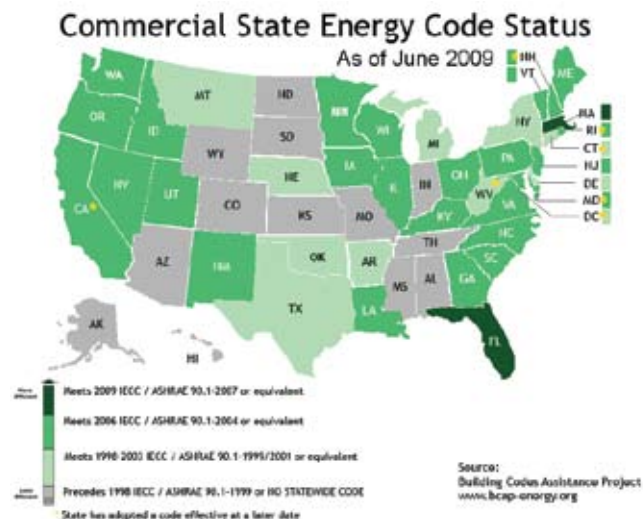# Energy Management

LEVITON®

For most companies, the last time they reaped significant financial benefit from a change in their lighting systems was with an upgrade to more efficient lamps and electronic ballasts. But a lot has changed since then. Now, in virtually every business, there is an opportunity to significantly reduce existing lighting costs further by adopting newly developed energy management control systems.

WHY ADOPT ENERGY MANAGEMENT CONTROLS NOW? IT'S THE CODE.

Energy codes are now the law of the land. From the ASHRAE/IESNA 90.1 Energy Standard and IECC, to LEED, CEC Title 24 2005 and more, federal and state codes are underscoring the need for better energy-saving controls for lighting by either mandating compliance or encouraging it with tax incentives and utility rebates.

COMPETITIVE ADVANTAGE

Energy costs are rising faster than ever before, making the reduction of energy consumption by businesses an increasingly more powerful competitive advantage. With over 38% of a typical business' energy bill related to lighting, that puts energy saving controls for lighting squarely at the center of any effort to reduce energy expenditures.

Commercial State Energy Code Status
As of June 2009

Meets 2009 IECC / ASHRAE 90.1-2007 or equivalent

Meets 2006 IECC / ASHRAE 90.1-2004 or equivalent

Meets 1998-2003 IECC / ASHRAE 90.1-1999/2001 or equivalent

Precedes 1998 IECC / ASHRAE 90.1-1999 or NO STATEWIDE CODE

State has adopted a code effective at a later date

Source:
Building Codes Assistance Project
www.bcap-energy.org

green is good

Green technologies just make sense from an economic, environmental and compliance standpoint. And that's not going to change because the factors driving the movement towards better energy efficiency, like skyrocketing fossil fuel costs and codes mandating higher standards of building efficiency, are here to stay.

The fact is that lighting consumes a significant portion of the energy in a typical building and that's why lighting controls that reduce the draw on electricity through dimming and automatic switching can reduce consumption dramatically. Not only do these controls make more efficient use of lighting, they can interact with HVAC and other building systems to extend savings. Another benefit of keeping lights lower (or even off) is that, when it's warm outside, it reduces cooling requirements and lowers utility bills even further.

Yet there's more to the increasing demand for lighting controls on both an individual and a public level. There is a new awareness of the importance of reducing our energy consumption not only to make us less reliant on fossil fuels but also to protect our natural resources, including the air we breathe. Then there's the compliance side. Although codes do vary on a state and local basis, the trend throughout the country is clearly towards mandating higher and higher standards of energy efficiency for all types of buildings, including retrofits, existing building upgrades and new construction. Lighting controls are required to meet some of these codes, while in others they may be one of several options for meeting standards.

No company offers a broader range of lighting control products for optimizing energy efficiency than Leviton. We offer sensors, dimming systems, timers and relay systems for creating energy-saving lighting control systems for every imaginable type application, in any environment. We've even got lampholders and sensors for manufacturers producing today's most energy-efficient fluorescent fixtures. All from a company that has been producing innovative, reliable products for over 1øø years.

LEVITON PRODUCTS LEVERAGE ENERGY-SAVING TECHNOLOGIES

DIMMED LIGHTING

One of the easiest ways to reduce electricity consumption is via a combination of dimmers and task lighting. Not only do dimmed lights draw less electricity, they produce less heat— and that can reduce cooling costs, which can really add up in warmer climates. As a general rule: the more you dim, the more you save. Dimming also enables bulbs to last longer.

Leviton dimming products include: box-mounted dimmers; scene dimming stations and controllers; and sophisticated multizone dimming systems that incorporate dimming and relay cabinets, architectural lighting, and more. These products can help buildings meet mandatory ASHRAE 9ø.1-2øø4 and CEC Title 24 requirements.

Dimming incandescent lights by:	Reduces energy consumption by:
1ø%	1ø%
25%	2ø%
5ø%	4ø%
75%	6ø%

OCCUPANCY DETECTION

Occupancy sensors provide automatic switching of lighting and building loads. Not only does this ensure that lights go off when not needed, hands-free switching is extremely convenient because it takes the burden away from whomever is using the space. A new breed of devices, manual-on occupancy sensors, provides maximum savings by requiring user intervention and eliminating false-on triggers. Actual savings from occupancy sensors vary greatly depending on usage patterns and occupant habits.

Leviton's occupancy sensor line includes commercial and residential, wide-view and high-bay, dual-relay and even outdoor models for a broad range of coverage areas and patterns. These products can help buildings meet mandatory ASHRAE 9ø.1-2øø4, IECC-2øø6 and CEC Title 24 requirements, and earn LEED certification.

DAYLIGHT HARVESTING

Standard | Savings

Cost of Lighting Energy $/sf/yr

40¢ | 32¢ | -8¢ | -13¢ | 19¢ | -6¢ | 13¢

From Task Lighting (20%)
From Daylight Harvesting (35%)
From Occupancy Sensors (18%)

Source: Midwest Energy Efficiency Alliance

Daylight harvesting technology maintains a programmed level of light by precisely adjusting the output of a room's luminaires to compensate for the contribution of natural daylight. A typical system uses photocells to measure the ambient light and then automatically dim or brighten to achieve a user-programmed level of light. An alternative to dimming is bi-level or multilevel switching in which luminaires in different zones are switched on and off based on ambient light levels. By utilizing free light, daylight harvesting can reduce electricity bills as much as 6ø%.

Leviton offers photocells, occupancy sensors, relay cabinets, dimmers and dimming systems that can be integrated into daylight harvesting systems. These products can help buildings meet mandatory IECC-2øø6 and CEC Title 24 requirements, and earn LEED certification.

TIMED CONTROLS

Using timers to automate switching of lights and other loads is a sure-fire way to ensure that devices are only on for a set period of time. In the home, timer switches automate switching based on programmed or preset times of day (or on manual selection). Whether it's to keep something from staying on too long, like with a hot tub, or to automate both on and off so that the load is on for a finite period of time, like with a pool filter, electronic timers save electricity. Sophisticated relay systems provide advanced load scheduling based on chronological or astronomical time and are compatible with other lighting controls and sensors for a comprehensive approach that maximizes overall energy savings.

Leviton offers preset and programmable timer switches as well as relay systems that integrate with lighting and other building controls within commercial and industrial applications. These products can help buildings meet mandatory ASHRAE 9ø.1-2øø4, IECC-2øø6 and CEC Title 24 requirements, and earn LEED certification.
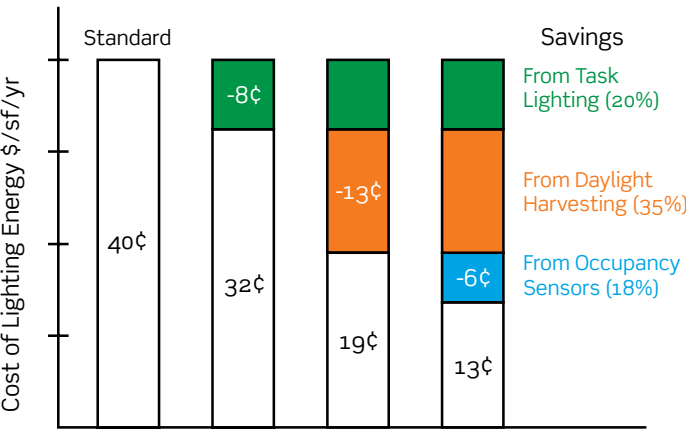
INTEGRATION WITH BUILDING CONTROLS

When lighting, security, HVAC and other building management systems are integrated into a single control system, optimal energy efficiency is one of a host of benefits. Integrated systems provide superior interoperability as well as an essential function for companies participating in load shedding programs —and can garner points towards LEED certification.

Leviton energy management components are building blocks that can interact with other Leviton products and, many of them, with non-Leviton building controls.

LEVNET RF WIRELESS
SELF-POWERED SOLUTIONS

LEVNET RF WIRELESS SELF-POWERED SOLUTIONS

Wireless self-powered technology means no new wiring, external power or batteries. Leviton LevNet RF Wireless Self-Powered Solutions are easy to install and maintenance-free, saving ongoing labor and material costs while saving energy.

Leviton is part of the EnOcean Alliance dedicated to the advancement of self-powered interoperable wireless building control systems. EnOcean technology allows energy harvesting LevNet RF transmitters to operate indefinitely without the use of batteries. The motion of a switch actuation, light on a solar cell, or temperature differentials in the environment provide power to Leviton transmitters, allowing zero maintenance wireless devices. The LevNet RF line includes multiple products that operate in the noncrowded 315 MHz band offering greater transmission range than other wireless technologies and minimal competitive traffic.

GREEN SOLUTIONS

Energy Savings
- Place virtually anywhere and control any LevNet RF or compatible EnOcean Alliance wireless device within range - the opportunities for energy savings are limitless
- Wireless self-powered occupancy sensors turn lights and other devices off when a room is unoccupied
- Wireless self-powered temperature sensors set heating or air conditioning to an "economy" setting
- Master switch stops current to devices that draw standby power and ensures lights, fans, and other devices are off when exiting

Material Savings
- No wires to run - reduce the amount of materials, labor, and time on installation
- No batteries or external power required - save on materials, energy, and waste from battery manufacturing and disposal

Minimize Costs
- Shorten electrical planning by hours
- Reduce labor required for initial installation and ongoing maintenance
- Flexible, adaptable systems can be moved or expanded with ease after initial installation
- Avoid wall repairs in retrofit applications
- Eliminate switch legs, traveler wires, and other raw materials

Ideal Uses
- Energy-wise lighting and HVAC control, hospitality energy management, classroom automation, building remodeling, retrofit projects and more.
- All LevNet RF devices are NAFTA/Buy America compliant.

enocean®alliance

No Wires. No Batteries. No Limits.

WIRELESS SENSORS

Infrared Occupancy Sensors, Wall Switch Receivers, and Remote Switch

Leviton combines occupancy sensing with wireless and self-powered technology for savings on energy, labor, material and time. With no additional wiring needed for installation, it's the ideal wireless solution for retrofit projects that need occupancy sensors or multi-location (3-way or 4-way) switching.

Installation is quick and easy. Simply replace the existing wall switch with the Wall Switch Receiver, mount the Wireless Self-Powered Occupancy Sensor and installation is complete. With no wires to run, product and installation costs combined can be as much as 5ø% less than conventional hardwire systems. The Wall Switch Receiver and Wireless Remote Switch can also be used for easy and convenient wireless multi-location switching.

FEATURES

Passive Infrared Occupancy Sensor

• Simple, fast installation with no additional wiring

• Auto-ON/Auto-OFF and Manual-ON/Auto-OFF modes

• Self-powered – a built-in solar cell draws on available ambient light to power itself indefinitely without the need for batteries or external power

• Sensors can be placed in locations difficult to hardwire in both retrofit and new construction applications

• Walk-thru feature turns the lights off after momentary occupancy
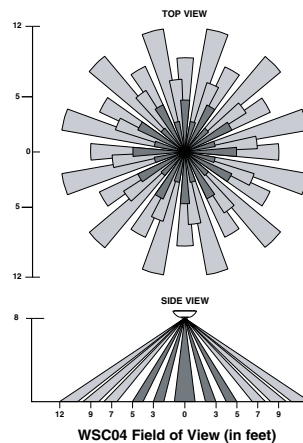
Wall Switch Receiver and Remote Switch

• Simple, fast installation with no additional wiring

• Takes the place of traditional single-pole wall switches and fits in a standard single-gang wall box

• Provides local control and manual override (WSS1ø models only)

• Provides remote local control and manual override (WSSøS model only)

• Convenient wireless multi-location (3-way or 4-way) switch solution – simply link the Wall Switch Receiver and as much as six Wireless Self-Powered Remote Switches – no additional wiring needed

• Responds to signals from the occupancy sensor, automatically shutting off lights when the room is vacant

• Self-powered, draws on kinetic energy to charge itself each time the button is pushed (WSSøS model only)

• Relay uses zero-crossing circuitry for enhanced reliability and long-life operation

• Compatible with incandescent, fluorescent and low-voltage lighting

• Compatible with electronic and magnetic ballasts

• Neutral and non-neutral models available (WSS1ø models only)

TESTING & CODE COMPLIANCE (WSCxx, WSS1ø & WSSøS models only)

• CEC Title 24 Compliant

• FCC Certified for Wireless Communication

• C-ETL/ETL Listed to UL5ø8 (WSS1ø and WSSøS models only)

• Backed by Limited Five-Year Warranty

TOP VIEW

SIDE VIEW

WSC15 Field of View (in feet)
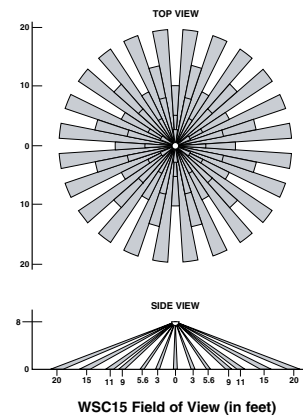
Major Motion

Minor Motion

TOP VIEW

SIDE VIEW

WSC04 Field of View (in feet)

MORE WIRELESS SELF-POWERED SOLUTIONS

WIRELESS REMOTE SWITCHES
• Controls virtually any on/off device

Single Push ON/OFF Decora™ Remote Switch

Single Rocker Decora™ Switch

Dual Rocker Decora™ Switch

Handheld 4-Button Remote

Hotel Key Card Switch
• Designed for the hospitality industry, the key card is inserted into the switch and a wireless signal is sent to a receiver(s) that controls devices in the room

Thermostat
• Adjusts temperature based on "occupied" and "unoccupied" signals

3 x 3 Single Rocker Switch

3 x 3 Dual Rocker Switch

WIRELESS LINE VOLTAGE RECEIVERS
3-Wire Relay Receivers
• Basic control for up to 3ø wireless light switches

5-Wire Relay Receivers
• Converts an existing pole switch into a 3-way (or multi-way) switch without running any wire
• Use for larger load ratings and motor load control

WIRELESS PLUG-IN RECEIVERS
Plug-In Dimmer Receiver
• Dimming and relay (on/off) control of devices

Plug-In ON/OFF Relay Receiver
• Relay (on/off) control of devices

WIRELESS LOW VOLTAGE RECEIVERS
2, 3, and 4-Channel Room Controller
• Manual and auto-OFF control of lights when no one is in a room
• Use with as much as four power packs and low-voltage sensors
• Available as 2 Inputs/2 Outputs or 1 Input/3 Outputs or ø Input/4 Outputs models

2-Channel Shade Controller
• Enables manual and automated control of window shades and blinds

4- and 8-Channel Relay Receiver
• Connects wireless switches and sensors to new or existing control systems

WIRELESS TRANSMITTERS
SLT Circuit Interlock Transmitter
• Replaces wires between an electrical load and a switch with an RF control signal to control loads

4-Channel SLT Transmitter
• Connects 4 GPIO signals from the HVAC controller to control lighting

WIRELESS ACCESSORIES
RS-232 Serial Box Data Interface
• Connects to any system that uses an RS-232 serial port

Signal Strength Meter
• Portable tool for measuring and indicating the received field strength (RSSI) of EnOcean tele-grams and disturbing radio activity at 315MHz
• Supports electrical installers during the planning phase
• Verifies whether the installation of Leviton LevNet RF products are possible at the positions planned

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LevNet RF solutions are powered by EnOcean and compatible with other EnOcean Alliance wireless devices.

