NATIONAL AUDUBON SOCIETY

CONTROL SPECIFICATIONS

Project Name:
National Audubon Society HQ

Type:

Date: 05/31/07

Page of

Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

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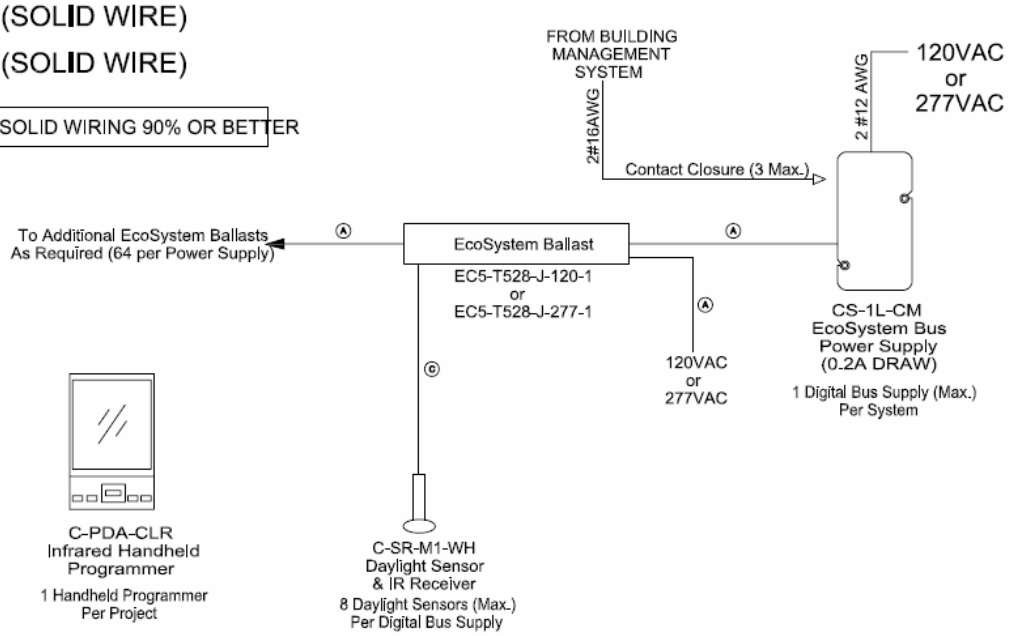
ECO System Typical Control Device One-Line
Electrical Contractor Is Responsible For Actual Fixture & Ballast Counts

Ⓐ 2 #16-18 AWG (SOLID WIRING)

Ⓑ 3 #22 AWG (SOLID WIRE)

Ⓒ 4 #22 AWG (SOLID WIRE)

NOTE: ALL #22 AWG IS SOLID WIRING 90% OR BETTER



LUTRON
COOPERSBURG, PA 18036
PHONE: (610) 282-3800
FAX: (610) 282-1146

Project Name:	National Audubon Society		
Location:	New York, NY	File:	x
Drawn By:	JGP	Rev:	0
Date:	5/30/07	Sheet:	1 of 1

MANUFACTURER:Lutron Electronics EcoSystem

Note: Include one day of on-site commissioning by Lutron. Electrical Contractor to coordinate visit by Lutron with Lighting Consultant.

- (10) Fluorescent Dimming Ballast Modules, 1 for each office with Type B-2 downlights
- (10) Infrared Wall Mounted Occupancy Sensor
- (10) 1-Button Wall Control

Location: Enclosed Offices

- (2) Ecosystem Bus Power Supplies
- (1) EcoSystem Handheld Programmer

Location: North and South Open Office

- (2) One-lamp EcoSystem Dimming Ballasts incorporated into Type A-1 luminaires (see Luminaire Specification)
- (55) Two-lamp EcoSystem Dimming Ballasts incorporated into Type A and A-3 luminaires (see Luminaire Specification)
- (6) EcoSystem Daylight Sensors integrated into Type A-3 luminaires

System to consist of:

Daylight Harvesting System

General:

Daylight harvesting system to regulate the light output of Type A, A-1, A-3 and Type B-2 luminaires to reduce energy consumption during times of sufficient daylight contribution to the interior space. System to be programmed to maintain a light level of not less than 25fc.

Project Name:

National Audubon Society HQ

Type:

Daylight Harvesting

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EcoSystem™ | C-SR-M1-WH | Daylight Sensor

C-SR-M1-1 7.18.06

Fixture Mountable Daylight Sensor

This daylight sensor is designed specifically to work with Lutron's EcoSystem to implement daylight harvesting. It allows the EcoSystem to automatically dim the lights when the available daylight is high and brighten the lights when the available daylight is low in order to maintain a specific light level in the space. An integrated IR receiver resides within the sensor to allow access to the system for advanced programming.

Features

- Photopic response matches human eye
- Mounts easily on any ceiling tile or fixture with 3/8 in. (10mm) diameter hole
- Threaded mounting stud (may be shortened for applications with limited fixture height)
- Calibrated for daylight sensitivity through the Lighting Control System to which it is attached
- Receives IR signals and transfers them to an EcoSystem Digital Ballast or Ballast Module
- The Infrared Receiver receives IR programming signals from up to 8 ft away.
- Constructed of flame retardant material with UL94 HB rating
- Meets IEC 801-2. Tested to withstand 15kV electrostatic discharge without damage

LUTRON SPECIFICATION SUBMITTAL Page

Job Name:	Model Numbers:
Job Number:	

Daylight Harvesting System

Daylight Sensor mounted to center of Type A-3 luminaires shown on Lighting Plan.

MANUFACTURER:Lutron Electronics
EcoSystem C-SR-M1-WH

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Project Name:
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Type:
Daylight Harvesting

Date: 05/31/07

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EcoSystem™	C-SR-M1-WH	Daylight Sensor

C-SR-M1-2 7.18.06

Specifications

Standards

- Designed for Class 2 operation only. Voltages do not exceed 35VDC. Complies with requirements of NFPA 70, of the National Electric Code (NEC)
- Follow all applicable national and/or local wiring regulations when installing this sensor
- Designed to give a linear response to changes in viewed light level
- For use with Lutron EcoSystem products only

Power

- Operating Voltage: Low-voltage Class 2, 20VDC
- Analog Signal: 0 - 2 mA
- IR Output: 0-20VDC

Environment

- Temperature: 32-113°F (0-45°C)
- Relative humidity: less than 90% non-condensing

Dimensions

- Sensor lead length = 4" (101mm) minimum beyond threaded stud.
- Total wire length from sensor to device must not exceed 200 ft (61m).
- Threaded Stud Diameter = 3/8" (9.5mm) maximum.
- Use 3/8-16 nut (provided) for mounting.

LUTRON SPECIFICATION SUBMITTAL Page

Job Name:	Model Numbers:
Job Number:	

Daylight Harvesting System

Daylight Sensor (continued)

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EcoSystem Bus Supply

Front Face

Top Side View

Side View

An EcoSystem lighting network containing more than one ballast or module requires an EcoSystem Bus Supply. This component powers the EcoSystem bus for up to 64 ballasts or ballast modules.

Features

- Provides power for the EcoSystem Bus
- Maintains redundant memory of ballast and module programming for building sustainability
- Accepts up to two normally open or normally closed dry contact closures to allow integration with building management and/or security systems
- Accepts one normally closed emergency input
- EcoSystem Bus may be wired Class 1 or Class 2
- Bus wires are polarity insensitive and topology free
- Voltage input: 120/240/277 V~ 50/60 Hz
- Non-volatile (EEPROM) memory stores specific system information for 10 years from power down to power restored
- 100% performance tested at factory
- Allows/prevents programming via the EcoSystem Programmer

LUTRON SPECIFICATION SUBMITTAL Page

Job Name:	Model Numbers:
Job Number:	

Daylight Harvesting System

Bus Supply to control EcoSystem Ballasts. Mount one Bus Supply in the North Open Office area and one in the South Open Office area. Contractor to determine location and mounting type.

