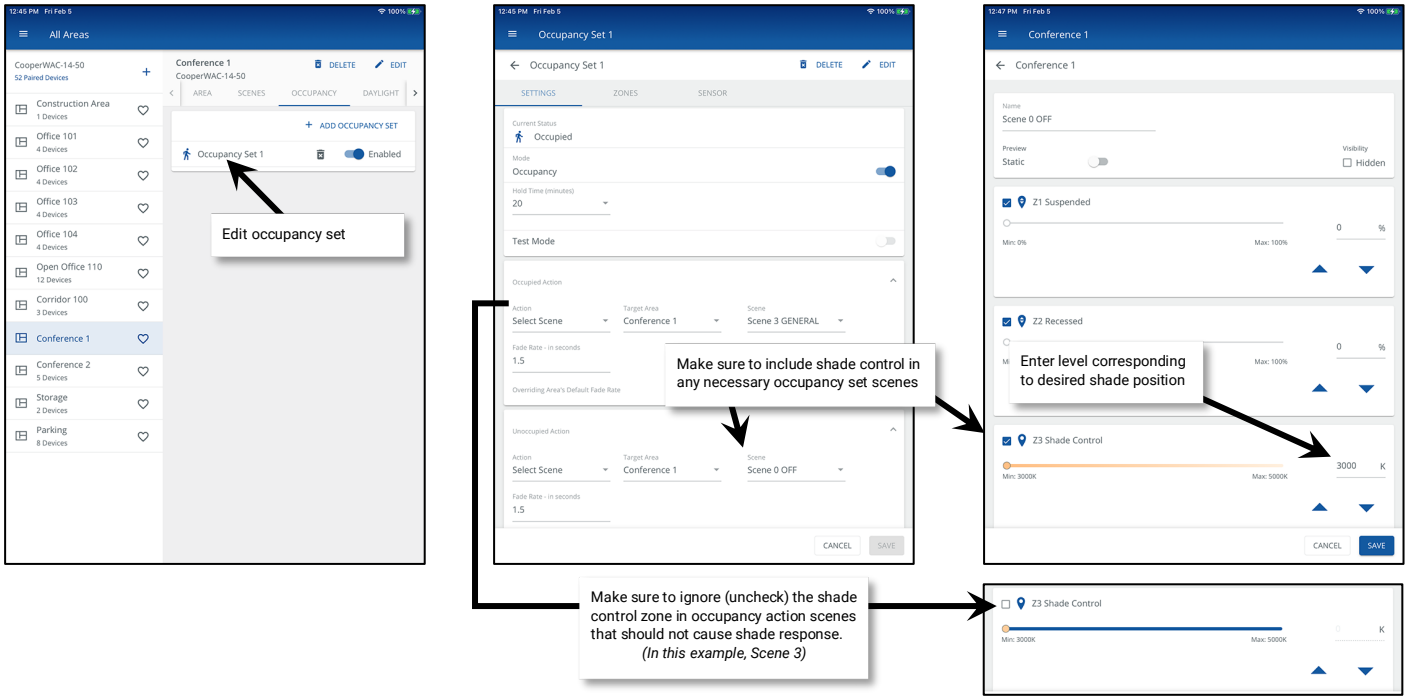
If occupancy sensor actions should move the shade position:

First, make certain that the shade control zone is assigned to the occupancy set.





Then, program the shade control zone level into the scene that is being used for the appropriate occupied and/or unoccupied action. If only one of the actions triggers the shade response, make certain to ignore the shade control from the other action's scene.