LEVNET RF WIRELESS SELF-POWERED SOLUTIONS

WIRELESS SENSORS (USE WITH WSS1Ø-ØDX, WSS1Ø- GDX, OR WSSØS-PØX)

DESCRIPTION	CAT. NO.*	COVERAGE	COLOR
PIR Occupancy Sensor, 45ØSF	wscø4-iøw	36Ø°, 45ØSF	W
PIR Occupancy Sensor, 15ØØSF	wsc15-iøw	36Ø°, 15ØØSF	W

WIRELESS SWITCHES (USE WITH WSCØ4-lØW OR WSC15-lØW)

DESCRIPTION	CAT. NO.*	RATING	COLOR
Decora™ Wall Switch Receiver	wss1ø-ødx	Incandescent: 8øøW @ 12øV. Fluorescent Ballasts: 12øøVA @ 12øV, 27øøVA @ 277V. Motor: 1/4 HP Load @ 12øV	W, I, A, T, G, E
Decora™ Wall Switch Receiver, Non-Neutral for Retrofit Applications	wss1ø-gdx	Incandescent: 8øøW @ 12øV. Fluorescent Ballasts: 12øøVA @ 12øV, 27øøVA @ 277V. Motor: 1/4 HP Load @ 12øV	W, I, A, T, G, E

WIRELESS REMOTE SWITCHES

DESCRIPTION	CAT. NO. *	COLOR
Single Push ON/OFF Decora™ Remote Switch	wssøs-pøx	W, I, A, T, G, E
1-Gang Single Rocker Decora™ Switch	wssøs-døx	W, I, A, T, G, E
1-Gang Dual Rocker Decora™ Switch	wssøs-d2x	W, I, A, T, G, E
Handheld 4-Button Remote	wssøs-røw	W
Hotel Key Card Switch	wssøs-høw	W
Thermostat, 4VAC	wsøth-søø	W
3 x 3 Single Switch	wssøs-eøx	W, E
3 x 3 Dual Switch	wssøs-e2x	W, E

WIRELESS LINE VOLTAGE RECEIVERS

DESCRIPTION	CAT. NO. *	COLOR
3-Wire 5øø Relay Receiver, 12øVAC	wspø5-ø1ø	W
3-Wire 12øø Relay Receiver, 277VAC	wspø5-ø2ø	W
3-Wire 1øøø Relay Receiver, 24øVAC	wspø5-ø8ø	W
5-Wire 15øø Relay Receiver, 12øVAC	wsp12-ø1ø	W
5-Wire 32øø Relay Receiver, 277VAC	wsp12-ø2ø	W
5-Wire 3øøø Relay Receiver, 24øVAC	wsp12-ø8ø	W
5-Wire 3øø Relay Receiver, 24VAC	wsp12-r1ø	W

WIRELESS PLUG-IN RECEIVERS

DESCRIPTION	CAT. NO. *	COLOR
Plug-In Dimmer Receiver	wsgøs-d1t	T
Plug-In ON/OFF Relay Receiver	wsgøs-s1t	T

WIRELESS LOW VOLTAGE RECEIVERS

DESCRIPTION	CAT. NO. *	COLOR
2-Channel Room Controller, 2 Inputs/2 Outputs, 8-3øVDC	wsørc-2øø	W
3-Channel Room Controller, 1 Input/3 Outputs, 8-3øVDC	wsørc-3øø	W
4-Channel Room Controller, ø Input/4 Outputs, 8-3øVDC	wsørc-4øø	W
2-Channel Shade Controller, 8-3øVDC	wsørc-søø	W
4-Channel Relay Receiver, 8-3øVAC or 8-3øVDC	wspas-lv4	W
8-Channel Relay Receiver, 8-3øVAC or 8-3øVDC	wspas-lv8	W

WIRELESS TRANSMITTERS

DESCRIPTION	CAT. NO.*	COLOR
SLT Circuit Interlock Transmitter, 12øVAC	wsslt-ø1ø	W
SLT Circuit Interlock Transmitter, 24øVAC	wsslt-r1ø	W
4-Channel SLT Transmitter, 8-28VDC	wsslt-gpø	W

WIRELESS ACCESSORIES

DESCRIPTION	CAT. NO. *	COLOR
RS-232 Serial Box Data Interface	wsørf-3øø	W
Signal Strength Meter	wsmet-ø1ø	W

* Colors available as listed, add suffix to catalog number as follows: Ivory (-I), White (-W), Almond (-A), Light Almond (-T), Gray (-G), Ebony (-E).

OCCUPANCY SENSORS

SAVES ON ENERGY COSTS

Lighting energy consumption has climbed to over 38% of all energy used in today's commercial facilities. Add the spiraling cost of energy to the mounting impact of its production on our environment and one comes to a simple conclusion: turning lights off in unoccupied spaces is not only an option but a necessity. And one of the best ways to ensure that this happens is by installing occupancy sensors.
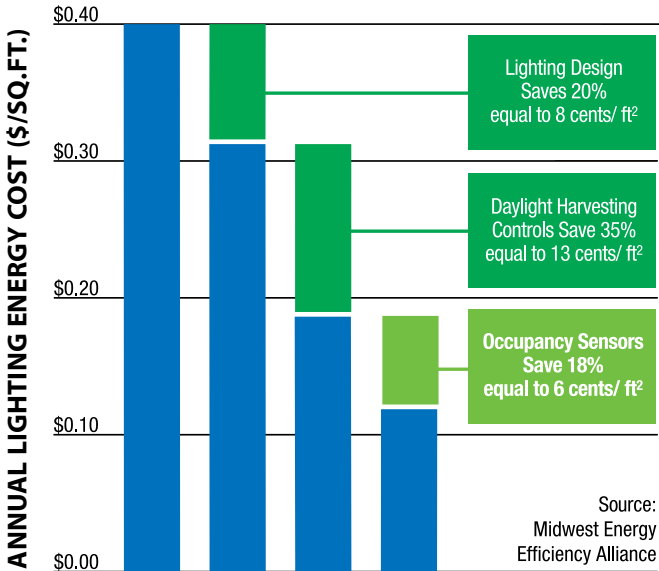
An E Source survey, focusing only on the addition of occupancy sensors, highlights the significant energy savings their adoption can provide

TYPICAL SAVINGS THRU OCCUPANCY SENSORS

TYPE OF ROOM	ENERGY SAVINGS %
Private Office	13 to 15%
Open-Plan Office	20 to 28%
Classroom	40 to 46%
Conference Room	22 to 65%
Bathrooms	30 to 90%
Corridors	30 to 80%
Storage Area	45 to 80%

According to a Midwest Energy Efficiency Alliance study, their cost-saving potential is considerable:

ANNUAL LIGHTING ENERGY COST ($/SQ.FT.)

- Lighting Design Saves 20% equal to 8 cents/ ft^2
- Daylight Harvesting Controls Save 35% equal to 13 cents/ ft^2
- Occupancy Sensors Save 18% equal to 6 cents/ ft^2

Source: Midwest Energy Efficiency Alliance

SAVES ON MATERIAL AND LABOR COSTS

A study by the Electrical Power Research Institute found that while the increased On/Off switching by occupancy sensors reduced fluorescent lamp life from 34,000 to 30,000 hours, it also dramatically increased lamp longevity from 3.9 years for always-on lamps to 6.8 years by not wasting lamp life during unoccupied hours. Despite the fact that the energy savings from occupancy sensors remains their most compelling feature, the reduced frequency of lamp replacement over time and the associated decline in maintenance costs can also provide significant savings. And, last but not least, their ease of installation makes their use a cost effective and viable energy saving alternative in both new construction and retrofit applications.

SAVES ON ENERGY CODE COMPLIANCE COSTS

The need to optimize building energy performance has resulted in a variety of mandatory energy codes. Occupancy sensors provide a very cost-effective means of compliance with these codes. They also offer an easy way to achieve higher levels of voluntary certification for implementation of energy saving measures, resulting in potential income tax credits for building owners or tenants who meet these "green" standards.

ASHRAE 9Ø.1-2ØØ8 ENERGY STANDARD

In 2ØØ4, the US Department of Energy mandated that state energy codes must meet or exceed their ASHRAE 9Ø.1- 1999 Energy Standard. In addition to other requirements, this standard calls for occupancy sensors that turn lights off within 3Ø minutes after a space is vacated as one solution for required automatic shut-off of lights in commercial buildings greater than 5ØØØ square feet. In addition, occupancy sensors are required in certain non-K-12 classrooms, conference/meeting rooms and employee lunch and break rooms if no multi-scene control is in place.

IECC 2ØØ6 LIGHTING CONTROL PROVISIONS

Provisions of the International Energy Conservation Code (IECC) have been adopted by many levels of government around the United States in formulating their requirements for minimum energy efficiency in commercial building design. The lighting load reduction controls (Section 8Ø5.2.2.1) section of this code allows occupancy sensors to be used in open areas as an alternative to a provision requiring manual control that uniformly reduces lighting by at least 5Ø%.

CALIFORNIA ENERGY COMMISSION (CEC) TITLE 24 PROGRAM

The California Energy Commission (CEC) took the lead in exceeding the ASHRAE 9Ø.1-1999 Energy Standard with its Title 24 program. It applies to nonresidential and residential high-rise buildings as well as hotel/motel occupancies. Key provisions now in effect include:

A. **Area Controls:** An occupancy sensor that turns lights off within 3Ø minutes after the space is vacated for all areas enclosed by ceiling height partitions.

B. **Multi-Level Lighting Controls:** General lighting for any enclosed space 1ØØ sq. ft. or larger where connected lighting load exceeds Ø.8 watts per sq. ft. for the space and has more than one light source shall have at least one control step that is between 3Ø% and 7Ø% and allow the power of all lights to be manually turned off. (Occupancy sensors that switch alternate rows of lighting fixtures based on occupancy are a possible solution).

C. **Shut-off Controls:** For every floor, all interior lighting must have a separate automatic control – an occupancy sensor or some other device – capable of automatically shutting off the lighting. Occupancy sensor is required for Offices ≤ 25Ø sq. ft.; Multipurpose room < 1ØØØ sq. ft.; Classrooms of any size; Conference rooms of any size. Shall allow lights to be manually shut off regardless of sensor status.

D. **New Single and Low-Rise Residential Structures:** Bathroom, garage, laundry room, utility room and outdoor lighting in single residences as well as lighting in common areas of low-rise residential buildings with four or more dwelling units must be from high-efficacy luminaires. If luminaires are used in these locations that are not high efficacy, occupancy sensors must control them. Lighting in other areas of residential buildings that is not from high-efficacy luminaires is only permitted if controlled by either a dimmer switch or an occupancy sensor.

E. **Demand Responsive Lighting Controls:** Retail buildings with sales floor areas > 5Ø,ØØØ sq. ft. require automatic demand responsive lighting controls; uniformly reduce lighting power consumption ≥ 15%; Exception: Buildings where > 5Ø% lighting power is controlled by daylighting controls.

LEED VOLUNTARY CERTIFICATION PROGRAM

A voluntary program developed and administered by the U.S. Green Buildings Council (USGBC), LEED (Leadership in Energy and Environmental Design) is a four-tier rating and certification system designed to encourage sustainable building practices. In addition to their importance for energy code compliance, occupancy sensors can also help a project qualify for LEED tier certifications. Besides to its focus on daylight harvesting in particular to reduce a building's operating costs, the LEED program also encourages the use of occupancy sensors in intermittently occupied spaces for better control of lights and HVAC systems to boost overall energy savings. LEED requires compliance with ASHRAE and as such occupancy sensors are required.

EPACT (ENERGY POLICY ACT OF 2ØØ6)

Tax deductions are available for buildings that reduce lighting energy below ASHRAE 9Ø.1-2ØØ4 by at least 25% with a sliding scale up to 5Ø% savings. Lighting controls must comply with ASHRAE 9Ø.1-2ØØ1 to qualify plus the addition of bi-level lighting control which can be met with dual-relay occupancy sensors and dimming. For more information, visit leviton.com/cenergycodes.

OCCUPANCY SENSORS

THE RIGHT TECHNOLOGY... THE RIGHT SOLUTIONS
Leviton has combined over a century of experience in the electrical industry with the latest available technologies to offer the most comprehensive single source for energy-saving occupancy sensors. From passive infrared (PIR) and ultrasonic to multi-technology occupancy sensors that combine the best features of both, Leviton offers the widest range of occupancy sensors and expertise available to help tailor an optimal code-compliant, occupancy sensor solution to meet your specific retrofit or new construction needs.

WE IDENTIFY OCCUPANCY SENSOR OPPORTUNITIES
Our exclusive Dollars & Sensors software helps you determine which occupancy sensors should go where in your facility. You also get a quick, accurate payback analysis on your occupancy sensors investment. Dollars & Sensors will do for you in minutes what it takes other programs to complete in a week.

WE SUPPORT YOUR OCCUPANCY SENSOR INITIATIVES FOR NEW CONSTRUCTION
Leviton stands ready with a host of helpful services to assure your project's success. We start with the largest sales force in the country, including Regional Lighting Control Specialists who stand ready to address your complex occupancy sensor issues. Our team of engineers can also help you plan your occupancy sensor energy solutions program. Just supply us with your facility's blueprints or CAD drawings and we will spec in the appropriate energy-saving occupancy sensors right on your layout. We'll also give you a bill of materials that you can take to your preferred electrical distributors to select the best competitive bid. Last but not least, we back our installations with technical customer service that is second to none.

ABOUT SENSING TECHNOLOGIES
Passive Infrared (PIR)
Infrared occupancy sensors are passive devices designed to detect the movement of heat-emitting bodies. They are installed to monitor areas where there are no physical obstructions to block the sensor's field of view. HOW IT WORKS: People naturally emit a small amount of infrared heat. As a person passes through the field of view, the sensor detects the motion as a change in the infrared background and responds by switching on area lights. After the field of view is unoccupied for a user-defined delayed-off time, the sensor will automatically turn off the lights.

Ultrasonic (US)
Ultrasonic sensing technology provides highly accurate small-motion detection. Leviton sensors employing ultrasonic technology are well suited to monitoring areas, especially smaller or narrow ones, with inanimate objects (such as furniture) that block the line of site and hence are likely to block the field of view of PIR sensors. They are also ideal where more sensitive detection is required. HOW IT WORKS: Ultrasonic occupancy sensors generate high frequency sound waves beyond the capability of human hearing, due to the Doppler Effect. These controls are active: continually emitting sound waves and monitoring changes in the return time of the reflected sound waves. Movement in the sound wave field causes a change in wave frequency and the sensor responds by switching on area lights. When the change in frequency is no longer detected after a delayed-off time, the sensor turns off the lights. Leviton ultrasonic sensors operate at a frequency outside the range of most hearing aid products and will not interfere with their ability to operate properly.
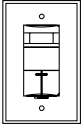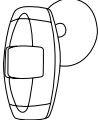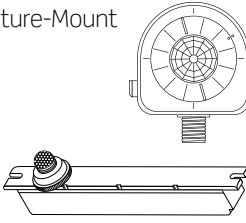
Multi-technology
Multi-technology occupancy sensors combine ultrasonic sensing for maximum sensitivity with PIR technology to prevent false triggers from air conditioning and corridor activity. These sensors are ideal for large, open areas including office areas with cubicles, general workspaces, warehouse and storage facilities, cafeterias, and public areas in commercial facilities. HOW IT WORKS: Leviton multi-technology sensors utilize both sensor technologies to determine when to turn the lights off.