MANUFACTURER:Lutron Electronics
EcoSystem CS-1L-XM

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EcoSystem™	CS-1L-CM, CS-1L-WM	Bus Supply

CS-1L-XX-2 6.12.06

Specifications

Standards

- UL, CUL, and NOM listed
- Meets ANSI C62.41 Category A surge protection standards up to and including 4kV
- Lutron manufacturing facilities employ ESD reduction practices that comply with the requirements of ANSI/ESD S20.20
- Lutron Quality Systems registered to ISO 9001.2000

Power

- Operating Voltage: 120/240/277 V~ 50/60 Hz
- Output Voltage: 18 VDC 250 mA maximum (Class 1 or Class 2)
- Device draws less than .11A

Environment

- Ambient Temperature Operating Range: 32-104°F (0-40°C)
- Relative humidity: less than 90% non-condensing

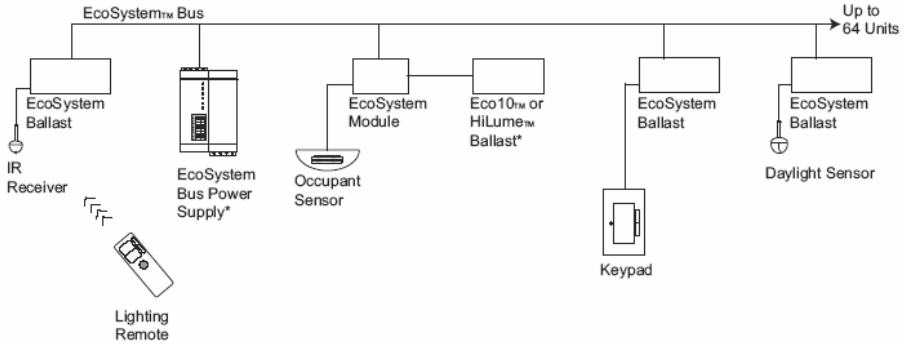
Terminals

- Power Wiring: #12 - #18 AWG
- EcoSystem Bus, Class 2 contact closures: #12 - # 22 AWG

Mounting

- Requires UL508 listed enclosure per NEC (customer supplied if CS-1L-CM). Enclosure provided if CS-1L-WM is ordered.
- Mounts to standard DIN rail (included)

EcoSystem Lighting Network



* does not count as one of the ballasts or modules on the EcoSystem bus

Notes:

- EcoSystem Bus may be wired Class 1 or Class 2
- Sensors and EcoSystem Bus Supply contact closures must be wired Class 2

LUTRON SPECIFICATION SUBMITTAL Page

Job Name:	Model Numbers:
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Daylight Harvesting System:

Bus Supply (continued)

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EcoSystem Programmer

The EcoSystem Programmer is the key to an intelligent EcoSystem. Capable of adjusting EcoSystem to the needs of any space, the Programmer allows users to define light levels, adjust sensor & control preferences, set groups, and adjust multiple settings on every ballast. On the side of flexibility, the Programmer allows re-purposing of any space through programmed groups that do not require costly re-wiring of a space. The Programmer now allows the abilities of a team of electricians to fit in the palm of your hand.

Features

- No limit to number of ballasts it can program
- Password protected for system integrity
- Wireless infrared communication with lighting system
- Handles programming changes for all sensors, wall controls, and ballasts
- Simple user interface allows programming without training or guidebook

LUTRON SPECIFICATION SUBMITTAL Page

Job Name:	Model Numbers:
Job Number:	

Daylight Harvesting System:

Handheld Programmer to allow for as-signment of luminaires to dimming zones.

MANUFACTURER:Lutron Electronics
EcoSystem C-PDA-CLR

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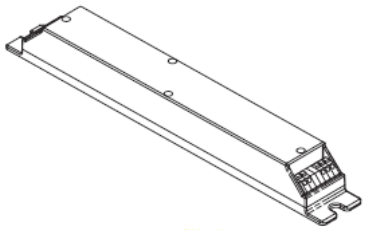
EcoSystem™ | C5-BMF-2A | Fluorescent Dimming Module

C5-BMF-2A 1 03.27.06

Fixture Mountable Ballast Module for 3-wire Fluorescent Ballasts



Lutron's EcoSystem Ballast Module allows integration of Lutron's 3-wire phase controlled dimming ballasts into Lutron's EcoSystem Bus (Eco-10™ and Hi-lume™ series only). The Ballast Module combines digital commands and sensor data to determine the proper light level.

Features

- Continuous, flicker-free dimming from 100% to minimum ballast level. (10% for Eco-10, 1% for Hi-lume)
- Provides power for and responds to one occupant sensor, one photo sensor, and one personal control input (infrared receiver or wallstation)
- Communicates status and sensor levels over the EcoSystem Bus
- Universal voltage input: 120/240/277 V~ 50/60 Hz
- Non-volatile (EEPROM) memory stores specific system information for 10 years from power down to power restored
- 100% performance tested at factory

Daylight Harvesting System:

Fluorescent Dimming Ballast Module for use with Type B-2 compact fluorescent downlights with Compact-SE dimming ballasts.

Location: Enclosed Offices within Daylight Harvesting Zone .

Note: Allow one BMF for each office, not for each fixture.

MANUFACTURER:Lutron Electronics EcoSystem C5-BMF-2A

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sensorswitch

WALL SWITCH DECORATOR SENSOR - PASSIVE INFRARED (PIR), LOW VOLTAGE

WSD-LV Series

Programmable Edition!

TYPICAL APPLICATIONS

- Private Offices
- Conference Room
- Individual Bathrooms (no stalls)
- Janitor Closets

FEATURES

- PIR Occupancy Detection
- Small Motion Detection to 20 Feet
- Time Delay: 30 sec. to 20 minutes, selectable in 2.5 min. increments
- Green LED Activity Indicator
- Push-Button Programmable

AVAILABLE OPTIONS

- Vandal-Resistant Lens (-V)
- Isolated Low Voltage Relay (-R)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

- Size: 4.2" H x 1.8" W x 1.5" D (10.67cm x 4.57cm x 3.81cm)
- Sensor Weight: 5 Ounces
- Colors: Ivory, White, Gray, Almond
- Mounting Height: 30 to 48 inches
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14º to 85º F (-10° to 29° C)
- Storage Temp: -14º to 160º F (-26° to 71° C)
- Operating Voltage:12-24 VAC/VDC
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -40º F (-40°C)

The *WSD-LV Series* is a low voltage wall switch occupancy sensor that is stylish, easy to install, and simple to use. Ideal for private offices, copy rooms, closets, or any small enclosed space without obstructions, the WSD-LV uses the industry's best Passive Infrared (PIR) technology to achieve excellent small motion detection up to 20 feet. A user programmable time delay ensures that once the room is vacated the sensor will time out and turn off the lights. *WSD-LV* sensors also have additional On Modes and Switch Modes that are all fully programmable using the front push-button. For rooms with obstructions the WSD-PDT-LV should be considered. The *WSD-LV* offers a Vandal Resistant version for high abuse or public areas.

Available Sensor Modes

On Modes
- Automatic On
- Manual On
- Reduced Turn-On

Switch Modes
- Normal
- Switch Disable
- Predictive Off

SENSOR OPERATIONS

The sensor detects changes in the infrared energy given off by occupants as they move within the field-of-view. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12 to 24 VAC/VDC and typically operates with a PP-20 or MP-20 Power Pack; enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. This state-of-the-art sensor requires no field calibration or adjustment.

LOW VOLTAGE RELAY OPTION (WSD-LV-R)

To enable a sensor to interface with a building management system, the -R option provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay. The relay is energized while the sensor registers "Unoccupied". The relay is then de-energized when the sensor registers "Occupied".

MODEL NUMBERING SYSTEM: WSD-LV-[LENS]-[RELAY]-[COLOR*]-[TEMP/HUMIDITY]

SERIES #	LENS	LOW VOLTAGE RELAY	COLOR	TEMP/HUMIDITY
WSD-LV	Blank = Standard -V = Vandal Resistant	Blank = No Relay -R = w/ SPDT Relay, 1 Amp	-I = Ivory -W = White -G = Gray -A = Almond	Blank = 14° to 85° F -LT = -40° to 85° F

*Must specify color

T098-003-P

Daylight Harvesting System:

Occupancy Sensor for Enclosed Offices. Time delay to be set for 30 minutes.