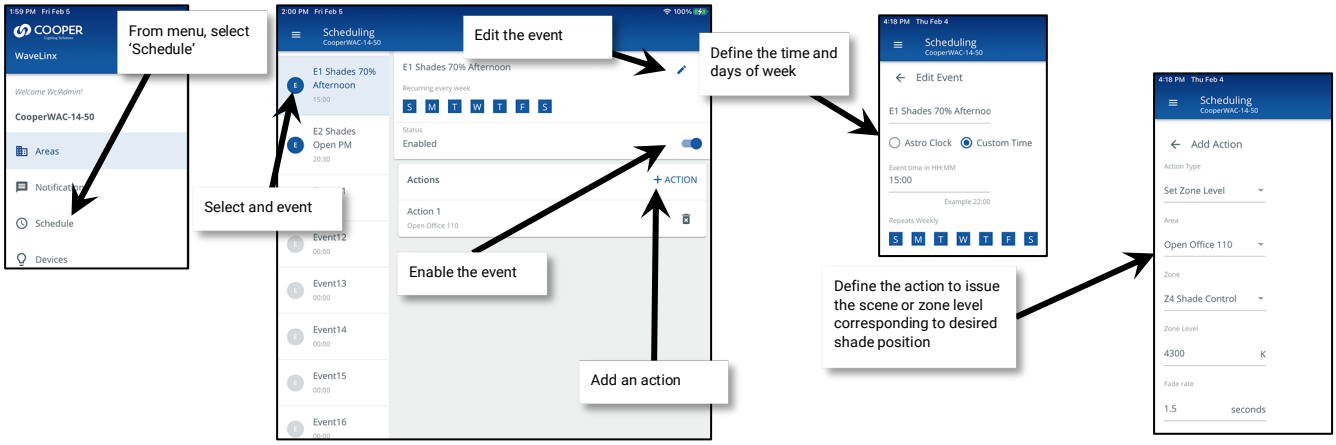
Adding Shade Control from Time Schedules

Schedule events can be added to meet applications that require the shade position to adjust automatically based on time-of-day. For instance, shades may be commanded to lower during specific hours to reduce glare and may be commanded to open at other times to maximize daylighting.

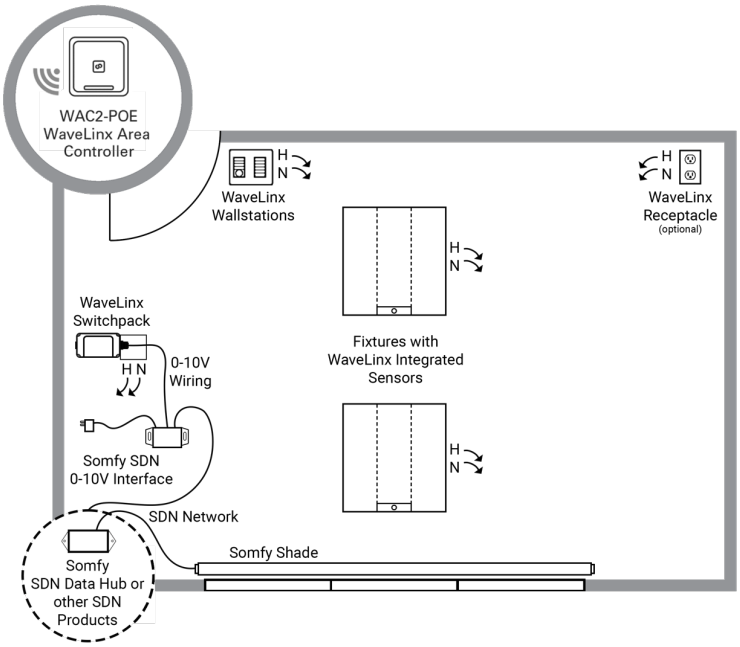
Schedule events can issue:

- a scene command to the area to adjust both the lighting intensity and shade position
- a zone level command to move the shade position

From the menu, select the 'Schedule' option. Select a schedule event and then edit the event to choose the time and days of the week the event will occur. Enable the event and then add an action to issue the desired scene or zone level command.



Private Office Example



WaveLinx PRO Bill of Materials

Qty	Catalog#	Description
1	WAC-POE	WaveLinx Area Controller
1	W4S-RL-W	4 Small button scene wallstations w/raise-lower
1	W6S-W	6 Small button wallstation (for shade control)
1	CUST-ENGRV-6BTNS-W	Custom engraving for 6 small button wallstation (optional for shade control wallstation)
1	WSP-UV-010	WaveLinx PRO Universal Dimming Switchpack
1	WR-20	Wireless Receptacle (optional)
2	22CZ2-44-UNV-L835-CD1-WAA-U	Cruze 2X2 with WaveLinx PRO Integrated Sensor

Somfy Components

Description
• Somfy SDN 0-10V Interface
• Somfy Shades
• SDN Data Hub or other Somfy device to connect the SDN 0-10V Interface and Somfy Shades to the Somfy Digital Network.

Refer to Somfy for exact equipment and devices required.