Adaptive Definition
A dedicated internal microprocessor continually analyzes the room environment and adjusts itself automatically. The internal timer, detection sensitivity and thresholds are automatically adjusted. Once installed, a sensor incorporating adaptive technology should not require manual adjustment or calibration.

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ABOUT DIFFERENT SENSOR DESIGNS

Sensor Type		When to Use
Wall Switch		This sensor replaces an existing wall switch. Get both occupancy sensing and manual on/off switching in a single device.
Ceiling-Mount		For 18ø° or 36ø° coverage of an area (36ø° sensor shown).
Wall-Mount		For coverage of irregularly shaped areas and those with varying ceiling heights, as well as narrow hallway and high-bay corridor applications. For detection in spaces outside the field of view of other occupancy Adjustable swivel neck rotates 8ø° vertically and 6ø° horizontally to allow wall or ceiling mount installation.
Fixture-Mount		For mounting on or in fixtures.

SELECTION & PLACEMENT

Sensors can be mounted in the middle of walls, in corners, or on ceilings. Occupancy sensors must be intelligently placed in order to ensure that motion is detected throughout an entire space. With a variety of models from which to choose, care should be taken to select the proper combination of sensors to cover an entire area with motion detection.

Factors to consider before selecting and placing an occupancy sensor include:

• Size and shape of area needing coverage compared to ranges of occupancy sensors

• Obstacles that may block the sensor's line of sight

• How much activity there is in a space

• Ceiling height

• Airflow that can falsely register as motion

• Location of HVAC ducts

Leviton's Lighting Management Systems Division provides a complimentary occupancy sensor layout service. This service provides suggested sensor selection and placement on a customer's drawings in either paper or electronic form, along with a bill of material detailing the components necessary for that layout. Register for this complimentary service at http://portal.leviton.com.

OCCUPANCY SENSOR INSTALLATION TYPES AND TIPS

Passive Infrared Occupancy (PIR) Sensors
PIR sensors use a semiconductor detector to sense the movement of infrared heat emitted from the human body. They require an unobstructed line-of-sight for accurate detection. Any furniture or decorations that block the sensor's view will prevent an occupant's movement from being "seen" by the sensor. The sensor will respond when a person moves across the sensing zones monitored by a multi-faceted Fresnel lens. Generally, PIR sensors respond to larger movements than ultrasonic sensors and work best in small, enclosed areas where there are high levels of occupant motion. If fine motion detection is required, consider using an ultrasonic or multi-technology occupancy sensor.

Placement Tips:
Locate PIR sensors with a clear line-of-view of the area to be covered. Place the sensor perpendicular to likely movement as a person is most easily detected when crossing the boundary between one Fresnel lens element and another.
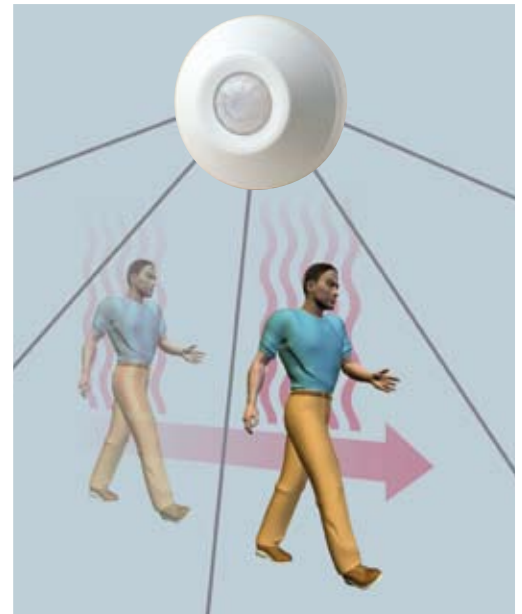
Ultrasonic Occupancy Sensors
Ultrasonic occupancy sensors act as transmitter/receivers, continuously sending out ultrasonic sound waves and responding whenever they "hear" a change in the transmitted wave's frequency caused by a shift in position of a person relative to the
sensor (doppler shift). They do not rely on line-of-sight sensing and are, therefore, more effective in sensing motion around corners and in cubicles. They are also more sensitive to smaller motion than passive infrared sensors and are particularly appropriate for locations where only small amounts of motion are taking place.

Placement Tips:
Since ultrasonic sensors are omni-directional, they are capable of detecting motion outside of the room they are monitoring if their coverage range extends beyond doorways into adjacent rooms or hallways. To avoid this, aim unidirectional sensors away from doorways or room openings and avoid placing sensors where their signal can extend through these openings into adjacent areas. False-triggering in response to air currents can be avoided by placing ultrasonic sensors no closer than 6 feet from HVAC ducts. Coverage ranges can be affected by the nature of a room's surfaces. Carpeting, partitions and ceiling tiles will all absorb ultrasonic waves, reducing coverage range. Hard surfaces, on the other hand, such as tile or metal partitions will result in increased sensitivity. Use care when exceeding a mounting height of more than 8 feet. Mounting height greater than this may reduce sensitivity to movement around desks and work surfaces as increased heights increase the overall room volume being monitored.

Multi-Technology Occupancy Sensors

Multi-technology occupancy sensors combine both passive infrared and ultrasonic technologies to provide the most reliable detection means possible. They are triggered ON by passive infrared sensing and, once triggered, are kept ON by either a passive infrared or an ultrasonic detection signal. They combine the best of both technologies with long-range detection from infrared technology and high sensitivity from ultrasonic technology.

Placement Tips:

Because these sensors use PIR technology to initially detect occupancy and to maintain detection, they must be located with an unobstructed line-of-site view of a room's entrance. As they also include ultrasonic technology to maintain detection, they must be located at least 6 feet from air handling ducts. Unidirectional units should be placed away from room entrances. Locate the sensors so that the ultrasonic minor-motion coverage area reaches all areas of the room where small motion work occurs, such as desks and workstations.

UNDERSTANDING SENSOR CATALOG NUMBERS

First 2 Letters	3rd Character: type of product	Last 2 Characters	–	1st Character of Suffix: sensor technology	2nd Character of Suffix: voltage	3rd Character of Suffix: color
OS = Occupancy Sensor OD = Occupancy Detector WS = Wireless Sensor	C = Ceiling Mount W = Wall Mount P = Power Pack A = Add-A-Relay S = Switch Mount F = Fixture Mount D = Dimmer G = Plug R = Room Controller ø = N/A	ø2 = 2øøsf or 2A ø4 = 4øøsf or 4A ø5 = 5øøsf or 5A 1ø = 1øøøsf or 1øA 12 = 12øøsf or 12A 15 = 15øøsf or 15A 2ø = 2øøøsf or 2øA øD = Dual relay øS = Self-contained CG = Cage HU = High Bay LR = Long Range MD = Multi-Tech Dual Relay MT = Multi-Tech Single Relay RA = Raceway Adapter WV = Wide View	–	F = 1ø min delayed-OFF for 2nd relay G = Neutral not required I = Infrared M = Multi-technology R = Relay (HVAC) P = Self-powered T = CEC Title 24 Compliant, 2nd Relay U = Ultrasonic ø = N/A	1 = 12øV 2 = 23øV 3 = 347V 4 = 48øV 7 = 277V 8 = 24øV D = 12ø-277V U = Universal N = NAFTA/ Buy America* ø = N/A	W = White I = Ivory A = Almond T = Light Almond G = Gray E = Ebony/Black ø = N/A

*Contact Leviton for NAFTA/Buy America compliant occupancy sensors.

WALL SWITCH

DECORA WALL SWITCH OCCUPANCY SENSORS

Convenient switch and occupancy sensor combo in sleek Decora® style unit. Advanced passive infrared technology provides highly accurate monitoring in a variety of commercial and residential applications. The OSSMD and OSSMT Multi-Tech unit combines passive infrared and ultrasonic technologies to provide maximum sensitivity with immunity to false triggering.

SPECIFICATIONS & FEATURES

COMMERCIAL	ODS1ø	ODS15	ODSøD-ID	ODSøD-TD	OSSNL	OSS1ø	OSSMT-MD	OSSMT-GD	OSSMD-MD	OSSMD-GD	OSSMD-FT
Internal photocell prevents lights from turning on when there is ample natural light (S = self adjusting)	X	S	S	S			X	X	X	X	X
Manual override turns lights on at any time regardless of override setting	X	X	X	X	X	X	X	X	X	X	X
Dual pushbuttons provide manual ON/OFF switching for 2 separate banks from a single unit			X	X					X	X	X
Exclusive automatic "walk-through" sensing increases energy savings by shutting lights within 2-1/2 minutes after momentary occupancy		X	X	X			X	X	X	X	X
Unit beeps to indicate load is going to be switched off automatically	X		X	X							
Choice of "Conference Room" or "Classroom" modes for maximum performance and energy savings in a variety of installations			X								
Manual delayed-off-time settings: 1ø, 2ø, and 3ø minutes, with 3ø-second test mode	X	X	X	X		X	X	X	X	X	X
Manual delayed-off-time settings: 3ø seconds, 3ø minutes, 1 hour, 2 hours					X						
1ø minute delayed-OFF on 2nd relay											X
Three-position service switch with off, auto, on		X	X	X							
Single-pole and 3-way wiring							X	X	X	X	X
Elegant Decora styling complements any interior, uses Decora wallplates	X	X	X	X	X	X	X	X	X	X	X
Fits in standard wallbox; units may be ganged	X	X	X	X	X	X	X	X	X	X	X
Neutral Wire not required for retrofit installations	X	X	X	X					X		X
Night Light mode or "Guide Light" feature					X	X					
Night Light dim feature					X	X					
Patented adjustable integral blinders with 18ø° to 32° field-of-view	X	X	X	X	X	X	X	X	X	X	X
Vandal resistant	X	X	X	X	X	X	X	X	X	X	X
Manual ON/Auto OFF operation for CEC Title 24 compliance	X	X	X	X		X	X	X	X	X	X

IDEAL USES

ODS1ø-ID — Enclosed areas: small offices, conference rooms, storage rooms, copy rooms, closets
ODS15-ID — Commercial areas: small offices, conference rooms, classrooms, stockrooms, lounges, restrooms, warehouses
ODSøD-ID/ODSøD-TD — Classrooms, multimedia and conference rooms, day care centers, office, lounges
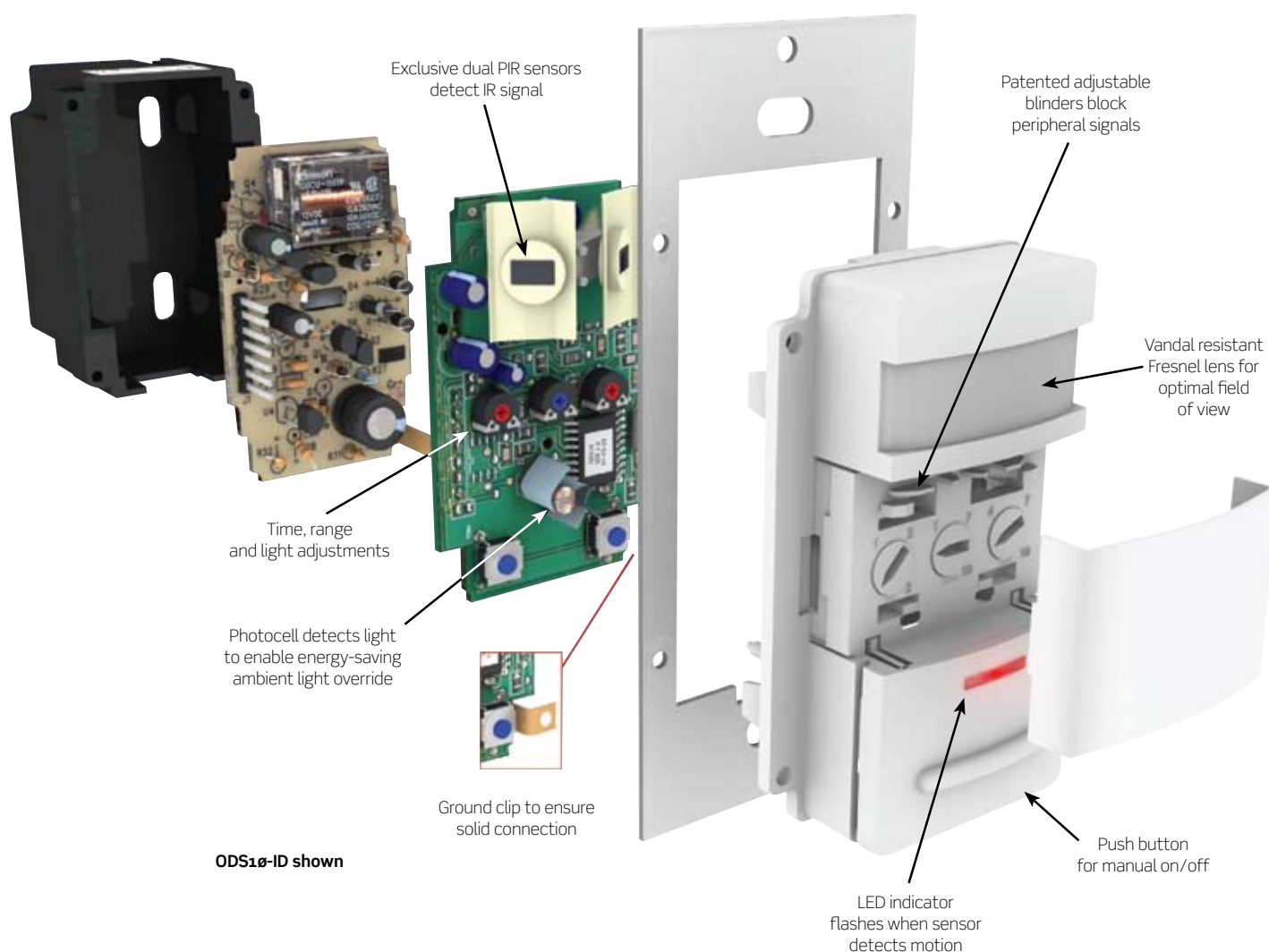OSSNL/OSS1ø — Hotel restrooms, hospital restrooms, conference rooms, class rooms, small offices, lounges, storage areas, and bathrooms
OSSMD — Bi-level offices, partitioned areas, bathrooms
OSSMT — Private and executive offices, conference rooms, storage areas, restrooms, classrooms, lounges, and training areas

TESTING & CODE COMPLIANCE

• UL Listed (ODSxx, OSSxx, and OSSMT-MD models)
• CUL/US Certified (ODSøD models)
• ETL/cETL Listed UL5ø8/CSA C22.2 No. 14 (OSSMD and OSSMT-GD models)
• CSA Certified
• CEC Title 24 compliant (ODSXX, OSS1ø, and OSSMX models) and meets ASHRAE Standard 9ø.1 requirements
• Backed by a Limited Five-Year Warranty

Exclusive dual PIR sensors
detect IR signal

Patented adjustable
blinders block
peripheral signals

Vandal resistant
Fresnel lens for
optimal field
of view

Time, range
and light adjustments

Photocell detects light
to enable energy-saving
ambient light override

Ground clip to ensure
solid connection

ODS1ø-ID shown

Push button
for manual on/off

LED indicator
flashes when sensor
detects motion

SPECIFICATIONS & FEATURES

RESIDENTIAL	IPP15	PR15Ø	PR18Ø
Ambient light override prevents lights from turning on when there is ample natural light (S = self adjusting)		X	X
True 3-way occupancy sensing when used with IPPøR	X		
Manual override turns lights on at any time regardless of override setting	X	X	X
Manual delayed-off-time settings: 1ø, 2ø, and 3ø minutes, with 3ø-second test mode	X		
Manual delayed-off-time settings: 15 seconds to 15 minutes		X	X
Single-pole and 3-way wiring*	X		
Elegant Decora styling complements any interior, uses Decora wallplates	X	X	X
Fits in standard wallbox; units may be ganged	X	X	X
Patented adjustable integral blinders with 18ø° to 32° field-of-view	X		
Vandal resistant	X		
Manual ON/Auto OFF operation for CEC Title 24 compliance	X		

*When used with IPPøR or Vizia +® Remote.