Location: Enclosed Offices within Daylight Harvesting Zone

MANUFACTURER:Sensorswitch WSD-LV-G

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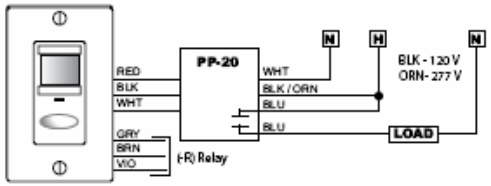
Programmable Edition **WSD-LV**

WIRING INSTRUCTIONS

Wire lead connections are Class II, 18 to 22 AWG.



STANDARD WSD-LV

RED – 12 to 24 VAC/VDC
BLACK – Common
WHITE – Output (High DC for Occupancy)

LOW VOLTAGE RELAY OPTION WIRING

GRAY / BROWN – Connected during Occupied state
VIOLET / BROWN – Connected during Unoccupied state
Note: Relay is energized during Unoccupied state and must have power at all times for to function.

OPERATIONAL MODES

On Modes (*Default)

Automatic On* - The sensor automatically turns the lights on when the sensor detects occupancy.
Manual On (Semi-Automatic) - The occupant must push the sensor's button to turn the lights on.
Reduced Turn-On - The sensor is set to initially only detect large motions, effectively ignoring any reflected PIR signals while still sensing occupants when they enter the room. Once on, the sensor returns to maximum sensitivity.

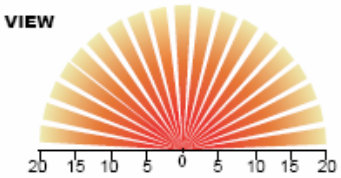
Switch Modes (*Default)

Predictive Off * - Pressing the switch overrides the lights off and temporarily disables the occupancy detection. After an exit time delay of 10 seconds, the PIR detection reactivates and monitors for an additional 5 seconds. If no occupancy is detected during this 5 second period, the sensor will revert to Automatic On operation. If occupancy is detected, the sensor will remain in Permanent Off mode requiring the switch to be pressed again in order to restore the sensor to Automatic On.
Permanent Off - Pressing the push-button switch will turn the lights off. The lights will remain off regardless of occupancy until the switch is pressed again, restoring the sensor to Automatic On Mode.
Switch Disable - Prevents user from manually turning off the lights via the push-button.

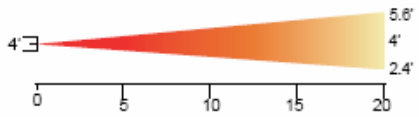
AREA OF COVERAGE:

The PIR collector beams view out horizontally in a wall-to-wall pattern. The beams will see out to 50 feet, however, their effectiveness with *Standard* Lens is 20 feet for small hand or body motions and 10 feet for the *Vandal Resistant* lens.

TOP VIEW



SIDE VIEW



STANDARD vs. VANDAL RESISTANT LENS

The Standard lens provides maximum PIR detection sensing small movements up to 20 feet, and large motions up to 50 feet. This lens should be used in typical offices or rooms where occupants work for extended periods of time. The Vandal Resistant lens should be used in high abuse or public areas (copy rooms, small public restrooms, storage closets), where occupants simply come and go and make larger types of motions. A sensor with a Vandal Resistant lens will have its PIR detection range reduced by 50%.

WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of sixty months. Sensor Switch, Inc., upon prompt notice of such defect will, at its option, provide a Returned Material Authorization number and a replacement product. **LIMITATIONS AND EXCLUSIONS:** This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

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Daylight Harvesting System:

Occupancy Sensor (continued)

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CC-1BRL-1.3.24.05

1-Button Wall Control with Raise/Lower

The 1-Button Wallstation functions as an individual or group control of EcoSystem ballasts or ballast modules and provides a programming point for all devices in the system. The wallstation connects directly to the EcoSystem ballast or ballast module via low voltage wiring.

Features

- Wires Class 2 Low Voltage
- Mounts easily in any single-gang wallbox
- Fits any designer (*Claro*®) opening faceplates
- On/Off Tapswitch
- Single tap to return to preset level or double tap to full on
- Raise/Lower rocker
- Built-in infrared receiver allows wallstation to be used as a programming point for EcoSystem
- Infrared signals are received through the plastic button (maximum distance of 5 feet)
- Programming of control groups can be performed at the wallstation
- Multi-color LED to indicate button presses, programming mode, and reception of infrared signals
- Green LED shall be on at all times and operate as a "night light"
- Red LED shall indicate programming mode is active
- Faceplate not included

OMITTED

Daylight Harvesting System:

1-Button Wall Control : OMITTED
Location: Enclosed Offices within Daylight Harvesting Zone

MANUFACTURER:

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EcoSystem™ CC-1BRL-WH 1-Button Wallstation

CC-1BRL-2 6.24.05

Specifications

Standards

- Designed for Class 2 operation only. Voltages do not exceed 35VDC. Complies with requirements of NFPA 70, of the National Electric Code (NEC).
- Follow all applicable national and/or local wiring regulations when installing this wallstation.
- For use with EcoSystem products only.

Mechanical

- Gloss finish available in white & ivory
- LED flashes in response to button presses and programming commands.
- IR transmissions received through plastic button. (maximum distance = 5 feet)

Notes

- Mounts easily in any single-gang wallbox.
- Has screw terminals for wire connections.
- Total wire length from sensor to device must not exceed 50 feet (15m).

Power

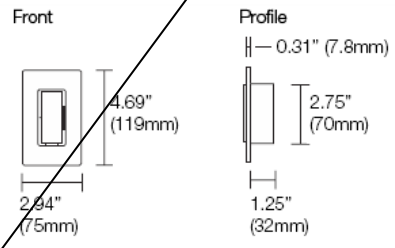
- Operating Voltage: Low-voltage Class 2, 20VDC
- Output Signal: 0 - 20VDC
- Current Draw: 25mA maximum

Environment

- Temperature: 32-113°F (0-45°C)
- Relative humidity: less than 90% non-condensing.

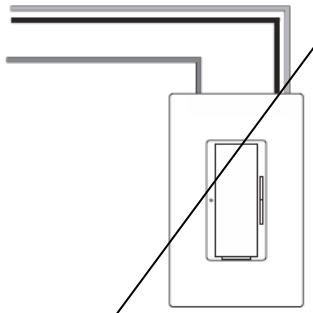
Dimensions

- Including *Claro* wallplate (sold separately)



OMITTED

Wiring



Wiring to EcoSystem Ballast or Ballast Module

- Wire color designations:
  Red = 20VDC
  Black = Common
  Blue = Signal (IR input terminal of Ballast or Module)
- Make sure that the supply breaker for the EcoSystem device to which the control will be connected is OFF.
- Connect the three conductors to the appropriate terminals of the EcoSystem ballast or ballast module.

Daylight Harvesting System:

1-Button Wall Control: OMITTED

MANUFACTURER:

Revised:	Description
2/8/08	REV OCC SENSORS IN OFFICES
10/4/07	ADDED OS-4; REVISED OS-2
8/2/07	ADDED OS-3; REVISED WD-2
6/26/07	ISSUED FOR 100% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
5/31/07	ISSUED FOR 60% PACAKGE

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Project Name:
National Audubon Society HQ

Type:
Daylight Harvesting

Date:
05/31/07

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OCCUPANCY SENSORS | Wall Switch Sensors

DW-200 Dual Technology Dual Relay Wall Switch Sensor

PROJECT

LOCATION/TYPE

Product Overview

Description

The DW-200 dual technology wall switch sensor combines the benefits of passive infrared (PIR) and ultrasonic technologies to turn lights ON and OFF based on occupancy. It contains two relays for controlling two independent lighting loads or circuits and features our innovative SmartSet™ technology.

Operation

The DW-200 fits in a single gang junction box. By default, when both PIR and ultrasonic technologies detect occupancy, lights turn ON automatically. Once the lights are ON, detection by either technology holds lights ON until occupancy is no longer detected and the time delay elapses. Each of the DW-200's relays can control a separate lighting load and each can be set for either automatic or manual-ON. Dual ON/OFF buttons allow the user to manually turn on and off each of the loads. DIP switch settings allow for a variety of control options such as Auto-ON or Manual-ON, walk-through, and test mode.

