⚠ WARNING

IMPORTANT: Read carefully before installing product. Retain for future reference.

⚡ **Risk of Fire, Electrical Shock, Cuts or other Casualty Hazards-** Installation and maintenance of this product must be performed by a qualified electrician. This product must be installed in accordance with the applicable installation code by a person familiar with the construction and operation of the product and hazards involved. For continued protection against shock hazard replace all covers and guards after field wiring is completed.

🔥 **Risk of Fire and Electric Shock-** Before installing or performing any service, the power MUST be turned OFF. All installations should be in compliance with the National Electric Code and all state and local codes.

♨ **Risk of Burn-** Disconnect power and allow product to cool before handling or servicing.

🗲 **Risk of Personal Injury-** Due to sharp edges, handle with care.

Failure to comply with these instructions may result in death, serious bodily injury and property damage.

DISCLAIMER OF LIABILITY: Cooper Lighting Solutions assumes no liability for damages or losses of any kind that may arise from the improper, careless, or negligent installation, handling or use of this product.

NOTICE: Product may become damaged and/or unstable if not installed properly.

Note: Specifications and dimensions subject to change without notice.

ATTENTION Receiving Department: Note actual product description of any shortage or noticeable damage on delivery receipt. File claim for common carrier (LTL) directly with carrier. Claims for concealed damage must be filed within 15 days of delivery. All damaged material, complete with original packing must be retained.

NOTICE: Designed for indoor installation and use only. Dry location rated.

NOTICE: Install in accordance with all local electrical codes.

NOTICE: Maximum of 40 0-10VDC LED drivers and ballasts.

CAUTION: To reduce the risk of overheating and possible damage to other equipment, do not install to control a receptacle, a motor-operated appliance, or a transformer-supplied appliance.

Specifications

Technology: Passive Infrared (PIR) and Ultrasonic (US)
Electrical Ratings:
120/277VAC Electronic Ballast 8 amps 60Hz (LED)
120/277VAC Magnetic Ballast 8 amps 60Hz
Neutral required.
0-10V Dimming Control 80mA max current sink
Ballast Compatibility: Compatible with magnetic and electronic ballasts (LED)
No Minimum Load Requirement
Time Delays:
Selectable 5, 10, 15, 20 (default), 30 minutes
Coverage:
Major motion – 30x30'
Minor motion – 18x18'
Light Level Sensing: 0 to 200 foot-candles

Operating Environment:
- Temperature 32° - 104°F (0°C-40°C)
- Relative Humidity 20% to 90% non-condensing
Housing: Durable injection molded housing
Polycarbonate resin complies with 94V2.
Size:
Mounting plate/strap dimensions:
- 4.19"H x 1.73"W x 0.048"D
- Product Housing Dimensions:
- 2.7"H x 1.73"W x 2.19"D
Mounting:
Fits in a standard 3.5" deep back box
Can be mounted in multiple gang back box
Refer to NEC box calculation for properly sized mounting box
LED Indicators: Red LED indicates PIR detection
Green LED indicates Ultrasonic detection

Description

The OSW-D-010 Occupancy Sensing Wall Dimmer is a Passive Infrared (PIR) and Ultrasonic (US) motion sensing lighting control and VSW-D-010 Vacancy Wall Dimmer are all-in-one, used for energy savings and convenience.

US Technology
The sensor produces a low intensity, inaudible sound. It detects occupancy from changes in the acoustic waves caused by motion, such as reaching for a telephone, turning a page in a book, walking into a room, turning in a swivel chair, etc. The sensor does not respond to audible sound.