SEQUENCE OF OPERATIONS

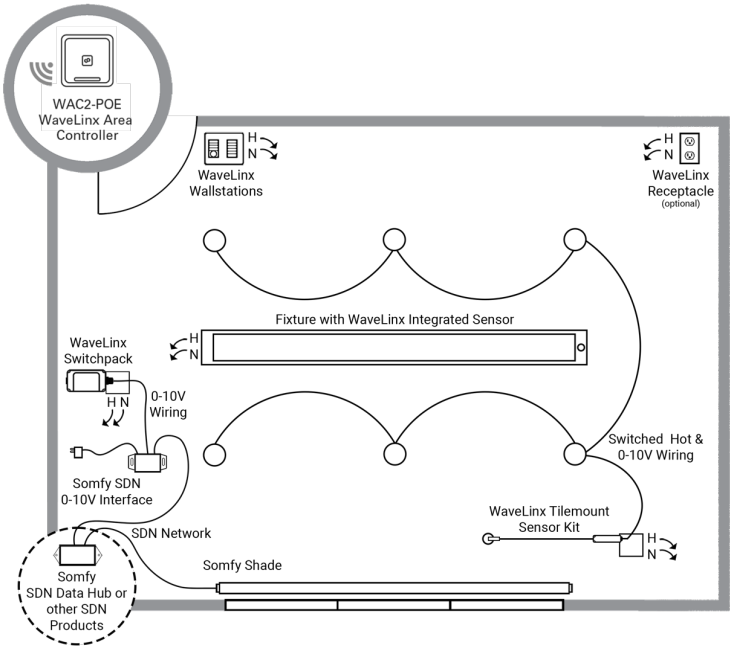
LIGHTING
- CONTINUOUS DIMMING

STANDARD CONTROLS
- AUTOMATIC ON TO 50%
- OPTIONAL VACANCY MODE
- PLUG LOAD TURNS ON WITH OCCUPANCY
- AUTOMATIC OFF OF LIGHTING AND PLUG LOAD ON VACANCY
- CLOSED LOOP DAYLIGHTING (OPTIONAL)

CONTROL DEVICES
- LIGHT INTENSITY CONTROL
  MANUAL VIA WAVELINX PRO WALLSTATION
  AUTOMATIC VIA WAVELINX PRO SCHEDULE (OPTIONAL)
- SHADE CONTROL
  MANUAL VIA WAVELINX PRO WALLSTATION
  AUTOMATIC VIA WAVELINX PRO SCHEDULE (OPTIONAL)

ADDITIONAL FEATURES
- AUTOMATIC DEMAND RESPONSE AVAILABLE FROM WAVELINX AREA CONTROLLER
- SCHEDULING OF PARTIAL OFF LIGHT LEVELS AND TIMES FROM WAVELINX AREA CONTROLLER
- UL924 EMERGENCY CONTROL CAPABILITIES AVAILABLE VIA LUMINAIRE BATTERY BACKUP OR LUMINAIRE INTEGRATED UL924 TRANSFER SWITCH IF USING CENTRALIZED EMERGENCY SOURCE (WIRING AND BILL OF MATERIAL MAY DIFFER SLIGHTLY FROM THAT SHOWN)

Conference Room Example



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1	W4S-RL-W	4 Small button scene wallstations w/raise-lower
1	W6S-W	6 Small button wallstation (for shade control)
1	CUST-ENGRV-6BTNS-W	Custom engraving for 6 small button wallstation (optional for shade control wallstation)
1	WSP-UV-010	WaveLinx PRO Universal Dimming Switchpack
1	WTA	WaveLinx PRO Tilemount Sensor Kit
1	WR-20	Wireless Receptacle (optional)
1	SQ4-F-050U/125D-835-1D-UNV-STD-WAA-W-AC48-T1-8	Continua SQ4 Suspended with WaveLinx PRO Integrated Sensor
6	LDS4B20D010-EU4B102035	Portfolio LDS4B with 0-10V dimming

Somfy Components

Description
• Somfy SDN 0-10V Interface
• Somfy Shades
• SDN Data Hub or other Somfy device to connect the SDN 0-10V Interface and Somfy Shades to the Somfy Digital Network.

Refer to Somfy for exact equipment and devices required.