Bi-Level Control

The DW-200 features a built-in light level sensor that controls the second (secondary) relay. If adequate daylight is present, the sensor will hold secondary lights off until daylight levels drop, providing increased energy savings. The DW-200 satisfies energy codes requiring bi-level or daylight control switching. The two relays in the sensor give it the ability to control two lighting loads independently. This provides A/B switching where the user can achieve half-lighting (or another desired portion) from a single switch.

Applications

The DW-200 has the flexibility to work in a variety of applications where one technology alone may not be sufficient. In addition, its dual relays allow bi-level switching or control of a secondary load. Common applications include small and executive offices, small and medium conference rooms and lunch/break rooms. This sensor is also a perfect choice for ADA compliant buildings due to lower mounting height requirements.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing on both relays for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Auto-ON or Manual-ON operation, selectable for each relay
- Selectable SmartSet automatically adjusts time delay for maximum savings
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Selectable test mode allows quick and easy adjustments
- Selectable audible alert for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Four occupancy logic options give users the ability to customize control to meet application needs
- Features built-in light level sensing with simple, one-step setup
- Override mode allows sensor to operate as a service switch in the unlikely event of a failure
- NEMA WD 7 guideline utilized for coverage testing

WattStopper | legrand

www.wattstopper.com
800.879.8585

OS1

Dual technology dual relay occupancy sensor to control Type F 2' x 2' fluorescents on one relay and Type G wall-washers on the other relay.

Set for manual on and automatic off. Time delay to be set for 30 minutes.

Location: Art Room

MANUFACTURER: Watt Stopper DW-200

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Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

Project Name:
National Audubon Society HQ

Type:
Occupancy Sensor—OS1

Date:
05/31/07

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Specifications

- 120/230/277 VAC; 50/60 Hz
  - 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
  - 230/277 VAC, 0-1200 W ballast
- Time delays: SmartSet (automatic), fixed (5, 15 or 30 minutes), walk-through, test-mode
- Coverage: PIR Major motion 35'x 30'
  PIR Minor motion 20' x 15'
  Ultrasonic Major motion 20'x 20'
  Ultrasonic Minor motion 15' x 15'
- Sensitivity adjustment: PIR (high/low), Ultrasonic (fully variable)
- Dimensions: 2.73" x 1.76" x 1.83" (69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and CUL listed; five year warranty

Controls & Settings

Product Controls

DIP Switch Settings

Wiring

DW-200 Bi-level Level Wiring

DW-200 Two Circuit Level Wiring

Coverage

* For best performance, Watt Stopper/Legrand recommends using this sensor in spaces no larger than 18' x 15'

Ordering Information

Catalog No.	Color	Voltage	Load Rating
☐ DW-200-W	White	120/230/277 VAC; 50/60 Hz	120 VAC, 0-800 W ballast or tungsten, 1/6 hp 230/277 VAC, 0-1200 W ballast
☐ DW-200-LA	Lt. Almond		
☐ DW-200-I	Ivory		
☐ DW-200-G	Grey		
☐ DW-200-B	Black		

One ASP-211 single-gang cover plate included. Order ASP-422 for blank 2-gang cover plate, ASP-432 for 2-gang cover plate with switch option (specify color).

Pub. No. 23201

www.wattstopper.com
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OCCUPANCY SENSORS | Wall Switch Sensors

OS1

Dual Technology Dual Relay Occupancy Sensor (continued)

MANUFACTURER: Watt Stopper DW-200

Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

Project Name:
National Audubon Society HQ

Type:
Occupancy Sensor—OS1

Date: 05/31/07

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OCCUPANCY SENSORS | Wall Switch Sensors

DW-100 Dual Technology Wall Switch Sensor

PROJECT

LOCATION/TYPE

Product Overview

Description

The DW-100 dual technology wall switch sensor combines the benefits of passive infrared (PIR) and ultrasonic technologies to turn lights ON and OFF based on occupancy. It is characterized by high sensitivity to small and large movements, appealing aesthetics, and variety of features.

Operation

The DW-100 fits in a single gang junction box. By default, when both PIR and ultrasonic technologies detect occupancy, lights turn ON automatically. Once the lights are ON, detection by either technology holds lights ON until occupancy is no longer detected and the time delay elapses. Through DIP switch settings, the user can customize the sensor by choosing the combination of technologies to turn -ON and hold-ON lights. Additional DIP switch settings allow for a variety of control options such as Auto-ON or Manual-ON, walk-through, and test mode.

SmartSet™

Using SmartSet technology, the DW-100 continuously monitors the controlled space to identify usage patterns and automatically adjust the time delay for optimal energy efficiency. The sensor assigns short delays (as low as seven minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times. SmartSet is also able to differentiate electrical noise from human motion for greater performance.

Applications

Watt Stopper's dual technology has the flexibility to work in a variety of applications where one technology alone may not be sufficient. Common applications include small and executive offices, small and medium conference rooms and lunch/break rooms. In addition, dual technology sensors are the perfect choice for ADA compliant buildings due to lower mounting height requirements.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Auto-ON or Manual-ON operation
- Selectable SmartSet automatically adjusts time delay for maximum savings
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Selectable test mode allows quick and easy adjustments
- Selectable audible alert for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Four occupancy logic options give users the ability to customize control to meet application needs
- Features built-in light level sensing with simple, one-step setup
- Override mode allows sensor to operate as a service switch in the unlikely event of a failure
- NEMA WD 7 guideline utilized for coverage testing

WattStopper | legrand
www.wattstopper.com
800.879.8585

OS2

Dual technology occupancy sensor.

Set for manual on and automatic off. Time delay to be set for 30 minutes.

Location: Enclosed Offices outside of Daylight Harvesting Zone, IT Room and Copy Room, Physically Challenged Restroom

MANUFACTURER: Watt Stopper DW-100

Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

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Project Name:
National Audubon Society HQ

Type:
Occupancy Sensor—OS2

Date:
05/31/07

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Specifications

- DW-100: 120/230/277 VAC; 50/60 Hz
  - @ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
  - @ 230/277 VAC, 0-1200 W ballast
- DW-100-347: 347 VAC; 50/60Hz, 0-1500 W ballast
- Time delays: SmartSet (automatic), fixed (5, 15 or 30 minutes), walk-through, test-mode
- Coverage: PIR Major motion 35'x 30'
  PIR Minor motion 20' x 15'
  Ultrasonic Major motion 20'x 20'
  Ultrasonic Minor motion 15' x 15'
- Sensitivity adjustment: PIR (high/low), Ultrasonic (fully variable)
- Dimensions: 2.73" x 1.76" x 1.83" (69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and CUL listed; five year warranty

Controls & Settings

Product Controls

DIP Switch Settings

Coverage & Wiring

Coverage Pattern

* For best performance, Watt Stopper/Legrand recommends using this sensor in spaces no larger than 18' x 15'

DW-100/347 Single Level Lighting

Ordering Information

Catalog No.	Color	Voltage	Load Rating
☐ DW-100-W	White	120/230/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 230/277 VAC, 0-1200 W ballast
☐ DW-100-LA	Lt. Almond		
☐ DW-100-I	Ivory		
☐ DW-100-G	Grey		
☐ DW-100-B	Black		
☐ DW-100-347-W	White	347 VAC; 50/60 Hz	0-1500 Watt Ballast
☐ DW-100-347-LA	Lt. Almond		
☐ DW-100-347-I	Ivory		
☐ DW-100-347-G	Grey		
☐ DW-100-347-B	Black		

One ASP-211 single-gang cover plate included. Order ASP-422 for blank 2-gang cover plate, ASP-432 for 2-gang cover plate with switch option (specify color).