PIR Technology
The device has a segmented lens that divides the field of view into sensor zones, and detects the changes in light that are created when a person, or part of a person as small as a hand, passes into or out of a sensor zone.
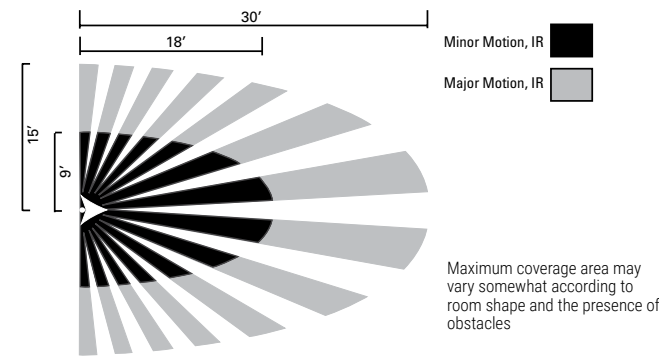The OSW-D sensor dimmer is intended to act as a two-scene occupancy controller. A scene consists of the relay state and the dim level target. The occupied scene is determined by the **preset** configuration and the unoccupied scene is determined by two settings, **low-end trim** and **partial off** Low-end trim is the minimum output power of the sensor.
Partial off Delay is how long the device will remain at the low-end trim before turning off. **Hold On Time** is the time interval, since sensing the last motion in the occupied space, after which the sensor will initiate power savings by dimming or turning off the light.


TIMEOUT VALUE
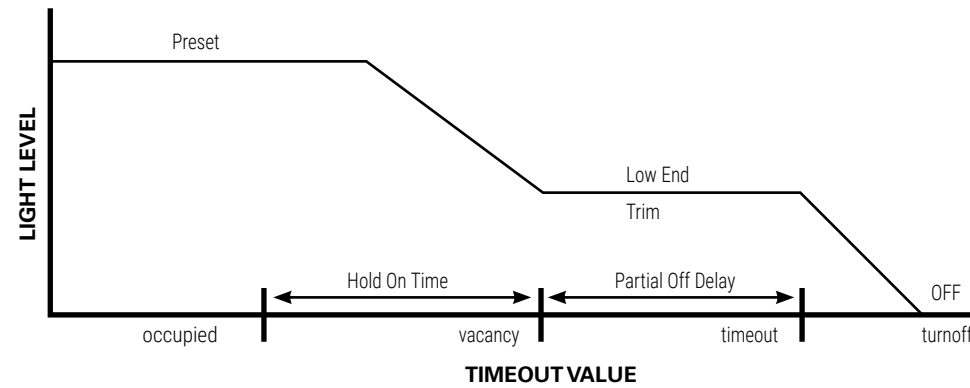
Occupancy Coverage Pattern

The OSW/VSW-D-010 is designed for spaces up to 1000 square feet (92.9 m²).

■ Minor Motion, IR
▨ Major Motion, IR

Maximum coverage area may vary somewhat according to room shape and the presence of obstacles

Operation Instructions (VSW versus OSW)

VSW (Vacancy Only) devices will be unable to set automatic occupancy and daylight load switching behaviors. Only the dimming option will be available. For a vacancy device, occupancy mode operation is initiated by a manual On/Off toggle button press on the unit.
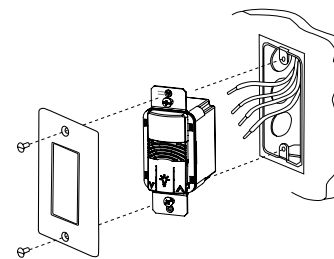
Device Overview and Installation
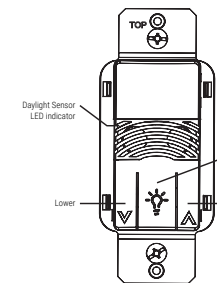
Installation
The OSW/VSW-D-010 fit into a 3.5" deep back box. It may be installed in the same manner as an ordinary wall switch.
- Wire the OSW/VSW-D-010 as described in the wiring section
- Mount the OSW/VSW-D-010 in the junction box

Wiring

CAUTION: Before installing or performing any service on a Greengate sensor, the power MUST be turned off at the branch circuit breaker. According to NEC 240-83(d), if the branch circuit breaker is used as the main switch for a fluorescent lighting circuit, the circuit breaker should be marked "SWD." All installations should be in compliance with the National Electric Code and all state and local codes.

NOTE REGARDING COMPACT FLUORESCENT LAMPS: The life of some compact fluorescent lamps (CFLs) is shortened by frequent automatic or manual switching. Check with CFL and ballast manufacturer to determine the effects of cycling.

