Echo and Metropolitan Sage Wi-Fi Configurable Keypads and Dimmers

BOX CONTENTS

(1) Dimmer (faceplate not included)
(5) Wire Nuts
(2) Double Height Keypad Buttons for configurable keypads only (PWKE-NB1/NM1-C6, PWKM-NB1/NM1-C6)
(1) Quick Reference Guide (this document)

SPECIFICATIONS

Environmental	
Temperature	32° to 104° F (0° to 40° C)
Humidity	Up to 90% Relative Humidity (non-condensing)
Location	Indoor Use Only
Pollution	Degree 2

Dimensions and Weights	Height	Width	Depth	Weight
WPB, WIB WPD, WID	4.13 in. (10.50 cm)	2.36 in. (6.00 cm)	1.57 in. (3.99 cm)	.29 lb. (0.13 kg)
WPK, WIK	4.13 in. (10.50 cm)	2.36 in. (6.00 cm)	1.80 in. (4.57 cm)	.29 lb. (0.13 kg)
Shipping	7.0 in. (17.78 cm)	4.5 in. (11.43 cm)	3.0 in. (7.62 cm)	.53 lb. (0.24 kg)

Recommended Back Box Depth

Keypads require a standard U.S. electrical back box.
- Recommended - 3.5 in (8.89 cm) deep
- Minimum 2.25 in (5.72 cm) deep
- Type 1 enclosure for control

Mounting

Independently mounted for flush mounting (vertical position only)

Installation	
Operating Control	Type 1.B action
Software	Class A

Power	
Input	120V AC at 60 Hz
Power: Load (Max)	See the Derating Table later in this document.
Rated Impulse Voltage	2500V

Standards	
Bluetooth	Bluetooth Low Energy (BLE)
Wi-Fi	802.11 a/b/g/n (2.4 and 5 GHz)
Security	WPA™, WPA2™, WPA1™ +WPA2™, WEP

Regulatory		
Safety and Emissions	FCC Part 15	UL
Contains FCC ID:	PUU-KEYPADSG2A	
Contains IC:	10798A-KEYPADSG2A	
RoHS	Compliant	

Minimum Supported Release	
SavantOS	da Vinci 10.4

PRODUCTS

Bi-phase Dimming	
Configurable Keypad Switch	(WPB-xxB106V2, WIB-xxB106V2)
Dimmer	(WPD-xxB102V2, WID-xxB102V2)
Dial Keypad	(WPK-xxB105V2, WIK-xxB105V2)
Supported Load Types	
Standard Configuration	Incandescent, Electronic Low Voltage, Dimmable CFL, Dimmable LED (minimum load size = 5 watts)
No Neutral Configuration	Incandescent only (minimum load size = 25 watts)

Forward Phase & MLV Dimming	
Configurable Keypad	(WPB-xxT106V2, WIB-xxT106V2)
Dimmer	(WPD-xxT102V2, WID-xxT102V2)
Dial Keypad	(WPK-xxT105V2, WIK-xxT105V2)
Supported Load Types	
Standard Configuration	Incandescent, Magnetic Low Voltage, Dimmable CFL, Dimmable LED (minimum load size = 5 watts)
No Neutral Configuration	Incandescent only (minimum load size = 25 watts)

HELPFUL! Only the keypads listed in the **Forward Phase & MLV Dimming** section above support Magnetic Low Voltage (MLV) type loads.

REGULATORY

The following statements apply to all Savant Wireless Dimmers, Switches, and Keypads.

FCC Regulations

15.19. These devices comply with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) these devices must accept any interference received, including interferences that may cause undesired operation. 15.21. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. 15.105. This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. 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 or more of the following measures:

- Reorient or relocate the receiving circuit different from that to which receiver is connected.
- Increase the separation between the equipment and the receiver.
- Consult the dealer or experienced radio/TV technician for help.

IC Regulations:

This device contains license-exempt transmitter(s) and receiver(s) that comply with Innovation, Science and Economic Development Canada's license-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

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:

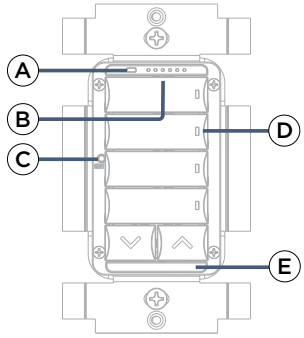
1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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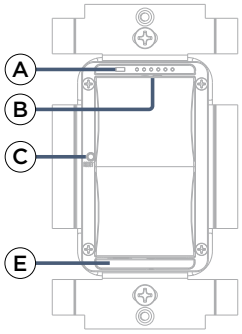
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HARDWARE OVERVIEW

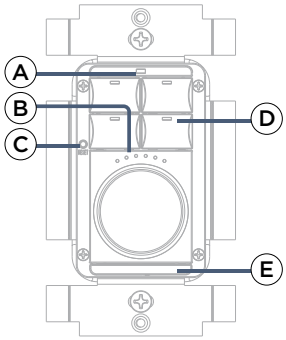
Front Panel



WPB-xxx106V2, WIB-xxx106V2



WPD-xxx102V2, WID-xxx102V2



WPK-xxx105V2, WIK-xxx105V2

A Ambient Light Sensor - Detects the ambient light level in the room and adjusts the brightness of both the button LEDs and the LEDs in the array on the front panel.