IDEAL USES

IPP15 — Kitchen, bathrooms, laundry rooms and garages or any odd shaped or large room when used with IPPøR
PR15ø-1L — Wide variety of residential applications
PR18ø-1L — Large rooms, home offices, and a variety of light commercial and residential applications

TESTING & CODE COMPLIANCE

• UL Listed
• CSA Certified
• CEC Title 24 compliant (IPP15 models) and meets ASHRAE Standard 9ø.1 requirements
• Backed by a Limited Five-Year Warranty; Limited Two-Year Warranty on PR1xx models

WALL SWITCH

DECORA WALL SWITCH INFRARED OCCUPANCY SENSORS

COMMERCIAL GRADE+

DESCRIPTION	CAT. NO.	RATING	COVERAGE	COLOR*
Decora Wall Switch PIR Occupancy Sensor	ods1ø-id	Incandescent: 8øøW @ 12øV. Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V. For 6øHz AC only. Motor: 1/4HP @ 12øV	18ø°, 21øøSF	W, I, A, T, G, E
Decora Wall Switch PIR Occupancy Sensor with Self-Adaptive Technology	ods15-id	Incandescent: 18øøW @ 12øV. Fluorescent: 18øøVA @ 12øV, 4øøøVA @ 277V. Motor: 1/4HP @ 12øV	18ø°, 21øøSF	W, I, A, T, G, E
Dual-Relay Decora Wall Switch PIR Occupancy Sensor with Self-Adaptive Technology. Default setting = Conference Room mode, alternate setting = Classroom mode**	odsød-id	Primary Relay–Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V; Incandescent: 8øøW @ 12øV. Secondary Relay–Fluorescent: 8øøVA @ 12øV, 12øøVA @ 277V; Incandescent: 8øøW @ 12øV	18ø°, 21øøSF	W, I, A, T, G, E
Dual-Relay Decora Wall Switch PIR Occupancy Sensor with Self-Adaptive Technology. Secondary relay provides manual ON only for CEC Title 24 compliance	odsød-td	Primary Relay–Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V; Incandescent: 8øøW @ 12øV. Secondary Relay–Fluorescent: 8øøVA @ 12øV, 12øøVA @ 277V; Incandescent: 8øøW @ 12øV	18ø°, 21øøSF	W, I, A, T, G, E
Decora Wall Switch PIR Occupancy Sensor with LED Night Light	ossnl-id	Incandescent: 8øøW @ 12øV. Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V. Motor: 1/8 HP @ 12øV	18ø°, 12øø SF	W, I, A, T, G, E
CEC Title 24 Compliant Decora Wall Switch PIR Manual-ON Sensor with LED Night Light	oss1ø-id	Incandescent: 8øøW @ 12øV. Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V. Motor: 1/8 HP @ 12øV	18ø°, 12øø SF	W, I, A, T, G, E
Protective Cage	oswwg	—	—	W

RESIDENTIAL GRADE

DESCRIPTION	CAT. NO.	RATING	COVERAGE	COLOR*
Decora Manual-ON Occupancy Sensor, CEC Title 24 Compliant. Single-Pole, 3-Way or more when used with IPPøR Remote and/or Vizia +® Remote Dimmers and Remote Switches	ipp15-1l	Incandescent: 18øøW. @ 12øV. Fluorescent: 18øøVA @ 12øV. Motor: 1/4HP @ 12øV	18ø°, 9øøSF	W, I, A, T, E
Decora Manual-ON Occupancy Sensor Remote. For use with IPP15 Sensor or Vizia +® Dimmers.	ippør-1l	12øVAC–No load rating. For use with IPP15 or Vizia +® Dimmers	18ø°, 9øøSF	W, I, A, T
Decora Wall Switch PIR Occupancy Sensor, Single-Pole	pr15ø-1l	Incandescent: 5øøW. Fluorescent: 4øøVA rapid start magnetic only @ 12øVAC. Motor: 1⁄8HP @ 12øVAC	15ø°, 35øSF	W
Decora Wall Switch PIR Occupancy Sensor, Single-Pole, 3-Way	pr18ø-1l	Incandescent: 5øøW. Fluorescent: 4øøVA rapid start magnetic only @ 12øVAC. Motor: 1⁄8HP @ 12øVAC	18ø°, 4øøSF	W, I, A

DECORA WALL SWITCH MULTI-TECH OCCUPANCY SENSORS

COMMERCIAL GRADE+

DESCRIPTION	CAT. NO.	RATING	COVERAGE	COLOR*
Decora Wall Switch Multi-Tech Occupancy Sensor with Self-adaptive Technology	ossmt-md	Incandescent/Tungsten: 8øøW @ 12øV. Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V. Motor: 1/4HP @ 12øV	18ø°, 24øø SF	W, I, A, T, G, E
Wall Switch Multi-Tech Occupancy Sensor. No neutral wire required for installation.	ossmt-gd	Incandescent/Tungsten: 8øøW @ 12øV. Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V. Motor: 1/4HP @ 12øV	18ø°, 24øøSF	W, I, A, T, G, E
Dual-Relay Wall Switch Multi-Tech Occupancy Sensor	ossmd-md	Primary Relay: Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V. Incandescent: 8øøW @ 12øV. Secondary Relay–Fluorescent: 8øøVA @ 12øV, 12øøVA @ 277V; Incandescent: 8øøW @ 12øV. Motor: 1/4HP @ 12øV	18ø°, 24øøSF	W, I, A, T, G, E
Dual-Relay Wall Switch Multi-Tech Occupancy Sensor. No neutral wire required for installation.	ossmd-gd	Primary Relay: Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V. Incandescent: 8øøW @ 12øV. Secondary Relay–Fluorescent: 8øøVA @ 12øV, 12øøVA @ 277V; Incandescent: 8øøW @ 12øV Motor: 1/4HP @ 12øV	18ø°, 24øøSF	W, I, A, T, G, E
Dual-Relay Wall Switch Multi-Tech Occupancy Sensor. 1ø minute delayed-OFF on 2nd relay.	ossmd-ft	Primary Relay: Fluorescent: 12øøVA @ 12øV, 27øøVA @ 277V. Incandescent: 8øøW @ 12øV. Secondary Relay–Fluorescent: 8øøVA @ 12øV, 12øøVA @ 277V; Incandescent: 8øøW @ 12øV Motor: 1/4HP @ 12øVc	18ø°, 24øøSF	W, I, A, T, G, E
Protective Cage	oswwg	—	—	W

* Add to end of catalog number suffix for color of switch: White (W), Ivory (I), Almond (A), Light Almond (T), Gray (G), and Ebony (E). Wallplates sold separately.
** In Conference Room Mode, both primary and secondary relays respond to ambient light override. In Classroom Mode, primary relay responds only to ambient light override.
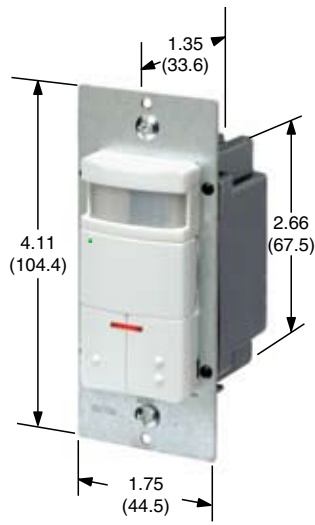Note: See Pages 38 and 39 for wiring diagrams, Page 25 for dimensioned photos and Page 26 for Field of View
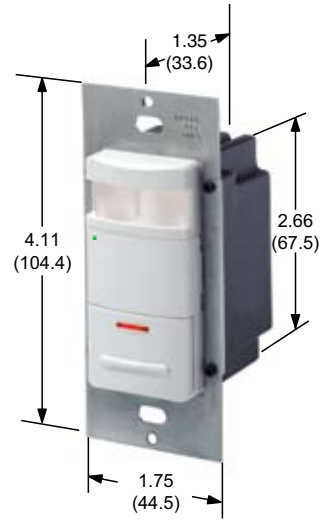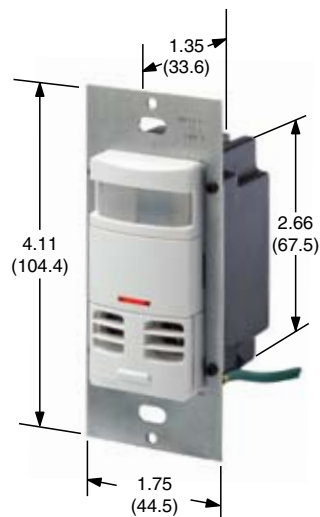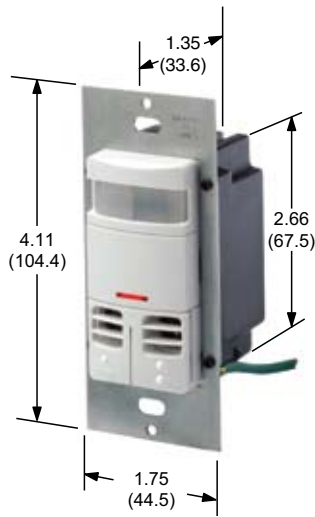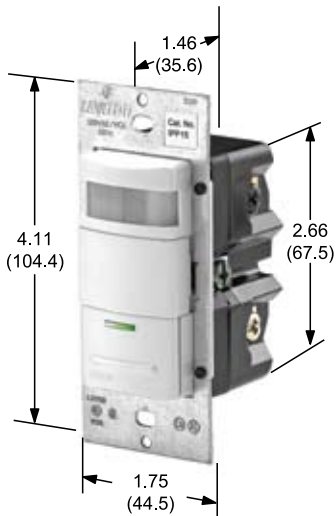+ Consult with factory for 2ø8, 22ø, 23ø, and 24øV models.

DECORA WALL SWITCH INFRARED OCCUPANCY SENSORS DIMENSIONS

1.35 (34.3)
4.06 (103.2)
2.60 (66.1)
1.75 (44.4)

ODS1ø-ID/ODS15-ID

1.35 (33.6)
4.11 (104.4)
2.66 (67.5)
1.75 (44.5)

ODSøD-ID/ODSøD-TD

1.35 (33.6)
4.11 (104.4)
2.66 (67.5)
1.75 (44.5)

OSSNL-ID1/OSS1ø-ID
Shown with Night Light ON

1.35 (33.6)
4.11 (104.4)
2.66 (67.5)
1.75 (44.5)

OSSMT-MD/OSSMT-GD/OSSMD-FT
Multi-Tech Sensor

1.35 (33.6)
4.11 (104.4)
2.66 (67.5)
1.75 (44.5)

OSSMD-MD/OSSMD-GD
Multi-Tech Dual Relay Sensor
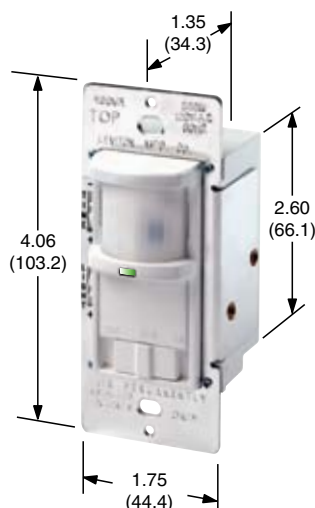
1.46 (35.6)
4.11 (104.4)
2.66 (67.5)
1.75 (44.5)

IPP15

1.35 (34.3)
4.06 (103.2)
2.60 (66.1)
1.75 (44.4)

PR15ø/PR18ø

DECORA WALL SWITCH INFRARED OCCUPANCY SENSOR FIELDS OF VIEW

TOP VIEW

Major Motion, IR
Minor Motion, IR

SIDE VIEW

OSSXX-ID/ODSXX-ID/ODSøD-TD
Field of View (in feet)

TOP VIEW

SIDE VIEW

Major Motion, IR
Minor Motion, IR
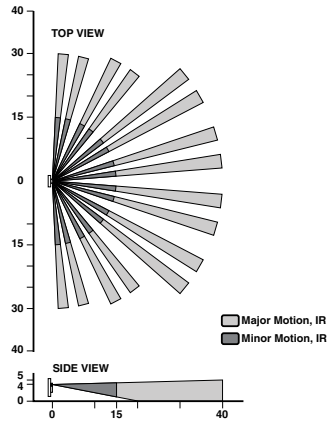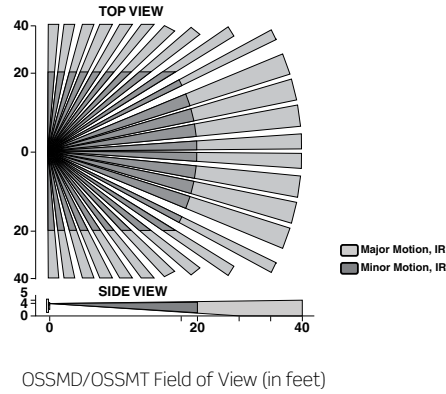
OSSMD/OSSMT Field of View (in feet)
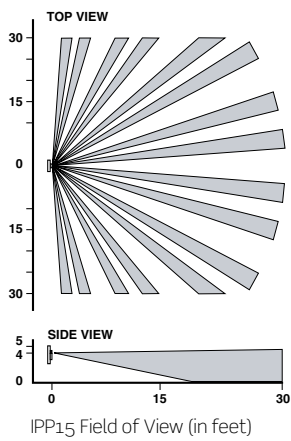
TOP VIEW

SIDE VIEW

IPP15 Field of View (in feet)

TOP VIEW

SIDE VIEW

PR15ø-1L Field of View (in feet)

TOP VIEW

SIDE VIEW

PR18ø-1L Field of View (in feet)

TOP VIEW

SIDE VIEW
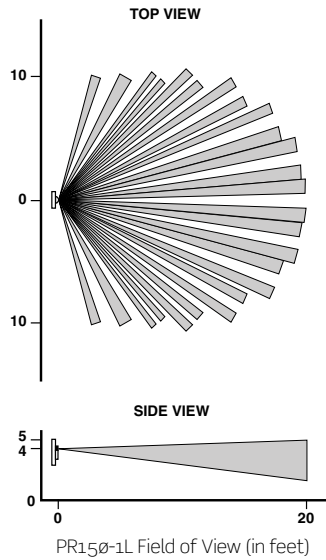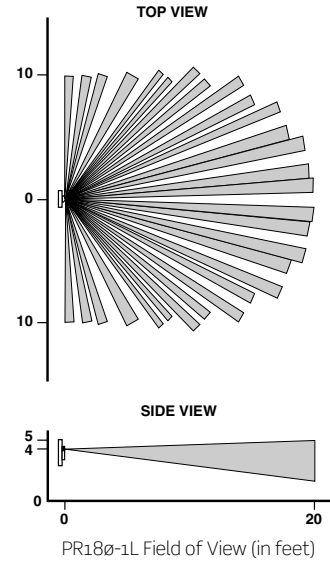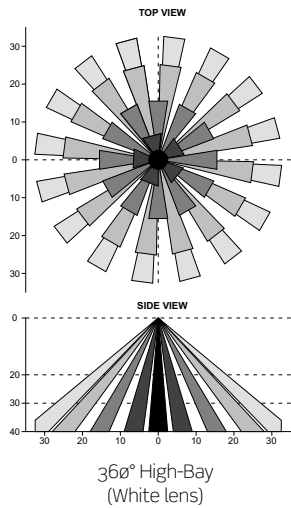
360° High-Bay
(White lens)

TOP VIEW

SIDE VIEW
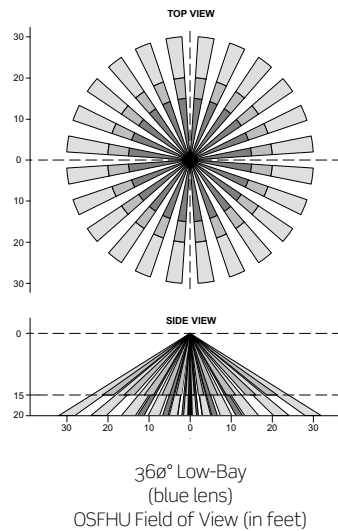
360° Low-Bay
(blue lens)
OSFHU Field of View (in feet)