1. Make sure power is turned OFF at the branch circuit breaker.
2. Wire units as shown in wiring diagrams per applicable voltage requirements.
3. Mount unit to wall box.
4. Turn power back ON at the branch circuit breaker and wait 2 minutes for the unit to stabilize.
5. Make necessary adjustments. (See Installer Adjustments section)
6. Install wall switch plate.

Model # OSW-D-010
Model # VSW-D-010

UltraSonic Activated | PIR Activated | Self-Adjusting **RoHS**

Wiring Diagram:
Typical Wiring Diagram (Simple 3-way Switch), Scene Dimming Allowed
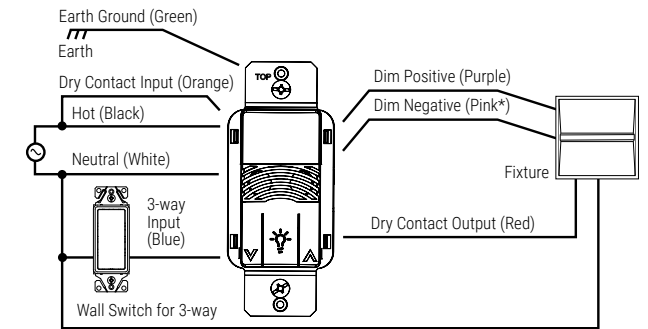
Only one sensor can be used in a 3-way circuit with a switch.
The switch will turn on/off the load only at the brightness level selected at the dimmer.

* Constructions built before Jan 2022 may have gray wire for 0-10 dimming control present. In these cases, the installer will label the gray building wire as a 0-10 dimming wire and connect to our product's pink 0-10V dimming control wire. Reference NFPA70 (2020 NEC), section 410.69.

Setting Scenes

User's Preferred Behavior	Preset	Low-End Trim	Partial Off "Grace Period" Time Delay
Occ- Max Bright, Unocc - Off	100%	**	5 minutes
Occ- Max Bright, Unocc - Very dim	100%	0%	Never Off
Occ- Max Bright, Unocc - 50%	100%	50%	Never Off
Occ- 75%, Unocc - Off	75%	**	5 minutes
Occ -75%, Unocc - 25%	75%	25%	Never Off

** User preference

Warranties and Limitation of Liability

Please refer to **www.cooperlighting.com** for our terms and conditions.

FCC Statement
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
  (1) This device may not cause harmful interference.
  (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

Note: The equipment has been tested and found to comply with the limits for a Class A 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 an on, the user is encouraged to try to correct the interference by one or more 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.

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons.

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Installer Adjustments

Feature Setting Changes - Sequence of Operations (Refer to Fig. −Settings change procedure):

1. Enter Configuration Mode
   a. Turn ON the light by pressing the On/Off toggle button
   b. Press and hold the ON/OFF button for 5 seconds
   c. LED indicator begins to blink cyan
   d. Release the ON/OFF button as soon as the LED starts to blink
   e. The LED continues to blink and Configuration Mode is active

Note: If ON/OFF toggle button continues to be pushed until LED stops blinking, the device will exit Configuration Mode and resume normal operation.

2. Select Settings Mode
   a. Press ON/OFF toggle button for number of times corresponding to the desired setting
   b. (Refer to table for details)
   c. LED indicator will blink Yellow for each press
   d. After pressing the ON/OFF toggle button the required number of times to enter a specific Settings Mode, and waiting for 2 seconds; the LED indicator will blink Yellow for number of times matching button pushes
   e. Wait until the LED blinks the number of times desired to confirm the correct Settings Mode.