Pub. No. 22301

OCCUPANCY SENSORS | Wall Switch Sensors

OS2

Dual technology occupancy sensor (continued)

MANUFACTURER: Watt Stopper DW-100

Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

Project Name:
National Audubon Society HQ

Type:
Occupancy Sensor—OS2

Date: 05/31/07

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OCCUPANCY SENSORS | Wall Switches

WD Passive Infrared Dimmable Wall Switch Sensor

PROJECT

LOCATION/TYPE

Product Overview

Description

The WD sensors are decorator style, dimmable automatic wall switches. They replace standard wall switches and work with fluorescent fixtures using ballasts with line voltage phase control input or Advance® Mark X™ electronic dimmable ballasts as well as incandescent fixtures.

Operation

The WD sensors use passive infrared (PIR) technology to turn lights on when the controlled space is occupied. The WD-170 and WD-180 automatically turn off once the space is vacated and the user-adjustable time delay elapses. The WD-270 and WD-280 have a dim-before-disconnect feature where once the space is vacated and the fixed 15 minute time delay elapses, lights dim to the minimum level. Then, lights turn completely off after a secondary, adjustable time delay. For all models, lights can be turned off manually by pressing the auto/off button.

Dimming Feature

The WD's slide dimmer adjusts the lighting from a minimum of 10% to a maximum of 100%. The position of the slide dimmer determines the light level that turns on upon occupancy. The combination of dimming and occupancy sensing provides a high degree of energy savings, as well as enhanced user control over the lighting environment.

Applications

The WD can be used in many spaces including private offices, small conference rooms, and copy rooms. Offices in public spaces can also use the WD because of the vandal resistant hard lens. The product's flat, low-profile appearance adds to the aesthetics in any location.

Features

- ASIC technology reduces components and enhances reliability
- Pulse Count Processing eliminates false offs without reducing sensitivity
- Detection Signature Analysis eliminates false triggers; provides immunity to RFI and EMI
- Hard lens makes the unit resistant to vandalism
- Zero Voltage Turn ON/OFF increases life of sensor
- Line voltage dimmable; does not require extra control wiring to the ballast for the dimming function
- Patented voltage drop protection
- For safety, there is no leakage to load in the off mode and sensor is safety grounded
- LED indicates occupancy detection

*Compatible with electronic dimming ballasts with line voltage phase control input as well as with incandescent fixtures

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www.wattstopper.com
800.879.8585

OS3

Dimmable PIR Wall Switch Occupancy Sensor.

Set for manual on and automatic off. Time delay to be set for 15 minutes.

Location: Small Conference Room

MANUFACTURER: Watt Stopper WD-170

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Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

Project Name:
National Audubon Society HQ

Type:
Occupancy Sensor—OS3

Date:
05/31/07

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OS3

Dimmable PIR Wall Switch Occupancy Sensor (continued)

MANUFACTURER:

OCCU- | Wall Switches

Specifications

- WD-170, WD-270 operate at 120 VAC; WD-180, WD-280 operate at 277 VAC
- Maximum 300 ft² (27.8 m²); 150 ft² (13.9 m²) for desktop activity
- 1.0 mm hard poly IR 2 lens
- WD-170, WD-180: time delay adjustable during installation from 30 sec up to 30 min
- WD-270, WD-280: fixed initial 15 min time delay after which lights will dim to minimum level; secondary adjustable time delay from 5 min to 30 min after which lights turn off
- Dimensions: 2.7" x 1.8" x 2.2" (68.6mm x 45.7mm x 55.9mm) L x W x D
- UL and CUL listed; 5 year warranty

Controls & Installation

Product Controls

Factory settings: maximum sensitivity; WD-170/180 30 min. time delay; WD-270/280 15 min. (fixed) time delay

Installation

Wiring

Single Level Lighting

Manual Bi-level Lighting

Coverage

The 2-level lens provides superior coverage at a desk-top level by allowing the sensor to detect vertical as well as horizontal motion.

Ordering Information

Catalog No.	Voltage	Load Requirement	Coverage	OFF Mode
☑ WD-170	120 VAC; 60 Hz	10-500 W Ballast, 0-500W Tungsten	180°, 300 ft² (27.9 m²)	Automatic-OFF
☐ WD-180	277 VAC; 60 HZ	10-500 Watt Ballast	180°, 300 ft² (27.9 m²)	Automatic-OFF
☐ WD-270	120 VAC; 60 Hz	10-500 W Ballast, 0-500W Tungsten	180°, 300 ft² (27.9 m²)	Dim-bef-disconnect
☐ WD-280	277 VAC; 60 HZ	10-500 Watt Ballast	180°, 300 ft² (27.9 m²)	Dim-bef-disconnect

Add –I to Cat. # for Ivory, -W for White, -A for Light Almond
One ASP-211 single-gang cover plate included. Order ASP-422 for blank 2-gang cover plate, ASP-432 for 2-gang cover plate with switch option (specify color).

Pub. No. 5305

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Revised:	Description
2/8/08	REV OCC SENSORS IN OFFICES
10/4/07	ADDED OS-4; REVISED OS-2
8/2/07	ADDED OS-3; REVISED WD-2
6/26/07	ISSUED FOR 100% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
5/31/07	ISSUED FOR 60% PACAKGE

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Project Name:
National Audubon Society HQ

Type:
Occupancy Sensor—OS3

Date:
05/31/07

Page 2 of 2

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OCCUPANCY SENSORS | Ceiling Mount Sensors

DT-200 Dual Technology Ceiling Sensor

PROJECT

LOCATION/TYPE

Product Overview

Description

Watt Stopper/Legrand's DT-200 Dual Technology occupancy sensors combine passive infrared (PIR) and ultrasonic technologies into one unit to achieve precise coverage.

Operation

The DT-200 turns lighting on when both PIR and ultrasonic technologies detect occupancy. It can also work with a low voltage switch for manual-ON operation. PIR technology senses the difference between infrared energy from a human body in motion and the background space. Ultrasonic technology uses the Doppler Principle and high frequency (40 kHz) ultrasound to sense motion within the space. Once lighting is on, detection by either technology holds lighting on. When no occupancy is detected for the length of the time delay, lighting turns off. The DT can also be set so that only one technology is needed to trigger lighting on or both technologies are needed to hold lighting on. The sensors are low voltage and utilize a Watt Stopper power pack.

SmartSet

Using SmartSet™ technology, the DT-200 sensors require no adjustment at installation. SmartSet monitors the controlled space to identify usage patterns. Using this information, it automatically adjusts the time delay and sensitivity for optimal performance and energy efficiency. The sensor assigns short delays (as low as 5 minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Application

Watt Stopper dual technology sensors have the flexibility to work in a variety of applications. Mounted at 10 feet, the sensors can cover up to 2000 square feet of walking motion and 1000 square feet of desktop motion. The sensors are designed to control lighting in difficult applications, such as classrooms, where one technology alone could encounter false triggers. In addition to classrooms, the DT-200 works well in warehouses, large offices, open office spaces, and computer rooms.

Features

- Advanced control logic based on RISC microcontroller provides:
  - Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
  - SmartSet automatically adjusts sensitivity and time delay settings to fit occupant patterns
  - Walk-through mode turns lights off 3 minutes after the area is initially occupied – ideal for brief visits such as mail delivery
  - Available with built-in light level sensor featuring simple, one-step setup
- Sensors work with low voltage momentary switches to provide manual control
- LEDs indicate occupancy detection
- 8 occupancy logic options give users the ability to customize control to meet application needs
- Available with isolated relay for integration with BAS or HVAC
- Swivel mounting bracket for convenient corner mounting to wall or ceiling

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www.wattstopper.com
800.879.8585

OS4

Dual technology dual relay occupancy sensor to control Type B-1, Z and Z-1 linear fluorescents.

Where required provide Dual Voltage Power Pack to provide voltage to both sensors in each Restroom.

Set for manual on and automatic off. Time delay to be set for 30 minutes.