TOP VIEW

SIDE VIEW

Aisle
(black lens)

TOP VIEW

SIDE VIEW
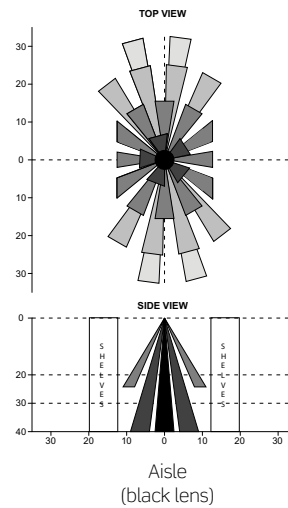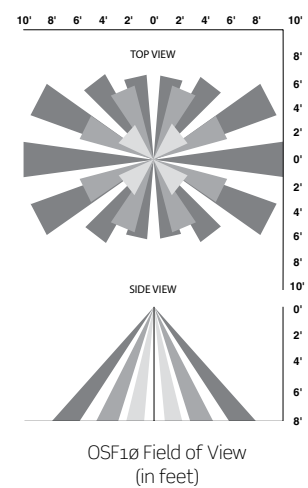
OSF1ø Field of View
(in feet)

SELF-CONTAINED INFRARED FIXTURE-MOUNT HIGH BAY AND INTEGRAL LUMINAIRE OCCUPANCY SENSORS

SPECIFICATIONS & FEATURES

Infrared Fixture-Mount High Bay Occupancy Sensor

• Universal unit includes three interchangeable lenses for 36ø° high bay, 36ø° low bay, and aisle way patterns at no additional cost

• Cold storage models for applications as low as -4ø° F

• 48øV models available in non-neutral versions

• Mounts directly to industrial-style fluorescent luminaires or electrical junction box

• Self-contained PIR sensor and relay turn individual fixtures ON/OFF based on occupancy

• Up to 4ø ft mounting height

• Relay uses zero-crossing circuitry for enhanced reliability and long-life operation

• Quick and easy installation with long 42" leads

• Bright green LED status indicator blinks to signify that the sensor is functioning properly

• Time-out delay features screen printing and rotary dial for easy setting confirmation

• Delayed-OFF time adjustment from 3ø sec to 2ø min

• Offset Adaptor Accessory snaps into 1/2" knockout to position sensor below fixture body for improved field of view with deep-body fixtures

Infrared Fixture Mount Integral Luminaire Occupancy Sensor

• Easy installation with longer 38" leads allows for easy connection to any ballast and eliminates the need to splice additional wiring

• Integrated photocell prevents lights from turning ON when room is adequately illuminated by natural light for maximum energy savings

• Passive infrared detection technology for accurate sensing

• 8' to 1ø' mounting heights

• Adjustable Time Delay and Light Level dials located on sensor housing for easy access

Ideal Uses:

• OSFHU: Commercial facilities with high ceilings, including warehouses, manufacturing, cold storage, and others.

• OSF1ø: Task lighting, cabinet lighting, cubicles, small bathroom lighting.

OSFHU

OSF1ø

TESTING & CODE COMPLIANCE

• UL/cUL Listed, CEC Title 24 Compliant (OSF1ø only)

• Backed by a Limited Five-Year Warranty

COMMERCIAL GRADE[†]

DESCRIPTION	CAT. NO.	RATING	COVERAGE *
PIR Fixture Mount High-Bay Occupancy Sensor with Three Interchangeable Lenses for High-Bay, Low-Bay, and Aisle Way Patterns for 12ø, 277 and 347V Applications	osfhu-itw osfhu-ctw (cold storage model)	Fluorescent: 8øøVA @ 12øV, 12øøVA @ 277V, 15øøVA @ 347V. Motor: 1/4HP @ 12øV	36ø° high-bay (white lens) with 2:1 spacing to mounting height coverage under 25 ft. mounting and 1.5:1 for heights up to 4ø ft. mounting. 36ø° low-bay (blue lens) with 2:1 spacing to mounting height coverage for 15 ft. to 25 ft. mounting. aisle (black lens) with detection of 6ø ft. long by 2ø ft. wide for heights up to 4ø ft. mounting.
PIR Fixture Mount High-Bay Occupancy Sensor with Three Interchangeable Lenses for High-Bay, Low-Bay, and Aisle Way Patterns for 48øV Applications	osfhu-i4w osfhu-c4w (cold storage model)	Fluorescent: 15øøVA @ 347V, 24øøVA @ 48øV. Motor: 1/4HP @ 12øV	36ø° high-bay (white lens) with 2:1 spacing to mounting height coverage under 25 ft. mounting and 1.5:1 for heights up to 4ø ft. mounting. 36ø° low-bay (blue lens) with 2:1 spacing to mounting height coverage for 15 ft. to 25 ft. mounting. aisle (black lens) with detection of 6ø ft. long by 2ø ft. wide for heights up to 4ø ft. mounting.
Offset Adaptor Accessory for Fixture-Mount High-Bay Occupancy Sensor	osfoa-øøw osflo-øøw	—	White
PIR Fixture Mount Integral Luminaire Occupancy Sensor for 12ø, 277 and 347V Applications	osf1ø-iøw	Fluorescent: 8øøVA @ 12øVAC, 12øøVA @ 277VAC. Incandescent: 8øøW @ 12øV. Motor: 1/6 HP Load @ 12øV	36ø° at 8 ft. to 1ø ft. mounting heights

[†] Consult with factory for 2ø8, 22ø, 23ø, and 24øV models.

NOTE: See Page 4ø for wiring diagrams.

SELF-CONTAINED INFRARED CEILING-MOUNT OCCUPANCY SENSORS

SPECIFICATIONS & FEATURES
- Sensor and switching relay combined in a single, self-contained unit—no control unit (power pack) required
- Ambient light override option prevents lights from turning on when there is ample natural light
- Adjustable delayed-off-time settings from 2ø seconds (for test mode) to 15 minutes
- Small, unobtrusive self-contained unit

Ideal Uses
- Storage areas, small bathrooms, copy rooms, and a variety of small spaces without wall switches

TESTING & CODE COMPLIANCE
- UL Listed and CSA Certified
- CEC Title 24 compliant and meets ASHRAE Standard 9ø.1 requirements
- Backed by a Limited Five-Year Warranty

2.15
(54.6)

4.30
(109.2)

ODCøS-I1W

COMMERCIAL GRADE

DESCRIPTION	CAT. NO.	RATING	COVERAGE	COLOR
Self-Contained Ceiling-Mount Infrared Occupancy Sensor and Switching Relay, 12øV	odcøs-i1w	Incandescent: 1øøøW @12øV. Fluorescent: 1øøøVA @ 12øV. Motor: 1HP @ 12øV. For 6øHz AC only	36ø°, 53øSF*	White
Self-Contained Ceiling-Mount Infrared Occupancy Sensor and Switching Relay, 22øV	odcøs-i2w	Incandescent: 1øøøW @22øV. Fluorescent: 5øøVA @ 22øV. For 5øHz AC only	36ø°, 53øSF*	White
Self-Contained Ceiling-Mount Infrared Occupancy Sensor and Switching Relay, 277V	odcøs-i7w	Fluorescent: 27øøVA @277V. For 6øHz AC only	36ø°, 53øSF*	White
Protective Cage	odccg	-	-	White

*When surface mounted on standard, 8-foot ceiling
Note: See Page 4ø for wiring diagrams.

TOP VIEW

13
0
13

SIDE VIEW

8
0
13 7 3 0 3 7 13

ODCøS-I Field of View (in feet)
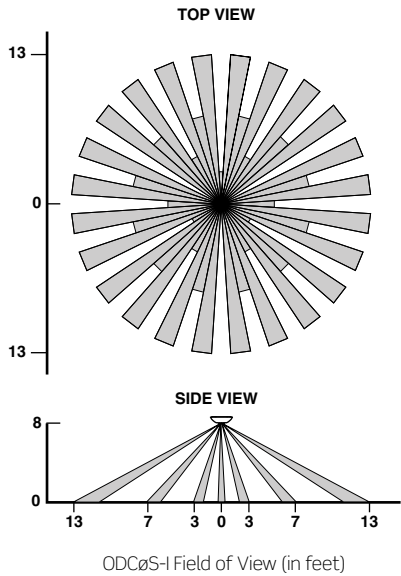
MULTI-TECHNOLOGY CEILING-MOUNT OCCUPANCY SENSORS

These advanced motion sensors combine infrared and ultrasonic technology for highly accurate monitoring without false triggers. All-digital self-adjusting technology provides "install and forget" solution for automatic lighting control. Available in a variety of coverage patterns to suit many applications. Use with Leviton Power Pack.

SPECIFICATIONS & FEATURES

Functional
- Ultrasonic sensing for maximum sensitivity combined with passive infrared (PIR) sensing to prevent false triggers from air conditioning and corridor activity
- Self-adjusting settings continuously analyze and adjust sensitivity, timer operation, and air current compensation for reliable, long-term performance
- Ambient light override to prevent lights from turning on when there is ample natural light
- Manual delayed-off-time settings of 3ø seconds to 3ø minutes
- Self-adjusting delayed-off-time interval settings for 3ø seconds to 3ø minutes
- Compensates for real-time occupancy patterns—preventing unnecessary on/off switching
- Non-volatile memory preserves all automatic and manual settings during power outages

Physical
- Small, unobtrusive unit blends in with any décor
- Fast, simple installation using 4 color-coded low-voltage wires and a single mounting post
- Compatible with Wiremold® surface raceways for mounting to hard ceilings

Ideal Uses
- Classrooms, office areas with cubicles, cafeterias, and public areas in commercial facilities

TESTING & CODE COMPLIANCE
- CUL/US, FCC and NOM Certified
- CEC Title 24 compliant and meets ASHRAE Standard 9ø.1 requirements
- Backed by a Limited Five-Year Warranty

1.55
(39.4)

4.20
(106.7)

OSCø5-MøW

1.55
(39.4)

4.20
(106.7)

OSC2ø-MøW

COMMERCIAL GRADE

DESCRIPTION	CAT. NO.	OPERATING FREQUENCY	COVERAGE	COLOR
Multi-tech Ceiling-Mount Occupancy Sensor	oscø5-møw	4økHz	18ø°, 5øøSF	White
Multi-tech Ceiling-Mount Occupancy Sensor	osc1ø-møw	4økHz	36ø°,1øøøSF	White
Multi-tech Ceiling-Mount Occupancy Sensor	osc2ø-møw	32kHz	36ø°, 2øøøSF	White
Protective Cage	odccg	—	—	White

NOTE: Use low-voltage wiring to connect sensors to OSPXX Power Pack.
See Page 34 for information on OSP Power Packs and Page 4ø for wiring diagrams.

▢ **Major Motion, IR**

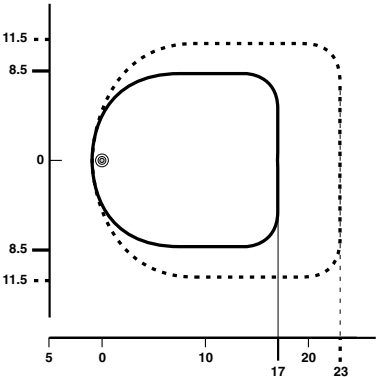▢ **Minor Motion, Ultrasonic**
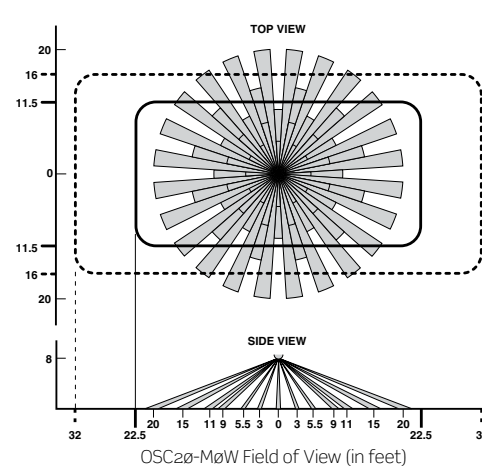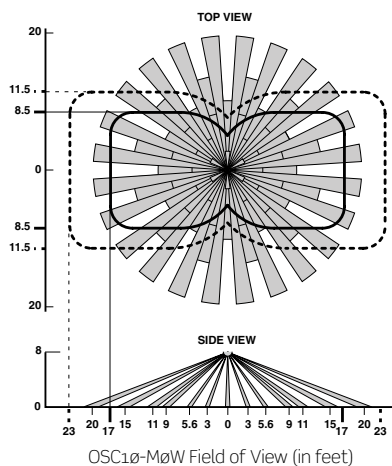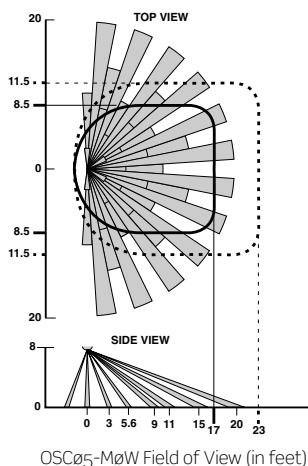
▢ **Major Motion, Ultrasonic**

OSCø5-MøW Field of View (in feet)

OSC1ø-MøW Field of View (in feet)

OSC2ø-MøW Field of View (in feet)

29

OSCø5-UøW

OSC2ø-UøW
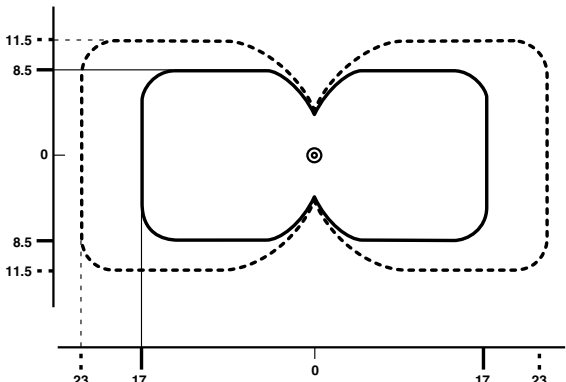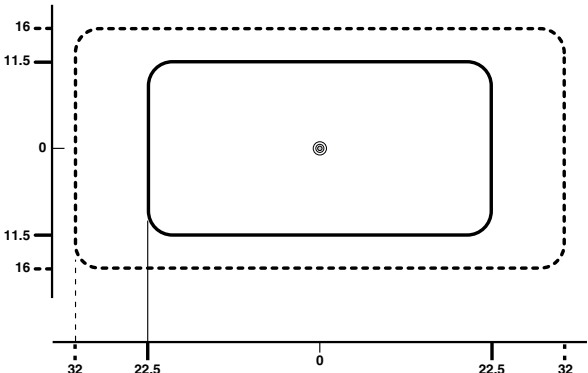
ULTRASONIC CEILING-MOUNT OCCUPANCY SENSORS

Advanced ultrasonic sensing technology for highly accurate monitoring, including small-motion detection. All-digital self-adjusting technology provides "install and forget" solution for automatic lighting control. Use with Leviton Power Pack.