   3. Change value for selected setting
   a. Refer to Settings Mode Options table for details

4. Save and Exit back to Configuration Mode

Settings Mode	Number of times to Press Toggle (while in Configuration Mode)
Occupancy/Vacancy Behavior	2 times**
High-End Trim	3 times
Low-End Trim	4 times
Occupancy Preset	5 times
Partial Off Time Delay	6 times
Hold-On Time	7 times
Daylight Switching**/ Daylight Dimming Select	8 times
Enter Installer Mode	9 times
Disable LED	10 times
PIR Sensitivity	11 times
Ultrasonic Sensitivity	12 times
Daylight Switching Calibration	13 times
Open-Loop Dimming Calibration	14 times
Factory Reset	15 times
Exit Settings Mode	Press and hold for 3 seconds
Exit Config Mode	Press and hold for 5 seconds

**Not available in vacancy only devices

Press # times to enter setting mode

Press & Hold Toggle 5 Seconds

Normal Mode ⟷ Configuration Mode
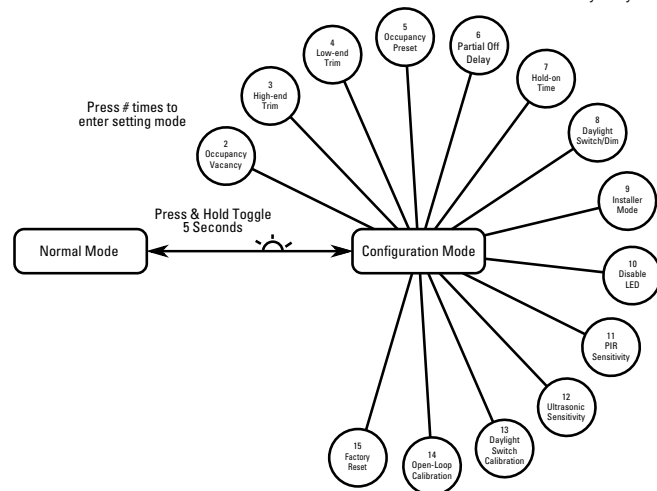
   a. Press and hold the [ON/OFF Toggle Button] 3 seconds to save new value for selected setting
   b. LED indicator blinks Yellow for same number of times as in step 2d above, indicating successful saving of feature setting; the unit will go back into the configuration mode and the LED starts to blink Cyan rapidly
   c. If LED blinks Red rapidly immediately after press and hold above, that indicates invalid feature setting entry, which cannot be saved, and the unit goes back into Configuration Mode

5. Repeat steps 2 through 4 above for one or more other features
6. Exit Configuration Mode through one of the following ways
   a. Press and hold the ON/OFF toggle button for 5 seconds; the LED stops blinking and the unit exits Configuration Mode
   b. Do nothing (although the LED continues to blink) and the Configuration Mode will time out after 30 seconds, and the LED stops blinking

Setting High and Low End Trim
High end trim and low end trim are the maximum and minimum output, respectively, allowable by the sensor. Start configuration by modifying this setting. If content with default settings, please do not adjust this setting. Proceed to modify other settings.
From Configuration Mode, press the ON/OFF toggle button 3 times and then use the raise/lower dimming buttons to adjust the maximum output. Press and hold the ON/OFF toggle button when sure this is the maximum desired output level. From Configuration Mode, press the ON/OFF toggle button 4 times, and then use the raise/lower dimming buttons to adjust the minimum desired output. Press and hold the ON/OFF toggle button when the output is at the minimum desired output level.

Settings Mode Options	1 Button Press (Green)	2 Button Presses (Blue)	3 Button Presses (Yellow)	4 Button Presses (Magenta)	5 Button Presses (Cyan)	Other
Occupancy/Vacancy Behavior	Occupancy (Auto-On)	Vacancy				
High-End Trim						Use Raise/Lower to set Max
Low-End Trim						Use Raise/Lower to set Min
Occupancy Preset						Use Raise/Lower to set Preset
Partial Off Time Delay	Immediate turn off (Default)	5 minutes	Match hold time	Never off		
Hold-On Time	5 minutes	10 minutes	15 minutes	20 minutes (Default)	30 minutes**	
Daylight Switching/Dimming Select	Daylight Switching Enabled (Default)	Open-Loop Daylighting Enabled				
Enter Installer Mode	Start Mode					Enters installer mode
Disable LED	LED ON (Default)	LED OFF				
PIR Sensitivity	High sensitivity (Default)	Low sensitivity				
Ultrasonic Sensitivity	High sensitivity	Normal sensitivity (Default)	Low sensitivity	Very Low Sensitivity	Disabled	
Daylight Switching Calibration	Start Calibration					See calibration instructions
Open-Loop Dimming Calibration	Start Calibration					Use raise/lower, see instructions
Factory Reset	Cancel	Factory Reset				