Location: Restrooms

MANUFACTURER: Watt Stopper
Occupancy Sensor DT-200
Power Pack BZ-100

Revised:	Description
2/8/08	REV OCC SENSORS IN OFFICES
10/4/07	ADDED OS-4; REVISED OS-2
8/2/07	ADDED OS-3; REVISED WD-2
6/26/07	ISSUED FOR 100% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
5/31/07	ISSUED FOR 60% PACAKGE

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Project Name:
National Audubon Society HQ

Type:
Occupancy Sensor—OS4

Date: 05/31/07

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Specifications

- 24 VDC/VAC and halfwave rectified AC
- 40 kHz frequency ultrasonic transmission
- Time delays: SmartSet (automatic), fixed (5, 10, 15, 20, or 30 minutes), walk-through, test-mode
- Sensitivity adjustment: SmartSet (automatic) or reduced sensitivity (for PIR sensitivity); ultrasonic sensitivity is variable with trimpot
- Built-in light level sensor (DT-200) – works from 2 to 200 footcandles (21 to 2,152 lux)
- Low voltage, momentary switch input for manual operation
- DT-200 contains an isolated relay with N/O and N/C outputs; rated for 1 Amp at 24 VDC/VAC
- 2000 ft² of walking motion mounted at 10 ft; 1000 ft² of desktop motion
- Units per power pack: DT-200: up to 2 (B), up to 3 (BZ); DT-205: up to 3 (B), up to 4 (BZ)
- Dimensions: 4.4" x 3.4" x 2" (110.3mm x 85.9mm x 49.6mm) LxWxD
- UL and CUL listed; Five year warranty

Wiring & Mounting

Wiring Diagram

Mounting

A swivel mounting bracket, attached to the sensor, allows the sensor to be angled for wall or ceiling mounting.

Grooves on the bracket help to achieve desired angle for coverage.

Controls & Settings

Product Controls

DIP Switch Settings

Coverage

Coverages shown are maximum and represent half-step walking motion. Under ideal conditions, with no barriers or obstacles, coverage for half-step walking motion can reach up to 2000 ft² while coverage for typical desktop activity can reach up to 1000 ft².

Ordering Information

Catalog No.	Voltage	Current	Coverage	Features
☐ DT-200	24 VDC	43 mA	2000 ft²(185.8 m²)	light level, isolated relay
☐ DT-205	24 VDC	35 mA	2000 ft²(185.8 m²)	

Sensors are white and use Watt Stopper power packs. Current consumption can be slightly higher when only one sensor per power pack is used.

Pub. No. 6205

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OS4: Continued

MANUFACTURER:

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Revised:	Description
2/8/08	REV OCC SENSORS IN OFFICES
10/4/07	ADDED OS-4; REVISED OS-2
8/2/07	ADDED OS-3; REVISED WD-2
6/26/07	ISSUED FOR 100% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
5/31/07	ISSUED FOR 60% PACAKGE

Project Name:
National Audubon Society HQ

Type:
Occupancy Sensor—OS4

Date:
05/31/07

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sensorswitch

WALL SWITCH DECORATOR SENSOR - PASSIVE INFRARED (PIR), LOW VOLTAGE

WSD-LV Series
Programmable Edition!

TYPICAL APPLICATIONS
- Private Offices
- Conference Room
- Individual Bathrooms (no stalls)
- Janitor Closets

FEATURES
- PIR Occupancy Detection
- Small Motion Detection to 20 Feet
- Time Delay: 30 sec. to 20 minutes, selectable in 2.5 min. increments
- Green LED Activity Indicator
- Push-Button Programmable

AVAILABLE OPTIONS
- Vandal-Resistant Lens (-V)
- Isolated Low Voltage Relay (-R)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS
- Size: 4.2" H x 1.8" W x 1.5" D (10.67cm x 4.57cm x 3.81cm)
- Sensor Weight: 5 Ounces
- Colors: Ivory, White, Gray, Almond
- Mounting Height: 30 to 48 inches
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14º to 85º F (-10° to 29° C)
- Storage Temp: -14º to 160º F (-26° to 71° C)
- Operating Voltage:12-24 VAC/VDC
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)
- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -40º F (-40°C)

The *WSD-LV Series* is a low voltage wall switch occupancy sensor that is stylish, easy to install, and simple to use. Ideal for private offices, copy rooms, closets, or any small enclosed space without obstructions, the WSD-LV uses the industry's best Passive Infrared (PIR) technology to achieve excellent small motion detection up to 20 feet. A user programmable time delay ensures that once the room is vacated the sensor will time out and turn off the lights. *WSD-LV* sensors also have additional On Modes and Switch Modes that are all fully programmable using the front push-button. For rooms with obstructions the WSD-PDT-LV should be considered. The *WSD-LV* offers a Vandal Resistant version for high abuse or public areas.

Available Sensor Modes

On Modes
- Automatic On
- Manual On
- Reduced Turn-On

Switch Modes
- Normal
- Switch Disable
- Predictive Off

SENSOR OPERATIONS
The sensor detects changes in the infrared energy given off by occupants as they move within the field-of-view. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12 to 24 VAC/VDC and typically operates with a PP-20 or MP-20 Power Pack; enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. This state-of-the-art sensor requires no field calibration or adjustment.

LOW VOLTAGE RELAY OPTION (WSD-LV-R)
To enable a sensor to interface with a building management system, the -R option provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay. The relay is energized while the sensor registers "Unoccupied". The relay is then de-energized when the sensor registers "Occupied".

MODEL NUMBERING SYSTEM: WSD-LV-[LENS]-[RELAY]-[COLOR*]-[TEMP/HUMIDITY]

SERIES #	LENS	LOW VOLTAGE RELAY	COLOR	TEMP/HUMIDITY
WSD-LV	Blank = Standard -V = Vandal Resistant	Blank = No Relay -R = w/ SPDT Relay, 1 Amp	-I = Ivory -W = White -G = Gray -A = Almond	Blank = 14° to 85° F -LT = -40° to 85° F

*Must specify color

T098-003-P

Occupancy Sensor

for Enclosed Offices outside of Daylight Harvesting Zone. Time delay to be set for 30 minutes.

Location: Enclosed Offices outside of Daylight Harvesting Zone

MANUFACTURER:Sensorswitch WSD-LV-G

Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

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Project Name:
National Audubon Society HQ

Type:
Occ Sensor—Private Offices

Date:
05/31/07

Page 1 of 2

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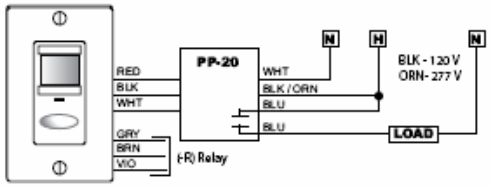
Programmable Edition **WSD-LV**

WIRING INSTRUCTIONS

Wire lead connections are Class II, 18 to 22 AWG.



STANDARD WSD-LV

RED – 12 to 24 VAC/VDC
BLACK – Common
WHITE – Output (High DC for Occupancy)

LOW VOLTAGE RELAY OPTION WIRING

GRAY / BROWN – Connected during Occupied state
VIOLET / BROWN – Connected during Unoccupied state
Note: Relay is energized during Unoccupied state and must have power at all times for to function.

OPERATIONAL MODES

On Modes (*Default)

Automatic On* - The sensor automatically turns the lights on when the sensor detects occupancy.
Manual On (Semi-Automatic) - The occupant must push the sensor's button to turn the lights on.
Reduced Turn-On - The sensor is set to initially only detect large motions, effectively ignoring any reflected PIR signals while still sensing occupants when they enter the room. Once on, the sensor returns to maximum sensitivity.

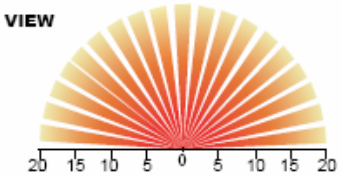
Switch Modes (*Default)

Predictive Off * - Pressing the switch overrides the lights off and temporarily disables the occupancy detection. After an exit time delay of 10 seconds, the PIR detection reactivates and monitors for an additional 5 seconds. If no occupancy is detected during this 5 second period, the sensor will revert to Automatic On operation. If occupancy is detected, the sensor will remain in Permanent Off mode requiring the switch to be pressed again in order to restore the sensor to Automatic On.
Permanent Off - Pressing the push-button switch will turn the lights off. The lights will remain off regardless of occupancy until the switch is pressed again, restoring the sensor to Automatic On Mode.
Switch Disable - Prevents user from manually turning off the lights via the push-button.