- As the room brightens, the LED's brightness increases.
- As the room dims, the LED's brightness decreases.

The sensor is enabled and disabled from within **Blueprint's Lighting and Shades Device Manager**.

B LED Array - These six LEDs on the front panel can indicate any of the following:

- The amount of power applied to the load. The LED's light from left to right as powered is increased and switch off from right to left as power is decreased.
- The amount of power applied to the load for any scenes created in Blueprint.
- The status of the keypad during the setup and provisioning process. See the LED Sequencing section.

C Reset Button - The reset button has two functions:

(Press and hold) - Press and hold the reset button for 5 seconds then release. Once released, the switch reboots and both the LED array on the front panel and the LEDs on the buttons will cycle through a sequence of colors (red > green > blue > white). When complete the keypad reverts to provisioning mode, all network settings and programming is cleared, and the LED array blinks a pattern corresponding to the state of the keypad. See the LED Sequencing table on the next page.

(Press and release) - Press and release the reset button to:

- Clear the configuration programmed in the keypad.
- Force the keypad to determine and configure control parameters for no neutral operation (when applicable).
- Remove Switch Mode.
- Defaults to Forward phase (Once Host connection is reastablished if configured as reverse phase, reverse phase will be reactivated).
- If in RAD (Roaming Assisted Discovery)
  - **Primary**: Sends "End RAD" message and restarts all active RAD devices.
  - **Subordinate Broadcast**: Ceases broadcasting RAD messaging and restarts device.
  - **Subordinate:** Ceases RAD discovery and restarts device.

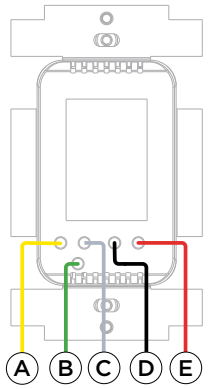
HELPFUL! For more information on RAD specific LED sequences, refer to the **Roaming Assisted Discovery (RAD) Wireless Provisioning Guide.**

TIP: Press and release the reset button if the keypad's load is experiencing any negative affects such as flickering or when the load is not performing optimally.

D Button LED - When provisioned to a network, but not configured or bound to a Savant system, the button LEDs track the state of the output load wire (red wire). When configured and bound to a Savant system, the state of the button LED is defined by the selection made in the LED Behavior field of Blueprint's **Lighting and Shades Device Manager**.

E Service Switch - Toggle to apply or disconnect power from the keypad. When changing a load, Savant recommends toggling the service switch to off, replacing the load, and then toggling the service switch back on.

Rear Panel



A	Yellow	Traveler (TRV) - Wire to one or more Auxiliary Controls for multi-location control.
B	Green	Ground - Wire to Gnd.
C	White	Neutral - Return path for voltage.
D	Black	Line - Wire to hot from the AC power source.
E	Red	Load -Wire to one side of the load.

Wires are all a five inch #16 AWG stranded wire.

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ELECTRICIAN REMOVAL/INSTALLATION

ELECTRIC SHOCK! The 120V AC, 60 Hz source power poses an electrical shock hazard that has the potential to cause serious injury to installers and end users.

CAUTION! Risk of Electric Shock! More than one disconnect switch may be required to de-energize the devices before servicing. Always disconnect power supply before servicing and wiring.

IMPORTANT NOTES!

- A licensed electrician is required to install any of Savant's wireless lighting switches and dimmers.
- Use #14 AWG or larger solid copper wire (90°C) for the supply, neutral, and ground connections. Strip wires to ⅝ in. (16 mm).

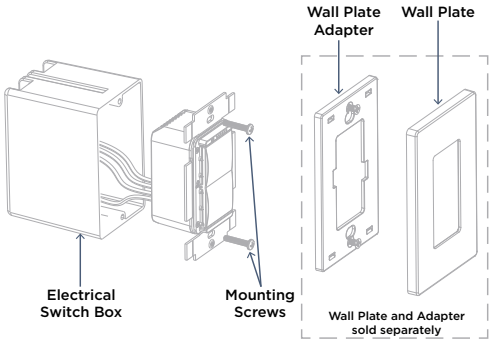
CHOC ÉLECTRIQUE! La source alimentation électrique de 120 V AC, 60 Hz présente un risque d'électrocution susceptible de causer des blessures graves aux installateurs et aux utilisateurs finaux.