SEQUENCE OF OPERATIONS

LIGHTING

- CONTINUOUS DIMMING

STANDARD CONTROLS

- AUTOMATIC ON TO 50%
- OPTIONAL VACANCY MODE
- PLUG LOAD TURNS ON WITH OCCUPANCY
- AUTOMATIC OFF OF LIGHTING AND PLUG LOAD ON VACANCY
- CLOSED LOOP DAYLIGHTING (OPTIONAL)

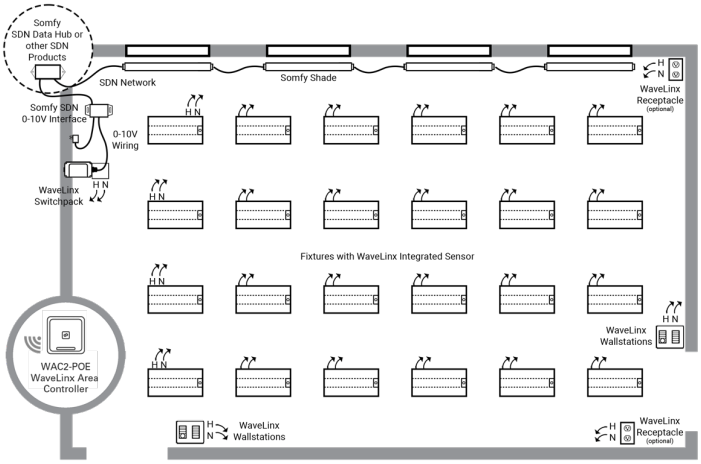
CONTROL DEVICES

- LIGHT INTENSITY CONTROL
  MANUAL VIA WAVELINX PRO WALLSTATION
  - OPTION TO CONTROL SHADES AS PART OF LIGHTING SCENE
  AUTOMATIC VIA WAVELINX PRO SCHEDULE (OPTIONAL)
- SHADE CONTROL
  MANUAL VIA WAVELINX PRO WALLSTATION
  - OPTION TO CONTROL SHADES SEPARATELY WITH ZONE COMMANDS
  AUTOMATIC VIA WAVELINX PRO SCHEDULE (OPTIONAL)

ADDITIONAL FEATURES

- AUTOMATIC DEMAND RESPONSE AVAILABLE FROM WAVELINX AREA CONTROLLER
- SCHEDULING OF PARTIAL OFF LIGHT LEVELS AND TIMES FROM WAVELINX AREA CONTROLLER
- UL924 EMERGENCY CONTROL CAPABILITIES AVAILABLE VIA LUMINAIRE BATTERY BACKUP OR LUMINAIRE INTEGRATED UL924 TRANSFER SWITCH IF USING CENTRALIZED EMERGENCY SOURCE (WIRING AND BILL OF MATERIAL MAY DIFFER SLIGHTLY FROM THAT SHOWN)

Open Office Example



WaveLinx PRO Bill of Materials

Qty	Catalog#	Description
1	WAC-POE	WaveLinx Area Controller
2	W4S-RL-W	4 Small button scene wallstations w/raise-lower
2	W6S-W	6 Small button wallstation (optional for shade control)
2	CUST-ENGRV-6BTNS-W	Custom engraving for 6 small button wallstation (optional for shade control wallstation)
1	WSP-UV-010	WaveLinx PRO Universal Dimming Switchpack
24	24CZ2-45-UNV-L835-CD1-WAA-U	Cruze 2X4 with WaveLinx PRO Integrated Sensor
2	WR-20	Wireless Receptacle (optional)

Somfy Components

Description
• Somfy SDN 0-10V Interface
• Somfy Shades
• SDN Data Hub or other Somfy device to connect the SDN 0-10V Interface and Somfy Shades to the Somfy Digital Network.

Refer to Somfy for exact equipment and devices required.

SEQUENCE OF OPERATIONS

LIGHTING
- CONTINUOUS DIMMING

STANDARD CONTROLS
- AUTOMATIC ON TO 50%
- OPTIONAL VACANCY MODE
- PLUG LOAD TURNS ON WITH OCCUPANCY
- AUTOMATIC OFF OF LIGHTING AND PLUG LOAD ON VACANCY
- CLOSED LOOP DAYLIGHTING (OPTIONAL)

CONTROL DEVICES
- LIGHT INTENSITY CONTROL
  MANUAL VIA WAVELINX PRO WALLSTATION
  AUTOMATIC VIA WAVELINX PRO SCHEDULE (OPTIONAL)
- SHADE CONTROL
  AUTOMATIC VIA WAVELINX PRO SCHEDULE
  MANUAL VIA WAVELINX PRO WALLSTATION (OPTIONAL)

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