** not allowable in some municipalities. Consult local energy code.

Occupancy and Vacancy
Depending on the local building codes, they may require manual turn-on only. In this case, the device is said to behave in the "vacancy mode". To configure the device for this behavior, press and hold the ON/OFF toggle button for 5 seconds until the LED indicator flashes cyan rapidly. Then release the ON/OFF toggle button.
In Configuration Mode, press the ON/OFF toggle button 2 times to enter occupancy/vacancy selection. Once this selection mode is made,(after led blinks 2 time for confirmation) press the ON/OFF toggle button the number of times below to select occupancy or vacancy:
   1. Occupancy (Default for occupancy sensors, not available for vacancy models)
   2. Vacancy
To exit the occupancy/vacancy selection menu, press and hold the ON/OFF toggle button down for 3 seconds to return to Configuration Mode.

Setting the Hold-On Time
From the Configuration Mode, adjust the hold-on-time settings by pressing the ON/OFF toggle button 7 times. Use the following chart to select the appropriate timeout.
Press and hold the ON/OFF toggle button 3 seconds to save settings.

Number of Button Presses	Timeout Duration (minutes)
1	5
2	10
3	15
4	20 (Default)
5	30

Disable LED settings
From the Configuration Mode, press the ON/OFF toggle button 10 times to change this setting.
Press and hold the ON/OFF toggle button 3 seconds to save settings.

Number of Button Presses	Setting
1	LED Enabled (Default)
2	LED Disabled

Setting the Partial Off Time Delay
From the Configuration Mode, press the ON/OFF toggle button 6 times to enter Partial Off Time Delay settings. Use the following chart to select the desired timeout:
Press and hold the ON/OFF toggle button 3 seconds to save settings.

Number of Button Presses	Timeout Duration
1	Immediate turn off (Default)
2	5 minutes
3	Match hold-on time delay
4	Never turn off

Daylight Switching Operation
The system has optional daylight switching behavior that can hold the lights in the OFF state whenever there is sufficient natural light available. Daylight switching is unavailable in the vacancy mode. Daylight switching is functional after calibration. Before beginning calibration, check that there is little natural light in the area, close the blinds, and turn on the lights. To begin, enter the Configuration Mode, press the ON/OFF toggle button 8 times to enter daylight switching/dimming select mode. The sensor will flash to confirm selection. Press the ON/OFF toggle button 1 time to select "Daylight Switching". The LED will shine GREEN to confirm daylight switching selected. Press and hold the ON/OFF toggle button for 3 seconds to return to Configuration Mode. Then press then ON/OFF toggle button 13 times to enter daylight switching calibration settings. Press the ON/OFF toggle button 1 time, and the device will provide LED flashing indication for the user to move away from the unit for at least 30 seconds in order to capture the ambient light level in the space. The device will enter into a daylighting test mode for 5 minutes so that when the light level exceeds the user settings, the device will turn off and when the light level is less than the user setting the device will turn on.
Press and hold the ON/OFF toggle button 3 seconds to save. The device will blink 13 times to confirm the setting.

Ultrasonic Sensitivity Adjustment Mode
First remove the button cover to expose the ultrasonic adjustment knob.
Ultrasonic Sensitivity (Green LED) − Using a small flathead screw driver turn the potentiometer so that the arrow points UP. (Note potentiometer will not rotate 360°).
   1. Stand in different areas of the room and wave hands.
   2. If the Green LED does not turn ON, increase the ultrasonic sensitivity by turning the green potentiometer clockwise in small increments. Repeat Step 1.
   3. Stand still three to four feet away from sensor for five seconds. With no motion, the LED should not turn ON.
   4. If Green LED turns ON without motion or is constantly ON decrease the ultrasonic sensitivity by turning green potentiometer counter-clockwise in small decrements. Repeat Step 3.
   5. If after adjusting the ultrasonic sensitivity knob to the lowest setting the Green LED turns on without motion, enter the Configuration Mode by pressing and holding the On/Off Toggle button. Then press the On/Off Toggle button 12 times to enter the Ultrasonic Sensitivity Adjustment Mode for more sensitivity options.
   Note: Do Not adjust sensitivity higher than necessary.
   6. Upon entering the Ultrasonic sensitivity mode, press the toggle button the number of times corresponding to your desired sensitivity setting (Green = HIGH SENSITIVITY, Blue = NORMAL (DEFAULT), Yellow = LOW, Magenta = VERY LOW, Cyan = DISABLED). When finished, press and hold the ON/OFF toggle button for 3 seconds to exit Ultrasonic Sensitivity Adjustment Mode and to return to Configuration Mode.