ATTENTION! Risque de choc électrique - Plus d'un sectionneur peut être nécessaire pour mettre l'appareil hors tension avant l'entretien. Déconnectez la source d'alimentation avant le câblage ou avant son entretien.

NOTES IMPORTANTES!

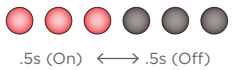
- Un électricien agréé est nécessaire pour installer tous les interrupteurs et gradateurs d'éclairage sans fil de Savant.
- Utiliser du fil de cuivre solide n° 14 AWG ou supérieur (90 °C) pour les connexions d'alimentation, de neutre et de terre. Dénudez l'isolant sur 5/8" (16 mm).

1. At the main breaker panel, switch off the breaker that supplies power to the dimmer or switch getting replaced.
2. Unscrew the wall plate and remove it. Verify power is removed using a 120V AC tester.
3. Unscrew the two 6-32 flat head screws and pull out the existing electrical switch/dimmer.
4. Disconnect and label each wire removed from the existing switch/dimmer. Labeling the wires ensures they will be installed onto the new switch/dimmer correctly, mainly if the circuit employs a 3-way configuration.
5. Using the supplied wire nuts or an approved alternative, connect the in-wall wires removed in step 4 to the leads coming from the new Savant wireless switch/dimmer. See the Wiring Diagrams and Rear Panel sections for more information.
6. Insert the switch/dimmer into the electrical switch box and secure using the 6-32 flat head screws provided. DO NOT use a powered screwdriver. A powered screwdriver can over tighten the screws.
7. Install the wall plate adapter. When installing, ensure the adapter completely covers the metal yoke.
8. From the main breaker panel, switch on the breaker that was switched off in step 1 above.
9. Toggle the service switch on the front panel to the ON position. With power applied, the switch/dimmer will go through a boot sequence, and both the button LEDs and LED array on the front panel will cycle red > green > blue > white.
10. After the boot sequence completes, the LED array will blink red in an alternating pattern This indicates the keypad is in a state where an IP Address is currently not assigned. **NOTE:** Provisioning will be accomplished later in the process.
11. Press the buttons on the front panel and verify the load reacts appropriately.



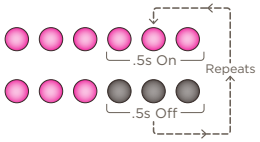
12. If the switch/dimmer being installed is a Bi-phase type device, or if the device is wired in a no neutral configuration, press and release the reset button. If the device is wired in a no neutral type circuit, press the reset button to force the keypad to determine the control parameters for no neutral operation.
13. Install the wall plate once all steps are complete. If the keypad is not already provisioned to the local Wi-Fi network, provisioning information is available in the **Wireless Keypad Provisioning Guide** available on the Savant Community.

LED SEQUENCING (LED ARRAY)



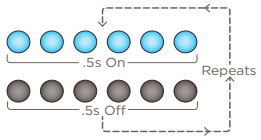
Three LEDs alternate red left to right. (.5 seconds On, .5 seconds Off)

The keypad is not communicating with the local Wi-Fi network and needs to be provisioned. After a short time (up to one minute), the blinking stops. To check the status of the keypad after the LED's stop blinking, press any button on the keypad and the LEDs will begin flashing again to indicate the state of the keypad.



Three left LEDs remain solid Magenta, Three right LEDs blink Magenta/Off. (.5 seconds On, .5 seconds Off)

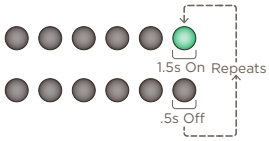
The keypad is connected to the local network (IP Address assigned) but not bound to the configuration running on the Host.



All LEDs blink. (.5 seconds On, .5 seconds Off)

Indicates the type of load connected is not supported.

NOTE: When the keypad is programmed and connected to a Savant system, the color shown may be different but the blinking sequence remains the same.



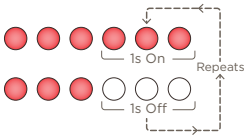
Rightmost LED blinks green. (1.5 seconds On, .5 seconds Off)

Boot loader mode. The keypad is ready/receiving an update.

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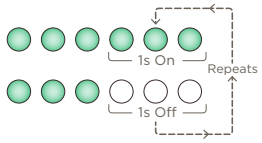
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LED SEQUENCING (LED ARRAY) - CONT.



Three left LEDs remain solid red, Three right LEDs blink Red/White. (1 second On, 1 second Off)

The temperature measured on the keypad's embedded temperature sensor exceeds the safe operating range. Certain low voltage loads that require a driver or transformer to step down the power received at the keypad's output can sometimes be the culprit of the overheating issue.