SPECIFICATIONS & FEATURES

Functional
- Ultrasonic sensing for maximum range and sensitivity combined with accurate small-motion detection
- Self-adjusting settings continuously analyze and adjust sensitivity, timer operation, and air current compensation for reliable, long-term performance
- Ambient light override to prevent lights from turning on when there is ample natural light
- Manual delayed-off-time settings of 3ø seconds to 3ø minutes
- Self-adjusting delayed-off time interval settings for 3ø seconds to 3ø minutes. Compensates for real-time occupancy patterns—preventing unnecessary on/off switching
- Non-volatile memory preserves all automatic and manual settings during power outages

Physical
- Small, unobtrusive unit blends in with any décor
- Fast, simple installation using 4 color-coded low-voltage wires and a single mounting post
- Compatible with Wiremold® surface raceways for mounting to hard ceilings

Ideal Uses
- Restrooms, office areas with cubicles, warehouse and storage facilities, cafeterias, and public areas in commercial facilities

TESTING & CODE COMPLIANCE

- CUL/US Certified
- Meets AHRAE Standard 9ø.1 requirements
- Backed by a Limited Five-Year Warranty

COMMERCIAL GRADE

DESCRIPTION	CAT. NO.	OPERATING FREQUENCY	COVERAGE	COLOR
Ultrasonic Ceiling-Mount Occupancy Sensor	oscø5-uøw	4økHz	18ø°, 5øøSF	White
Ultrasonic Ceiling-Mount Occupancy Sensor	osc1ø-uøw	4økHz	36ø°, 1øøøSF	White
Ultrasonic Ceiling-Mount Occupancy Sensor	osc2ø-uøw	32kHz	36ø°, 2øøøSF	White
Protective Cage	odccg	-	-	White

NOTE: Use low-voltage wiring to connect sensors to OSPXX Power Pack.

OSCø5-UøW Field of View (in feet)

■ Minor Motion, Ultrasonic
▯ Major Motion, Ultrasonic

OSC1ø-UøW Field of View (in feet)

OSC2ø-UøW Field of View (in feet)

INFRARED CEILING-MOUNT OCCUPANCY SENSORS

SPECIFICATIONS & FEATURES

Functional
- Self-adjusting settings continuously analyze and adjust sensitivity, timer operation, and long-term performance
- Ambient light override prevents lights from turning on when there is ample natural light
- Manual delayed-off-time settings of 3ø seconds to 3ø minutes
- Self-adjusting delayed-off-time interval settings for of 3ø seconds to 3ø minutes. Compensates for real-time occupancy patterns—preventing unnecessary on/off switching
- Non-volatile memory preserves all automatic and manual settings during power outages

Physical
- Small, unobtrusive unit blends in with any décor
- Fast, simple installation using 4 color-coded low-voltage wires and a single mounting post
- Compatible with Wiremold® surface raceways for mounting to hard ceilings

Ideal Uses
- Small offices, closets, open offices, and other areas in commercial facilities with unobstructed view of the sensor
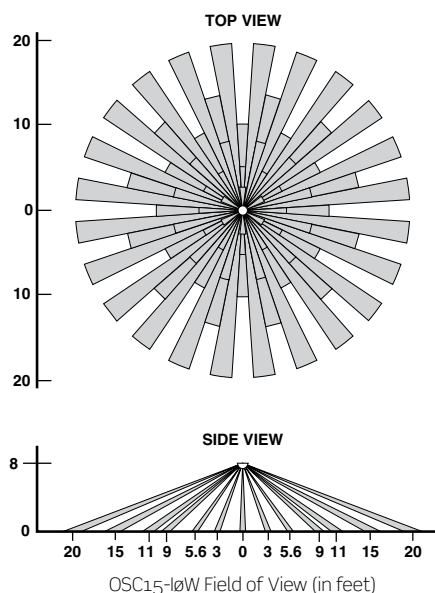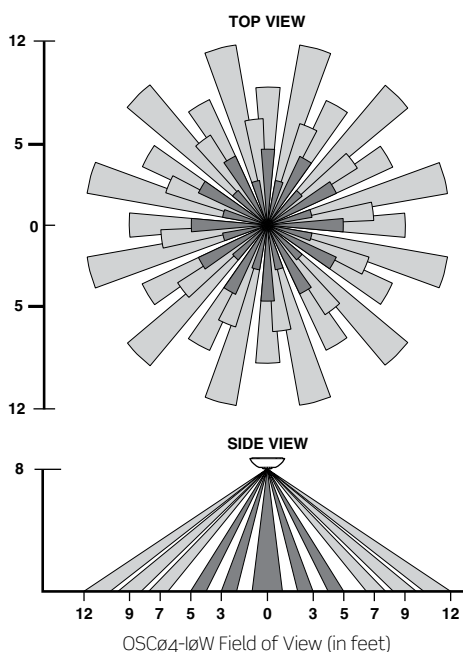
TESTING & CODE COMPLIANCE

- CUL/US Certified
- Meets ASHRAE Standard 9ø.1 requirements
- Backed by a Limited Five-Year Warranty

1,55 (39.4)

4.20 (106.7)

OSCø4-IøW

COMMERCIAL GRADE

DESCRIPTION	CAT. NO.	COVERAGE	COLOR
Infrared Ceiling-Mount Occupancy Sensor	OSCø4-iøw	36ø°, 45øSF	White
Infrared Ceiling-Mount Occupancy Sensor	OSC15-iøw	36ø°, 15øøSF	White
Protective Cage	ødccg	–	White

NOTE: Use low-voltage wiring to connect sensors to OSPXX Power Pack.
See Page 34 for information on OSP Power Packs and Page 4ø for wiring diagrams.

TOP VIEW

SIDE VIEW

OSCø4-IøW Field of View (in feet)

TOP VIEW

SIDE VIEW

OSC15-IøW Field of View (in feet)

■ Minor Motion, IR
□ Major Motion, IR

OCCUPANCY SENSORS

LOW VOLTAGE

OSW12-M0W

MULTI-TECHNOLOGY WALL-MOUNT OCCUPANCY SENSORS

SPECIFICATIONS & FEATURES
- Ultrasonic sensing for maximum sensitivity combined with passive infrared (PIR) sensing to prevent false triggers from air conditioning and corridor activity
- Adjustable swivel neck rotates 80° vertically and 60° horizontally. Can be used for ceiling or wall mounting
- Self-adjusting settings continuously analyze and adjust sensitivity, timer operation, and air current compensation for reliable, long-term performance
- Ambient light override to prevent lights from turning on when there is ample natural light
- Manual delayed-off-time settings of 30 seconds to 30 minutes
- Self-adjusting delayed-off-time interval settings of 30 seconds to 30 minutes. Compensates for real-time occupancy patterns, preventing unnecessary on/off switching
- Non-volatile memory preserves all automatic and manual settings during power outages
- Fast, simple installation using 3 color-coded low-voltage wires and a single mounting post

Ideal Uses
- Conference rooms, stairwells, high-ceiling rooms, open areas, storage rooms, and classrooms—including corner mounting in a variety of applications
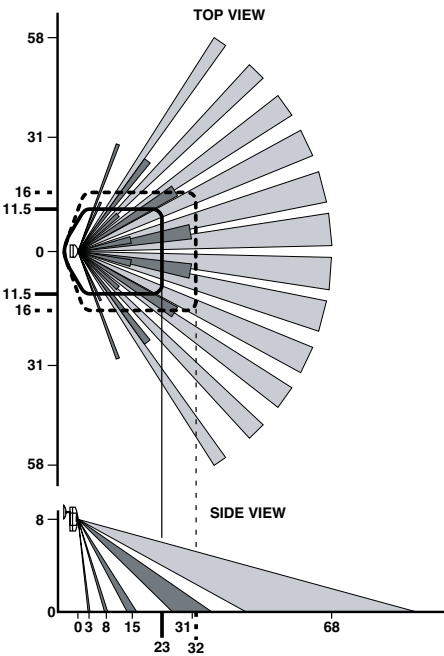
TESTING & CODE COMPLIANCE
- CUL/US Certified
- Meets ASHRAE Standard 90.1 requirements
- Backed by a Limited Five-Year Warranty

COMMERCIAL GRADE

DESCRIPTION	CAT. NO.	OPERATING FREQUENCY	COVERAGE	COLOR
Multi-tech Wall-Mount Occupancy Sensor	osw12-m0w	32kHz	115°, 1200SF	White
Protective Cage	oswcg	-	-	White

NOTE: Use low-voltage wiring to connect sensors to OSPXX Power Pack
See Page 234 for information on OSP Power Packs and Page 41 for wiring diagrams.

TOP VIEW

SIDE VIEW

OSW12-M0W Field of View (in feet)

- ■ Minor Motion, IR
- ▢ Major Motion, IR
- ▭ Minor Motion, Ultrasonic
- ⬚ Major Motion, Ultrasonic

INFRARED INDOOR WALL-MOUNT OCCUPANCY SENSORS

Advanced PIR technology for highly accurate monitoring. All-digital self-adjusting technology provides "install and forget" solution for automatic lighting control. Use with Leviton Power Pack.

SPECIFICATIONS & FEATURES

• Self-adjusting settings continuously analyze and adjust for optimum performance
• Adjustable swivel neck rotates 8ø° vertically and 6ø° horizontally. Can be used for ceiling or wall mounting
• Ambient light override prevents lights from turning on when there is ample natural light
• Manual delayed-off-time settings of 3ø seconds to 3ø minutes
• Self-Adjusting delayed-off-time interval settings for 3ø seconds to 3ø minutes. Compensates for real-time occupancy patterns—preventing unnecessary on/off switching
• Non-volatile memory preserves all automatic and manual settings during power outages
• Fast, simple installation using 3 color-coded low-voltage wires and a single mounting post

Ideal Uses

• OSWWV-I: conference rooms, stairwells, high-ceiling rooms, large open areas, parking garages, storage rooms, and rooms with pendant fixtures. Also ideal for corner mounting
• OSWHB-I & OSWLR-I: monitoring long, narrow spaces such as warehouse aisles, hallways, closets, and storage areas. Also ideal for corner mounting

TESTING & CODE COMPLIANCE

• CUL/US Certified
• Meets ASHRAE Standard 9ø.1 requirements
• Backed by a Limited Five-Year Warranty

OSW12-MOW

COMMERCIAL GRADE

| DESCRIPTION	CAT. NO.	COVERAGE	COLOR
Wide-View Infrared Wall-Mount Occupancy Sensor	oswwv-iøw	115°, 25øøSF	White
High-Bay Infrared Wall-Mount Occupancy Sensor	oswhb-iøw	55 ft., 7 ft. wide @ 3ø ft. high	White
Long-Range Infrared Wall-Mount Occupancy Sensor	oswlr-iøw	1øøft., 11ø° @ 1øft. high	White
Protective Cage	oswcg	-	White

NOTE: Use low-voltage wiring to connect sensors to OSPXX Power Pack.
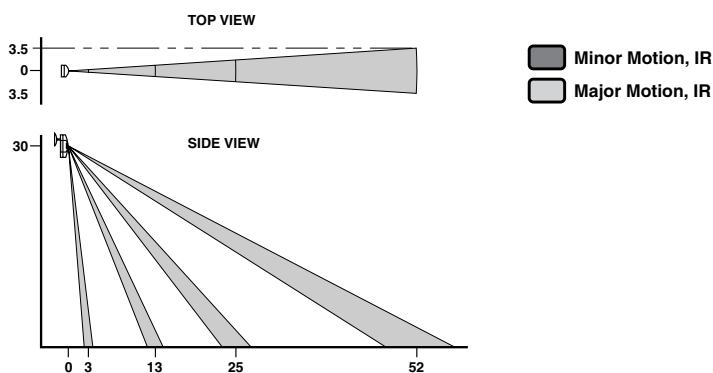See Page 34 for information on OSP Power Packs and Page 41 for wiring diagrams.
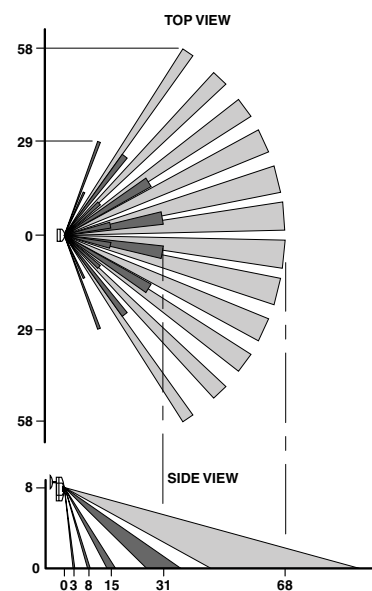
OSWWV Field of View (in feet)
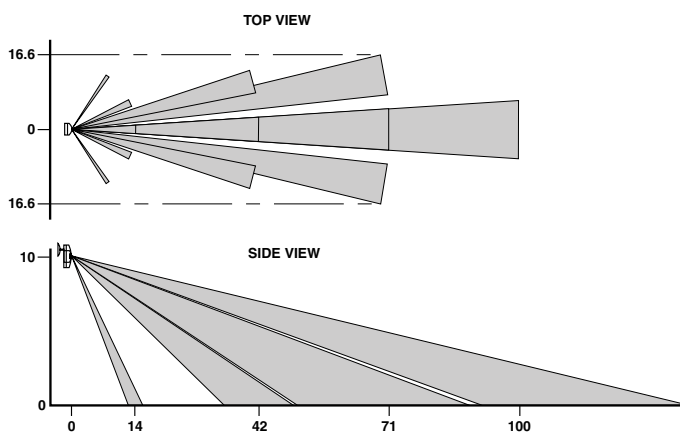
OSWLR Field of View (in feet)

OSWHB Field of View (in feet)

Minor Motion, IR
Major Motion, IR

OCCUPANCY SENSOR POWER PACKS

Power packs provide power for occupancy sensors as well as load switching circuitry. A Leviton Power Pack is required with any low voltage occupancy sensor. Add-A-Relay units can be used to expand control capability.

SPECIFICATIONS & FEATURES

Power Pack
• For use with all OS Series occupancy sensors
• Power supply for OS Series occupancy sensors
• Auto-ON and manual-ON inputs for occupancy sensors (OSP2ø-RDH)
• Hold-ON and Hold-OFF capabilities (OSP2ø-RDH)
• Switches incandescent, magnetic and electronic fluorescent, magnetic and electronic low voltage, and motor loads
• Compact size and light weight allows easy mounting through knockout in junction box (from either inside or outside the box) with a simple twist-on nut

Add-A-Relay
• Expands power pack load capacity by functioning as a supplementary relay
• Provides ability to switch loads in different voltage systems
• Compatible with electronic ballasts
• Same compact size and mounting features as Power Pack
• Zero-crossing switching circuitry for outstanding durability

Nipple Adapter
• Simplifies the connection of occupancy sensor to the low-voltage side of a power pack mounted inside a fluorescent ballast cavity
• 1/2" conduit lock nut included

3.66
(93.0)

2.35
(59.7)

1.38
(35.1)

OSP2ø-RDø

TESTING & CODE COMPLIANCE

• CUL/US, FCC and NOM Certified   • Meets ASHRAE Standard 9ø.1 requirements   • Backed by a Limited Five-Year Warranty

COMMERCIAL GRADE

DESCRIPTION	CAT. NO.	POWER INPUT*	RELAY RATING	CONTROL INPUT	POWER SUPPLY OUTPUT
Power Pack	osp2ø-ødø	12ø-23ø-277VAC 5ø/6øHz	2øA fluorescent/incandescent @ 12øV, 2øA fluor. @ 277V; 1HP @ 12øV, 2HP @ 24øV	5mA, 24VDC	15ømA, 24VDC
Power Pack with HVAC relay	osp2ø-rdø	12ø-23ø-277VAC 5ø/6øHz	2øA fluorescent/incandescent @ 12øV, 2øA fluor. @ 277V; 1HP @ 12øV, 2HP @ 24øV; HVAC: ø.5A @ 12øVAC, 1A @ 3øVDC	5mA, 24VDC	15ømA, 24VDC
Power Pack with HVAC relay	osp15-r3ø	347VAC, 6øHz	15A fluorescent @ 347V; 1HP @ 12øV, 2HP @ 24øV; HVAC: ø.5A @ 12øVAC, 1A @ 3øVDC	5mA, 24VDC	12ømA, 24VDC
Add-A-Relay Unit with HVAC relay	osa2ø-røø	——	15A incandescent @ 12øV, 2øA fluorescent @ 12øV, 2øA fluor. @ 277V, 15A fluor. @ 347V; HVAC: ø.5A @ 125VAC, 1A @ 3øVDC	5mA, 24VDC	——
Power Pack with HVAC Relay with Auto-ON and Manual-ON Inputs for Occupancy Sensors	osp2ø-rdh	12ø-23ø-277VAC, 5ø/6øHz	2øA fluorescent/incandescent @ 12øV, 2øA fluor. @ 277V; 1HP @ 12øV, 2HP @ 24øV; HVAC: ø.5A @ 12øVAC, 1A @ 3øVDC and 15A fluor. @ 347V; 1HP @ 12øV, 2HP @ 24øV; HVAC: ø.5A @ 12øVAC, 1A @ 3øVDC	5mA 24VDC	15ømA 24VDC and 15ømA 24VDC

* Consult with factory for 2ø8, 22ø, and 24øV models.