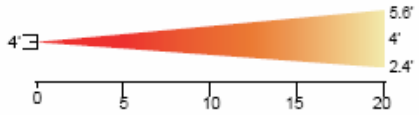
AREA OF COVERAGE:

The PIR collector beams view out horizontally in a wall-to-wall pattern. The beams will see out to 50 feet, however, their effectiveness with *Standard* Lens is 20 feet for small hand or body motions and 10 feet for the *Vandal Resistant* lens.

TOP VIEW



SIDE VIEW



STANDARD vs. VANDAL RESISTANT LENS

The Standard lens provides maximum PIR detection sensing small movements up to 20 feet, and large motions up to 50 feet. This lens should be used in typical offices or rooms where occupants work for extended periods of time. The Vandal Resistant lens should be used in high abuse or public areas (copy rooms, small public restrooms, storage closets), where occupants simply come and go and make larger types of motions. A sensor with a Vandal Resistant lens will have its PIR detection range reduced by 50%.

WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of sixty months. Sensor Switch, Inc., upon prompt notice of such defect will, at its option, provide a Returned Material Authorization number and a replacement product. **LIMITATIONS AND EXCLUSIONS:** This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

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www.sensorswitch.com

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Occupancy Sensor (continued)

MANUFACTURER:

Revised:	Description
2/8/08	REV OCC SENSORS IN OFFICES
10/4/07	ADDED OS-4; REVISED OS-2
8/2/07	ADDED OS-3; REVISED WD-2
6/26/07	ISSUED FOR 100% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
5/31/07	ISSUED FOR 60% PACAKGE

Project Name:
National Audubon Society HQ

Type:
Occ Sensor—Private Offices

Date:
05/31/07

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sensorswitch

120/277 VOLT POWER PACKS AND SLAVE PACKS

TYPICAL APPLICATIONS
- Used with Low Voltage Sensors
- Multiple Sensors
- Multiple Loads
- AC Switching Only

HIGHLIGHTS
- Dual Voltage Transformer
- Self-Contained Relay
- Patented Relay Circuit Protection (Tested to over 400,000 cycles)
- Powers up to 14 sensors

SPECIFICATIONS
- Size:(1/2" inch chase nipple not inc.)
  PP-20-2P: $4\frac{1}{8}$ x 3" x $1\frac{7}{8}$"
  PP-20 & SP-20: 3" x $2\frac{1}{4}$" x $1\frac{7}{8}$"
- Mounting: 1/2" inch chase nipple
- Operating Voltage: 120, 240, or 277 VAC (Single Phase only)
- Each Relay: 20 Amps
- 1 HP Motor Load
- Output Voltage: 15 VDC, 150 mA at 120 or 277 VAC
- Class II: 18 AWG, up to 2,000 ft.
- Plenum Rated
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14º to 160º F
- Storage Temp: -14º to 160º F
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)
- Conformally Coated PCB
- Operates down to -40º F
- Corrosion resistant from moisture

PLENUM CONSIDERATIONS

Most local codes allow for small plastic controls in Return Air Plenums; *Some Do Not!* To meet local code, the Power Pack can be mounted inside an adjacent (Deep) junction box as shown below.

PP-20
PP-20-2P
SP-20
Plenum Rated

Power Packs are the heart of the Low Voltage Sensor System. The *PP-20* transforms 120, 240 or 277 Volts (single phase) to class II 15 VDC to power the remote sensors. Utilizing Patented Relay Circuit Protection the *PP-20* also switches the lighting load "On" and "Off": Tested to over 400,000 cycles at rated load! Although Plenum Rated, the elongated mounting nipple allows for the *PP-20* to be mounted either directly thru a 1/2" inch knockout in a junction box, or to be located inside an adjacent box for specific local code requirements. Up to 14 sensors may be connected to one *PP-20*. Multi-circuit control can be handled by multiple *PP-20's*, or 2-Pole Power Packs (*PP-20-2P*) and Slave Packs (*SP-20*) may be configured. *PP-20's* can be wired continuously hot (line side), or on the switch leg (load side) without nuisance delays upon turn "On".

LOW VOLTAGE OPERATION AND TEST

The Low Voltage Wires or Terminal is color coded Red (15 VDC), Black (Common), and White (Occupancy Signal). With no sensors connected, using a small wire, connect the Red terminal to the White. The lights should turn "On". Remove the connection and the lights should turn "Off". With the sensors connected, the Red and Black wires provide DC power to the remote sensors, and when there is occupancy detected, the White wire produces a 15 VDC signal from the sensor to the power pack initiating the lights to "On". Upon initial power up, the Sensors automatically send an "On" signal until the sensors have stabilized and "Timed Out".

SIZING OF THE SYSTEM - VARIOUS COMBINATIONS

Combining Power Packs provides for additional power to drive remote devices. Maximum numbers of remote sensors are shown below based on the Power Pack/Slave Pack being used. *Maximum number of "Relays" is 30.*

	Sensors	Sensors with Relay
1 PP-20	14	8
1 PP-20-2P	7	6
1 PP-20 w/SP-20	7	6
1 PP-20-2P w/SP-20	5	5
2 PP-20	28	16
2 PP-20-2P	14	12

Note 1: Only three relays may be controlled with one Power Pack. If more than three circuits are required, multiple Power Packs must be used.

Note 2: Only one "Sensor with Relay" is required in most cases. See Technical Datasheet on Low Voltage Sensors with -R Interface Option.

SYSTEMS CONSIDERATIONS

The local override switch may be upstream or downstream of a *PP-20*. However, if an *SP-20* Auxiliary Relay or a *PP-20-2P* controller is being used, the switch(es) should be downstream on the load side of the relay. If power is disconnected to the Power Pack all subsequent relays will open, turning off all of the loads. If wiring the local switches before the Power Pack and Slave Pack, use multiple *PP-20's*, one for each circuit. This will allow for one circuit to remain powered, keeping the system operational when the other is turned off. When controlling a dimming circuit, *PP-20* must be wired before dimmer, or *SP-20* may be wired after dimmer.

INTERFACING WITH ELECTRONIC CONTROL SYSTEMS

The Relay Switching System is designed to switch Alternating Currents Only. The relay will not switch DC signal inputs to EMS or Lighting Control Systems. Use model #MP-20, or "-R" for signal relay located in Low Voltage Sensor Heads.

CATALOG INFORMATION

MODEL#	DESCRIPTION	OUTPUT VOLTAGE	OUTPUT CURRENT
PP-20	Power Pack with 20 Amp Relay	15 to 24 VDC	70 to 110 mA
PP-20-2P	Power Pack with two 20 Amp Relays	15 to 24 VDC	35 to 70 mA
SP-20	Slave Pack with 20 Amp Relay	N/A	40 mA (consumption)

**Add suffix -LT for Low Temp/Hi Humidity

Power Pack

for Enclosed Offices outside of Daylight Harvesting Zone.

Location: Enclosed Offices outside of Daylight Harvesting Zone

MANUFACTURER: Sensorswitch PP-20

Revised:	Description
2/8/08	REV OCC SENSORS IN OFFICES
10/4/07	ADDED OS-4; REVISED OS-2
8/2/07	ADDED OS-3; REVISED WD-2
6/26/07	ISSUED FOR 100% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
5/31/07	ISSUED FOR 60% PACAKGE

Project Name:
National Audubon Society HQ

Type:
Power Pack—Private Offices

Date:
05/31/07

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www.illuminationarts.com

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TYPICAL WIRING DIAGRAMS - DO NOT WIRE HOT

NOTE: The Power Pack must be connected to a single phase Hot and Neutral System. For 120 VAC, connect the Black wire to Hot, White wire to Neutral, and Cap off the Orange wire. For 240-277 VAC, connect the Orange to Hot, White to Neutral, and Cap off the Black wire. *Never connect both the Black and Orange wires!* Low Voltage wire can be 18 to 22 AWG; shielding is not necessary. Class II terminal Block on *PP-20-2P* only accepts one conductor per terminal of 18 AWG stranded or smaller.