+ INCREASE SENSITIVITY   **−** DECREASE SENSITIVITY

Number of Button Presses	
1	High sensitivity
2	Normal sensitivity (Default)
3	Low sensitivity
4	Very Low Sensitivity
5	Disabled

Open-Loop Daylight Dimming Operation
There is an open-loop daylight dimming method that is available for the sensor. Cooper Lighting Solutions only recommends using this setting if the sensor receives most of its light from natural lighting sources and if the unit faces a nearby window within the controlled area. To configure open-loop daylighting, enter the Configuration Mode. Press the ON/OFF toggle 8 times to enter the Daylight Dim/Daylight Switch selection. The sensor will flash to confirm selection. Press the ON/OFF toggle button 2 times to select "Open Loop Dimming". The LED will shine BLUE to confirm daylight dimming selected. Press and hold the ON/OFF toggle button for 3 seconds to exit the Daylight Dim/Daylight Switch selection mode.
Press the ON/OFF toggle button from Configuration Mode 14 times to enter Open Loop Daylighting Calibration mode. Press the ON/OFF toggle button 1 time to begin daylighting calibration. While standing to the side of the sensor without blocking natural light, use the raise and lower buttons to adjust the dimming output to the desired brightness. When finished, press and hold the ON/OFF toggle button for 3 seconds to exit Open Loop Daylighting Configuration Settings Mode and to return to Configuration Mode.

Installer Mode
After completing sensor installation, you can test the sensor as per the following steps:
From Configuration Mode, press the ON/OFF toggle button 9 times to select Installer Mode. The sensor will flash to confirm selection. Press and hold the ON/OFF toggle button 1 time to start installer test mode. While the unit is in Installer Mode the occupancy timeout is 15 seconds. The unit will automatically exit Installer Mode if there is no button press for 5 minutes.

Factory Reset
To factory reset the device: from the Configuration Mode, press the ON/OFF toggle button 15 times. Wait until the LED flashes 15 times to indicate that the device is in Factory Reset Mode. Then press the ON/OFF toggle button two times to confirm the selection. The LED will shine BLUE to confirm . Press and hold the ON/OFF toggle button for 3 seconds to confirm. If Factory Reset Mode is accidentally entered, press and hold 3 seconds and the device will return to Configuration Mode. Make sure that the LED shows color GREEN before pressing and holding 3 seconds.

Troubleshooting

Issue	Possible Solution
Lights won't turn on automatically	Ensure that device is not configured for vacancy
	Check that daylight switching was not calibrated for too low of an ambient setting
Lights won't turn off	Adjust PIR sensitivity to a lower setting and the ultrasonic sensor sensitivity dial to a lower setting.
	Check that the Partial Off Hold Time is set to something other than "Never off."
Lights won't turn off or on	Check that power is applied to the sensor. LED indicator should flash when occupancy occurs.
Lights won't go to my preset level (Occupancy Mode Only)	The device will go to preset levels after double-pressing the toggle. The device according to code cannot turn-on above 50% output.
Lights won't get brighter	Check that the high end trim is set to its maximum position in the settings.
Lights won't dim lower	Check that the low end trim is set to minimum
Device will not retain my scene settings	Make sure that high and low-end trim settings are right, then adjust preset settings to the desired level.
Device abruptly dims when using the raise and lower buttons	Adjust the high and low-end trim to optimize the operating range
When adjusting the dim level, the device doesn't respond for a long time	Adjust the high and low-end trim to remove the unresponsive operation

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