POWER PACK CAPACITY FORMULA

Leviton power packs can be used to provide power to one or more occupancy sensors. Since current consumptions of occupancy sensors may vary, the best way to ensure you order the correct number of power packs and add-a-relays is by using this formula:

# of sensor Model As X Sensor A current consumption rating	**+**	# of sensor Model Bs X Sensor B current consumption rating...	**+**	# of Add a Relays X 5ømA

$\leq$ **15ømA per power pack**

SENSOR	CURRENT CONSUMPTION
OSCø4-I, OSC15-I, OSWHB-I, OSWLR-I, OSWWV-I	2ømA
OSCø5-M, OSCø5-U, OSW12-M	3ømA
OSC1ø-M, OSC1ø-U	3ømA
OSC2ø-M, OSC2ø-U	4ømA
OSA2ø-Røø Add a Relay	5ømA

SELF-CONTAINED POWER BASE ADAPTOR

- Patent-pending design converts Leviton low-voltage ceiling sensors to line-voltage
- Ideal for both existing buildings with limited access to low-voltage wiring and new constructions with line-voltage circuiting only.
- Mounts easily in standard 2.125" deep x 4" octagon or 2.125" deep x 4" square electrical box with a 2-gang mud ring; flying leads provide fast line voltage connections
- Two-piece terminal block provides fast, easy low-voltage connections to the sensor
- Relay uses zero-crossing circuitry for enhanced reliability and long-life operation

Ideal Uses
- Lavatories, remodels in hard ceiling spaces, energy conservation retrofits and any installation with limited access for low-voltage wiring.

TESTING & CODE COMPLIANCE
- NOM Certified

Ø4.50 (114.3)

1.75 (44.5)

OPB15-øDW

COMMERCIAL GRADE

DESCRIPTION	CAT. NO.	RATING	COVERAGE	COLOR
Power Base Adaptor — converts any Leviton low-voltage ceiling or wall-mount occupancy sensor to a self-contained line voltage unit	opb15-ødw	Power Input: 12ø/277VAC, 6øHz Control Output: 24VDC, 4ømA	15A Incandescent, Electronic or Magnetic Fluorescent Ballast, 3/4 HP @ 12øV	White

Note: See Page 41 for wiring diagrams.
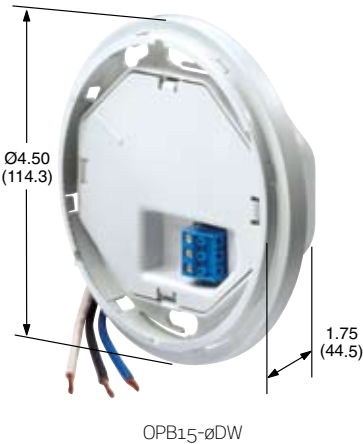
OUTDOOR MOTION SENSORS

Passive Infrared (PIR) outdoor motion sensors provide outstanding value in security lighting, as well as convenience, safety and energy savings for a wide range of commercial and residential applications.

SPECIFICATIONS & FEATURES

Professional Series

• Adjustable sensitivity and immunity to RFI signals reduces false triggers

• Ambient light override prevents lights from turning on when there is ample natural light

• Surge suppression minimizes likelihood of damage due to electrical surges

• Temperature compensation feature ensures uniform performance in extreme hot or cold weather and during temperature fluctuations

Residential Series

• Ideal for a wide range of residential settings including backyards, garages, entranceways, porches, swimming pool areas, doorways, and private docks

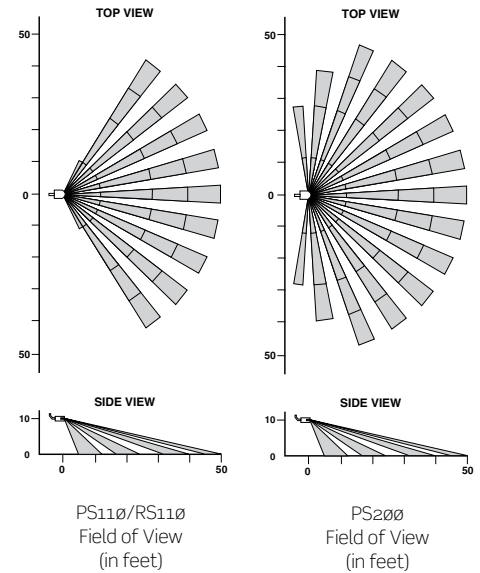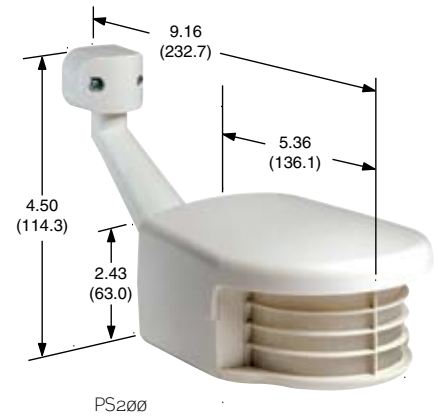• Adjustable sensitivity reduces false triggers

Both Series

• Sensor neck adjustment allows accurate monitoring: 11ø° vertical, 18ø° horizontal, 11ø° rotational

• With or without with dual floodlight lampholder

• Adjustable delayed-off-time settings from 2ø seconds (for test mode) to 15 minutes

• Provides automatic, test and continuous modes. Test mode simulates automatic operation with short delayed-off-time for easy adjustments. Continuous mode enables manual override for constant "lights on" operation (when used with standard on/off switch)

Ideal Uses

• A wide range of commercial/industrial settings including parking areas, storage facilities, warehouses, loading docks, marina, garages, walkways, campus grounds, and outbuildings

TESTING & CODE COMPLIANCE

• UL Listed and CSA Certified

• Meets ASHRAE Standard 9ø.1 requirements

• Backed by a Limited Five-Year Warranty

PS2øø

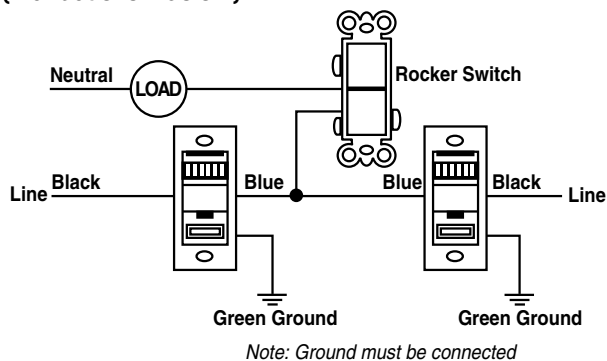PS11ø/RS11ø
Field of View
(in feet)

PS2øø
Field of View
(in feet)

COMMERCIAL GRADE

DESCRIPTION	CAT. NO.	RATING	COVERAGE	COLOR
Outdoor PIR Motion Sensor	ps2øø-1ø	Incandescent: 1øøøW @ 12øV. For 6øHz AC only	2øø°	White
Outdoor PIR Motion Sensor with Dual Floodlight Lampholder	ps2øø-1f	Same as Above	2øø°	White
Outdoor PIR Motion Sensor	ps11ø-1ø	Same as Above	11ø°	White
Outdoor PIR Motion Sensor with Dual Floodlight Lampholder	ps11ø-1f	Same as Above	11ø°	White
Outdoor PIR Motion Sensor	ps2øø-7øw	277VAC, 5ø/6øHz. 1øA incandescent, 5A ballasts.	2øø°	White
Outdoor PIR Motion Sensor with Dual Floodlight Lampholder	ps2øø-7fw	277VAC, 5ø/6øHz. 1øA incandescent, 5A ballasts.	2øø°	White
Outdoor PIR Motion Sensor	ps2øø-4øw	22ø-24øVAC, 5ø/6øHz. 1øA incandescent, 5A ballasts.	2øø°	White
Outdoor PIR Motion Sensor withDual Floodlight Lampholder	ps2øø-4fw	22ø-24øVAC, 5ø/6øHz. 1øA incandescent, 5A ballasts.	2øø°	White
Outdoor PIR Motion Sensor	ps11ø-7øw	277VAC, 5ø/6øHz. 1øA incandescent, 5A ballasts.	11ø°	White
Outdoor PIR Motion Sensor with Dual Floodlight Lampholder	ps11ø-7fw	277VAC, 5ø/6øHz. 1øA incandescent, 5A ballasts.	11ø°	White
Outdoor PIR Motion Sensor	ps11ø-4øw	22ø-24øVAC, 5ø/6øHz. 1øA incandescent, 5A ballasts.	11ø°	White
Outdoor PIR Motion Sensor with Dual Floodlight Lampholder	ps11ø-4fw	22ø-24øVAC, 5ø/6øHz. 1øA incandescent, 5A ballasts.	11ø°	White

RESIDENTIAL GRADE

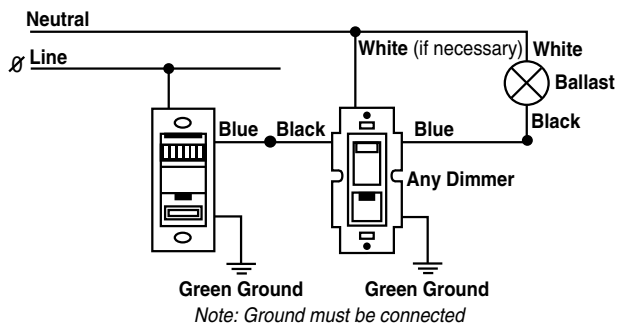| DESCRIPTION	CAT. NO.	RATING	COVERAGE	COLOR
Outdoor PIR Motion Sensor	rs11ø-1øw	Incandescent: 5øøW @ 12øV. For 6øHz AC only	11ø°	White
Outdoor PIR Motion Sensor with Dual Floodlight Lampholder	rs11ø-1fw	Incandescent: 5øøW @ 12øV. For 6øHz AC only	11ø°	White

APPLICATIONS

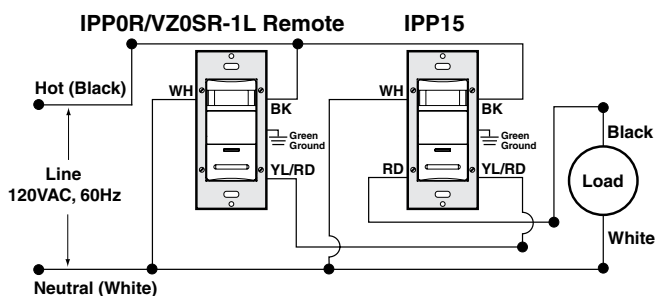### Two Occupancy Sensors Controlling One Load (manual override off)

Neutral — LOAD — Rocker Switch

Line — Black — Blue — Blue — Black — Line

Green Ground   Green Ground

Note: Ground must be connected

IPP15 Wall Switch Occupancy Sensor Wiring Diagram

IPP15

WH — BK — Hot (Black)

Green Ground

Black

RD — YL/RD

Load

Use Terminal for 3-Way or More Applications Only. For Single-Pole Applications, Do Not Remove This Label.

White

Line 120VAC, 60Hz

Neutral (White)
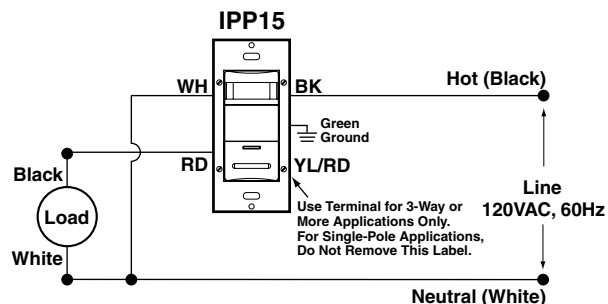
Occupancy Sensor and Dimmer Controlling One Load (manual override off)

Neutral

Ø Line

White (if necessary) — White

Ballast

Blue — Black — Blue

Black

Any Dimmer

Green Ground   Green Ground

Note: Ground must be connected

3-way IPP15 with IPPøR or VZøSR Wiring Diagram

IPP0R/VZ0SR-1L Remote   IPP15

Hot (Black)

WH — BK   WH — BK

Green Ground   Green Ground

Black

Line 120VAC, 60Hz

RD — YL/RD   YL/RD

Load

Neutral (White)   White

PR15ø Wall Switch Occupancy Sensor Wiring Diagram

PR150

Hot (Black) — Black — Black

Black

Line 120VAC, 60Hz

Load

Green Ground

White

Neutral (White)
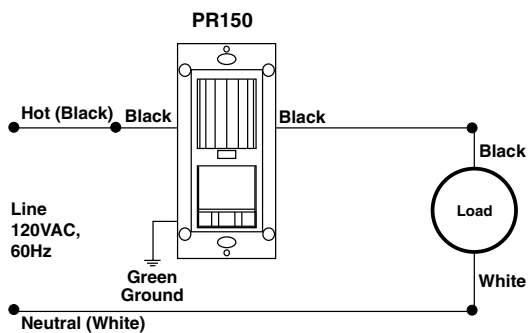
PR18ø Wall Switch Occupancy Sensor 3-Way Wiring Diagram

Switch #1   PR180

Common Terminal (Black Screw)   Jumper

Hot (Black)

Black — Yellow

Traveler A

Line 120VAC, 60Hz

Red

Black

Green Ground

Load

Traveler B

Green Ground

White

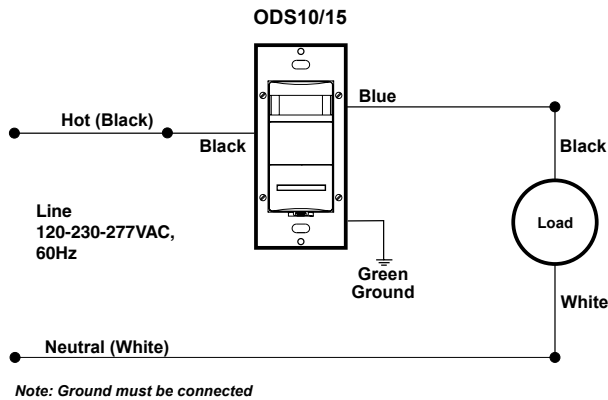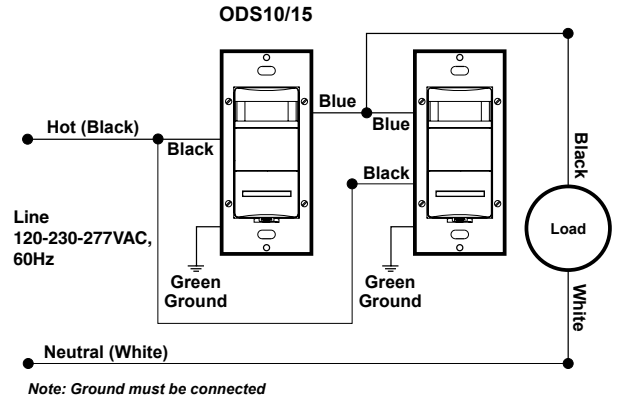Neutral (White)
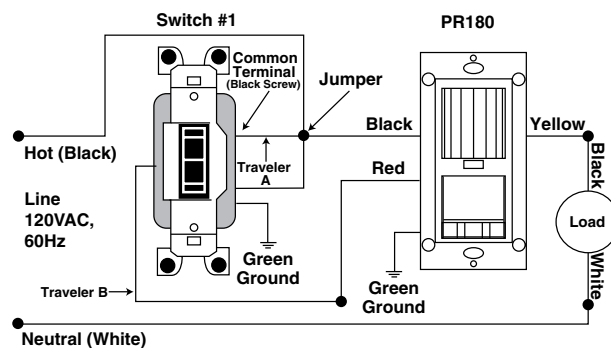
WIRING DIAGRAMS