Multiple Sensors Controlling One Circuit

Multiple Sensors Controlling Two Circuits

Multiple Sensors Controlling Three Circuits

Multiple Sensors Controlling Four Circuits

Wiring Multiple Power Packs Together

One Sensor Controlling Two Circuits

One Sensor Controlling One Circuit

WARRANTY: Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of sixty months. Sensor Switch, Inc, upon prompt notice of such defect will, at its option, provide a Returned Material Authorization number and repair or replace returned product.
LIMITATIONS AND EXCLUSIONS: This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

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www.sensorswitch.com

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Power Pack (continued)

MANUFACTURER:

Revised:	Description
2/8/08	REV OCC SENSORS IN OFFICES
10/4/07	ADDED OS-4; REVISED OS-2
8/2/07	ADDED OS-3; REVISED WD-2
6/26/07	ISSUED FOR 100% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
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Project Name:
National Audubon Society HQ

Type:
Power Pack—Private Offices

Date: 05/31/07

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SPECIFICATION SUBMITTAL

VAREO® Controls

www.lutron.com/vareo

The elegant thin-profile TapSwitch™ dimmer.

Preset Dimmer — Electronic Tapswitch

PRODUCT FAMILY FEATURES

- Sophisticated thin-profile styling featuring a large tapswitch and discrete linear slider
- Perfect solution for high-end applications
- Elegant appearance and operation
- Enclosed heat sink for an aesthetically pleasing appearance
- Multigang alignment for quick and easy installation
- Full line of matching devices and accessories
- Simple selection – all dimmers operate as single pole or 3-way

DIMENSIONS

SPECIFICATION SERIES STANDARD FEATURES

- Square Law Dimming
- Power-failure memory
- Captive tapswitch and linear slider
- Front accessible service switch (FASS™)
- Heavy-duty components for surge protection and long product life
- Voltage compensation
- Superior RFI suppression
- Precise color matching
- Electrostatic discharge tested

Lutron controls are rated at 120VAC, 60Hz unless otherwise noted.

JOB NAME	AREA CONTROLLED
LOCATION	JOB NUMBER
TITLE	PAGE NO.

CONTROLS AND ACCESSORIES

Preset Dimmers

Electronic Tapswitches

(with status light)

Fan-Speed Controls

(Small Control) (Large Control)

Auxiliary Tapswitches

(with status light)

Receptacles

15A Receptacles — 20A

15A GFCI Receptacles — 20A

15A Isolated Ground Receptacles — 20A

Telephone/Cable TV Jacks

Single Telephone Jack — Double — Triple — Cable TV Jack — Telephone/ Cable TV Jack

Ports

6-Port Frame

Custom Multigang Wallplates

2-gang, 3-gang and 4-gang for dimmers/switches

2-gang for a dimmer or switch and a receptacle or jack

LUTRON

Have Questions? Call the Lutron Hotline 800-523-9466
To order—Call Lutron Customer Service 610-282-3800

WD-1

Wall mounted dimmer switch in two-gang wallplate

Location: Large Conference Room and Work Room

MANUFACTURER: Lutron Electronics
Vareo VF-10-VWP-2-WH

Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

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Project Name:
National Audubon Society HQ

Type:
Wallbox Dimmer—WD-1

Date:
05/31/07

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VAREO® Controls

Description	Maximum Capacity [1]	Model #
DIMMERS		
Incandescent/Magnetic Low Voltage		
Preset Dimmers		
SMALL CONTROL		
Single pole/multi-location	600W/VA	V-600-
Single pole/multi-location	1000W/VA	V-1000-
Note: For multi-location switching, use with VETS-R-. Not for use with mechanical 3-way or 4-way switches.		
Fluorescent Dimming with Hi-lume® and Eco-10™ (ECO-Series) Electronic Ballasts		
Preset Dimmers		
SMALL CONTROL		
Single pole/multi-location	20 ballasts / 8A	VF-10-
Note: For use with line-voltage control electronic dimming ballasts only. Requires neutral wire connection. For multi-location switching, use with VETS-R-. Not for use with mechanical 3-way or 4-way switches.		

VAREO® Controls

STANDARD MULTIGANG WALLPLATES [4]

1-Gang

Single-gang wallplate is provided with Vareo product.

2-Gang

FOR TWO DIMMERS OR SWITCHES

4.56"W (116mm) x 4.56"H (116mm) x 0.30"D (7.6mm) VWP-2-

WD-1 (continued)

MANUFACTURER: Lutron Electronics

Project Name:
National Audubon Society HQ

Type:
Wallbox Dimmer—WD-1

Date: 05/31/07

Page 2 of 2

Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
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SPECIFICATION SUBMITTAL

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Preset Dimmer — Electronic Tapswitch

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- Full line of matching devices and accessories
- Simple selection – all dimmers operate as single pole or 3-way

DIMENSIONS

SPECIFICATION SERIES STANDARD FEATURES

- Square Law Dimming
- Power-failure memory
- Captive tapswitch and linear slider
- Front accessible service switch (FASS™)
- Heavy-duty components for surge protection and long product life
- Voltage compensation
- Superior RFI suppression
- Precise color matching
- Electrostatic discharge tested

Lutron controls are rated at 120VAC, 60Hz unless otherwise noted.

JOB NAME	AREA CONTROLLED
LOCATION	JOB NUMBER
TITLE	PAGE NO.

CONTROLS AND ACCESSORIES

Preset Dimmers

Electronic Tapswitches

Fan-Speed Controls

Auxiliary Tapswitches

Receptacles

15A Receptacles — 20A — 15A GFCI Receptacles — 20A — 15A Isolated Ground Receptacles — 20A

Telephone/Cable TV Jacks

Single Telephone Jack — Double — Triple — Cable TV Jack — Telephone/ Cable TV Jack

Ports

6-Port Frame

Custom Multigang Wallplates

2-gang, 3-gang and 4-gang for dimmers/switches

2-gang for a dimmer or switch and a receptacle or jack

WD-2

Wall mounted dimmer switch in single-gang wallplate

Location: Located in Pantry to control Type H in Lounge/Reception

MANUFACTURER: Lutron Electronics
Vareo VF-10-WH

Revised:	Description
5/31/07	ISSUED FOR 60% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
6/26/07	ISSUED FOR 100% PACAKGE
8/2/07	ADDED OS-3; REVISED WD-2
10/4/07	ADDED OS-4; REVISED OS-2
2/8/08	REV OCC SENSORS IN OFFICES

Project Name:
National Audubon Society HQ

Type:
Wallbox Dimmer—WD-2

Date:
05/31/07

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VAREO® Controls

Description	Maximum Capacity [1]	Model #
DIMMERS		
Incandescent/Magnetic Low Voltage		
Preset Dimmers		
SMALL CONTROL		
Single pole/multi-location	600W/VA	V-600-
Single pole/multi-location	1000W/VA	V-1000-
Note: For multi-location switching, use with VETS-R-. Not for use with mechanical 3-way or 4-way switches.		
Fluorescent Dimming with Hi-lume® and Eco-10™ (ECO-Series) Electronic Ballasts		
Preset Dimmers		
SMALL CONTROL		
Single pole/multi-location	20 ballasts / 8A	VF-10-
Note: For use with line-voltage control electronic dimming ballasts only. Requires neutral wire connection. For multi-location switching, use with VETS-R-. Not for use with mechanical 3-way or 4-way switches.		

VAREO® Controls

STANDARD MULTIGANG WALLPLATES [4]

1-Gang

Single-gang wallplate is provided with Vareo product.

2-Gang

FOR TWO DIMMERS OR SWITCHES

4.56"W (116mm) x 4.56"H (116mm) x 0.30"D (7.6mm) VWP-2-

WD-2 (continued)

MANUFACTURER: Lutron Electronics

Revised:	Description
2/8/08	REV OCC SENSORS IN OFFICES
10/4/07	ADDED OS-4; REVISED OS-2
8/2/07	ADDED OS-3; REVISED WD-2
6/26/07	ISSUED FOR 100% PACAKGE
6/22/07	ISSUED FOR 99% PACAKGE
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Project Name:
National Audubon Society HQ

Type:
Wallbox Dimmer—WD-2

Date: 05/31/07

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