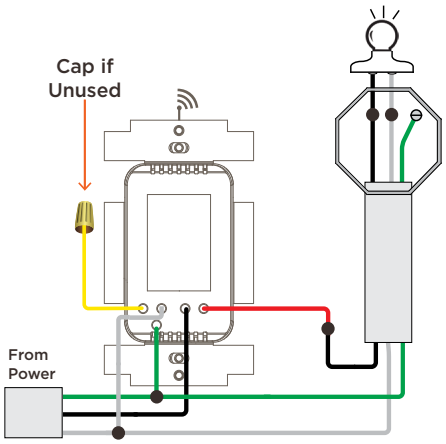
Three left LEDs remain solid green, Three right LEDs blink Green/White. (1 second On, 1 second Off)

The maximum power drawn from the load exceeds the safe operating range. The excessive draw is typically caused by exceeding the number of a particular type of load (CFL/LED, Incandescent, ELV, MLV) in the circuit. See the Derating Table section below for maximum values.

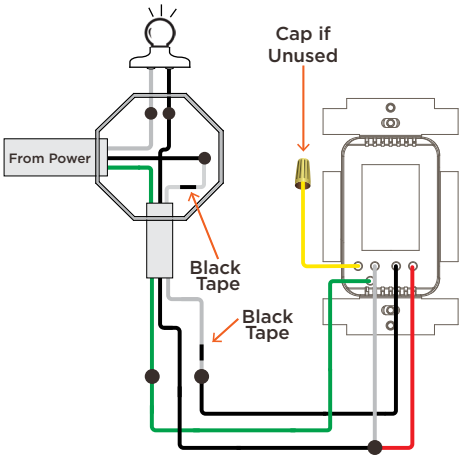
WIRING DIAGRAMS

Standard and no neutral installations are shown below. See the **Wireless Keypad Wiring Guide** available on the Savant Community for more information.

Single Dimmer Installation Example



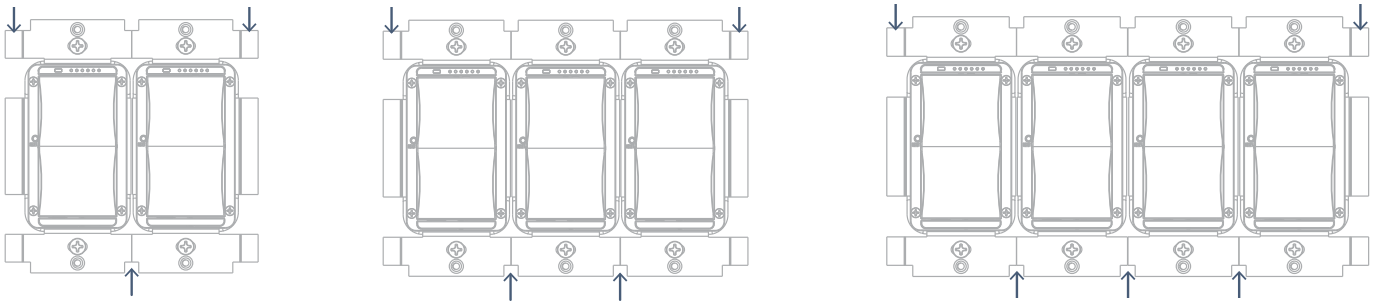
No Neutral Dimmer Installation Example



A no neutral configuration supports incandescent-type loads only. The six dimmer LEDs on the front panel will blink rapidly, and no power is supplied when the keypad senses a wrong load type installed in a no neutral configuration.

MULTI-GANG INSTALLATIONS

Derating is the process of removing the tabs from one or both sides of an electrical switch so that all the devices fit into an electrical box. Examples of 2, 3, and 4-gang scenarios are shown below. The arrows indicate which tabs to remove in each case.



- Remove the tabs from both sides of any devices positioned on the inside of an electrical box.
- Do NOT removed from the outside edge of any device positioned on the far ends of an electrical box.

⚠ **IMPORTANT NOTE:** Not supported as a BLE Gateway.

DERATING TABLE

Device	Load Type	1-Gang	2-Gang	3-Gang	4-Gang
Bi-phase Dimming	Incandescent	550W	500W	450W	450W
	CFL/LED	150W	150W	150W	150W
	Electronic Low Voltage	400W	375W	350W	350W
	Magnetic Low Voltage	Not Supported			
	Incandescent No Neutral	400W	375W	350W	350W
Forward Phase & MLV Dimming	Incandescent	550W	500W	450W	450W
	CFL/LED	150W	150W	150W	150W
	Electronic Low Voltage	400W	375W	350W	350W
	Magnetic Low Voltage	550VA (400W)	500VA (375W)	450VA (350W)	450VA (350W)
	Incandescent No Neutral	400W	375W	350W	350W

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