WALL SWITCH OCCUPANCY SENSORS

ODS1ø/15 Wall Switch Occupancy Sensor Wiring Diagram, Single Location Control†

ODS10/15

Hot (Black)

Black

Blue

Black

Line
120-230-277VAC,
60Hz

Load

Green
Ground

White

Neutral (White)

Note: Ground must be connected

ODS1ø/15 Wall Switch Occupancy Sensor Wiring Diagram, Two-Location Control†

ODS10/15

Hot (Black)

Black

Blue

Blue

Black

Black

Line
120-230-277VAC,
60Hz

Load

Green
Ground

Green
Ground

White

Neutral (White)

Note: Ground must be connected

ODSøD Wall Switch Occupancy Sensor Wiring Diagram (For Single Pole, Single Phase Application)†

ODS0D

Hot (Black)
Phase 1

Red

Black

Red

Blue

Line
120-230-277VAC,
60Hz

Green
Ground

Primary
Load

Secondary
Load

Neutral (White)

Note: Ground must be connected

ODSøD Wall Switch Occupancy Sensor Wiring Diagram (For Single Pole, Two Phase Applications†)

ODS0D

Red (To Phase 2)

Hot (Black)
Phase 1

Black

Red

Blue

Line 1
120-230-277VAC,
60Hz

Line 2

Green
Ground

Primary
Load

Secondary
Load

Neutral 1 (White)

Neutral 2

Note: Ground must be connected

OSSNL/1ø Wall Switch Occupancy Sensor Wiring Diagram, Single Location Control†

OSSNL/OSS10

Black (Hot)

Black

Blue

White

Black

Load

Line
120-230-277VAC, 60Hz

Green
Ground

White

Neutral (White)

† Consult with factory for 2ø8, 22ø, 23ø, and 24øV models.
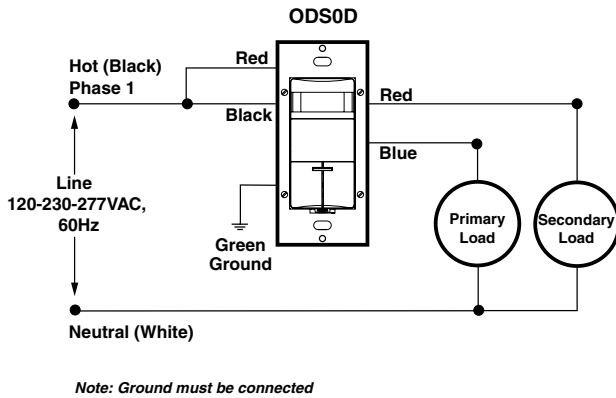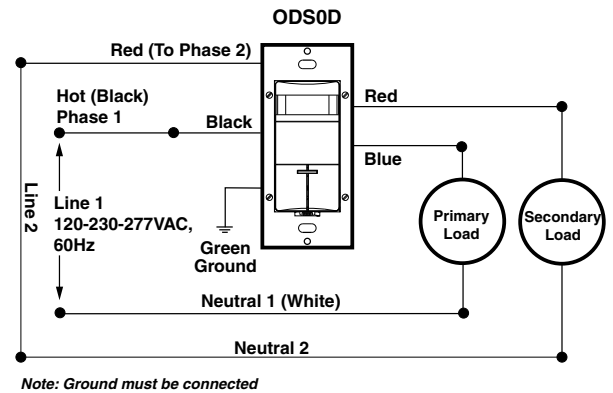
OSSMD-MD Wall Switch Occupancy Sensor Wiring Diagram, Single Location Control[†]

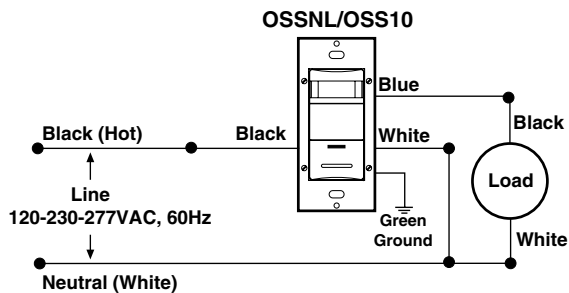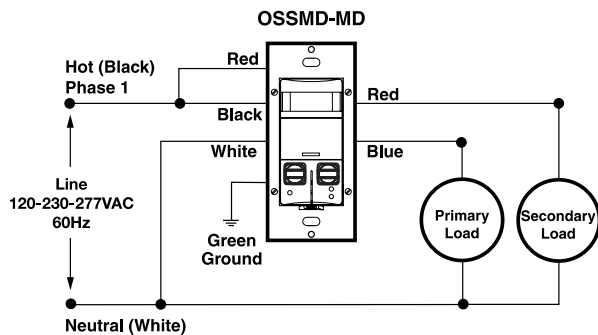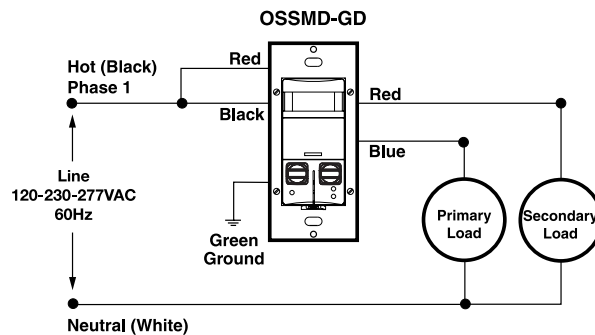**OSSMD-GD Wall Switch Occupancy Sensor Wiring Diagram, Single Location Control[†]**

OSSMD-FT Wall Switch Occupancy Sensor Wiring Diagram, Single Location Control[†]
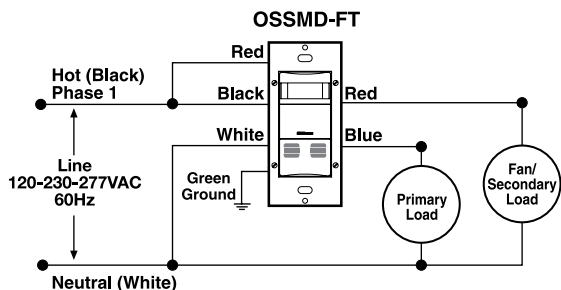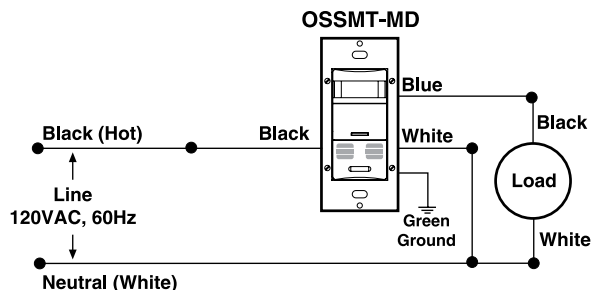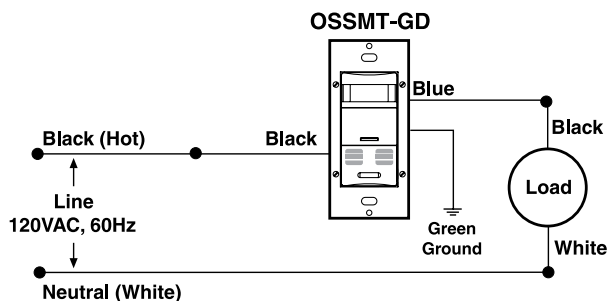

OSSMT-MD Wall Switch Occupancy Sensor Wiring Diagram, Single Location Control[†]

OSSMT-GD Wall Switch Occupancy Sensor Wiring Diagram, Single Location Control[†]

† Consult with factory for 208, 220, 230, and 240V models.

WIRING DIAGRAMS

FIXTURE-MOUNT HIGH BAY AND CEILING MOUNT OCCUPANCY SENSORS

OSFHU-ITW Occupancy Sensor Wiring Diagram†
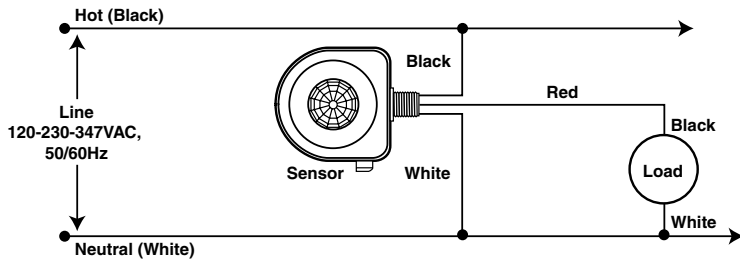
OSF1ø Occupacy Sensor Wiring Diagram†
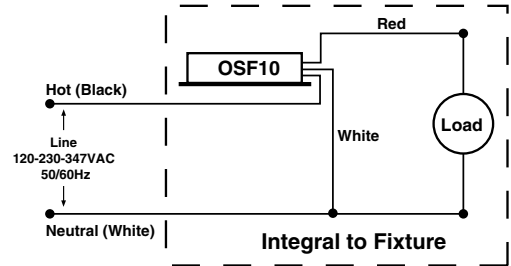
OSFHU-I4W Occupancy Sensor Wiring Diagram†
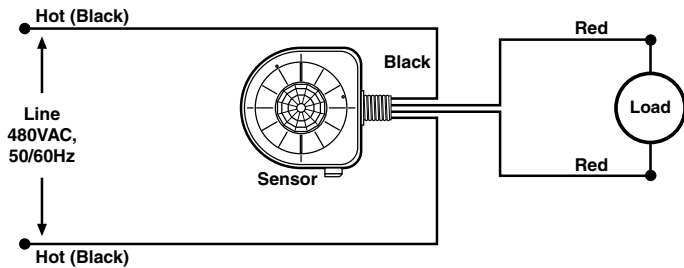
ODCøS-I1 Ceiling Mount Occupancy Sensor Wiring Diagram
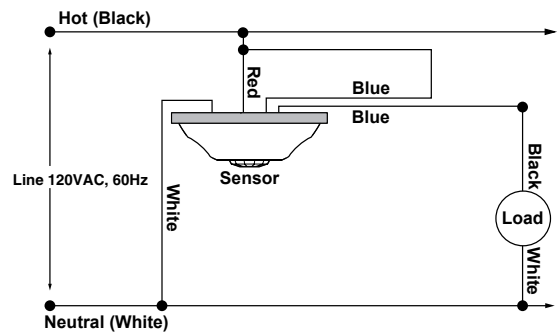
ODCøS-I2 Ceiling Mount Occupancy Sensor, Single-Location Wiring Diagram
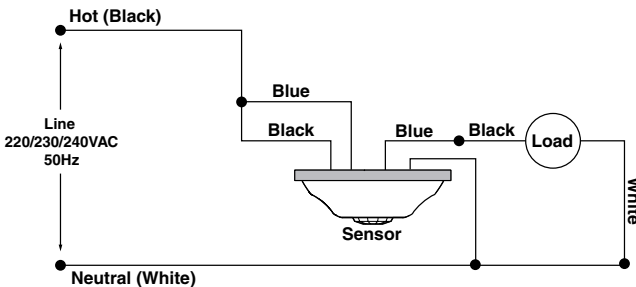
ODCøS-I2 Ceiling Mount Occupancy Sensor, Two-Location Wiring Diagram
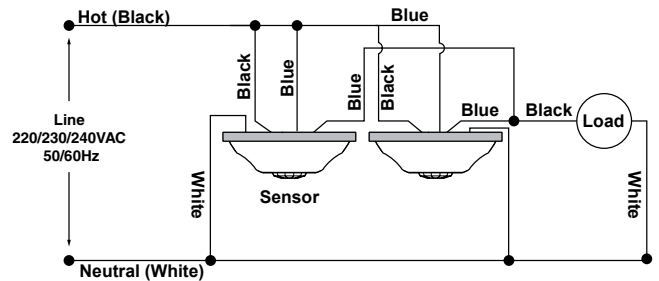
ODCøS-I7 Ceiling Mount Occupancy Sensor Wiring Diagram
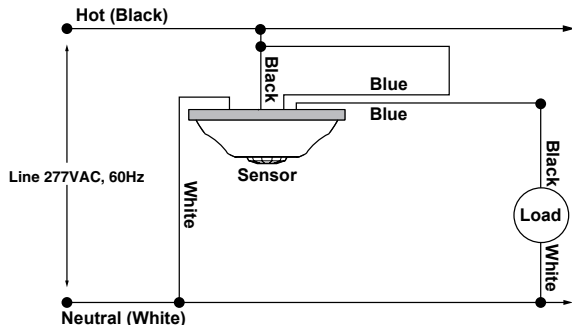
OS-Series Ceiling Mount Occupancy Sensor (with Power Pack) Wiring Diagram

† Consult with factory for 2ø8, 22ø, 23ø, and 24øV models.

WALL-MOUNT OCCUPANCY SENSORS

OSWxx Occupancy Sensor Wiring Diagram with Single Power Pack†
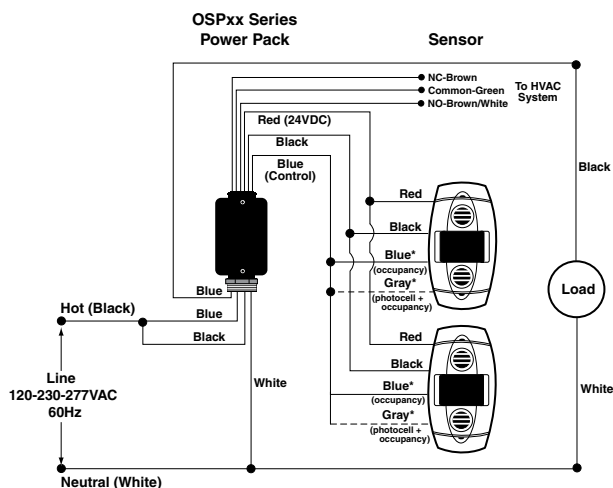
OSWxx Occupancy Sensor Wiring Diagram with Multiple Power Packs†
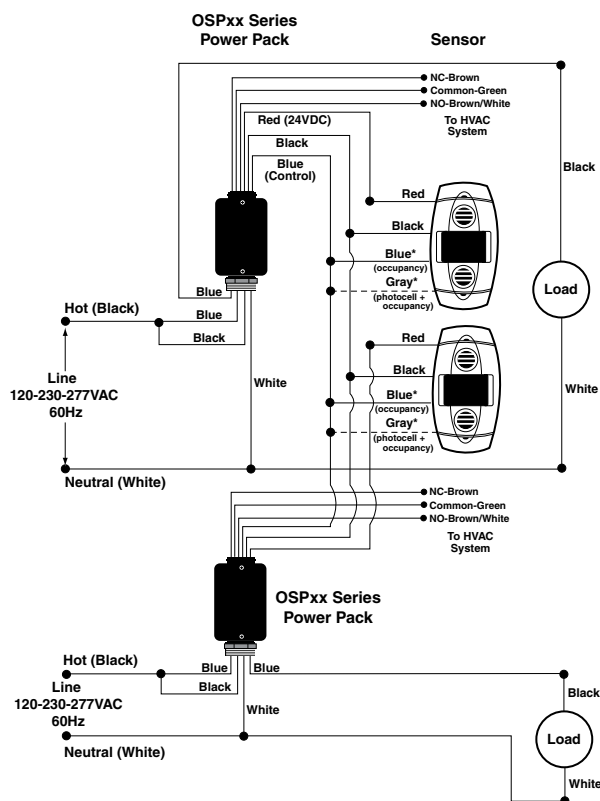
OSWxx Occupancy Sensor Wiring Diagram with Power Pack and Add-A-Relay†
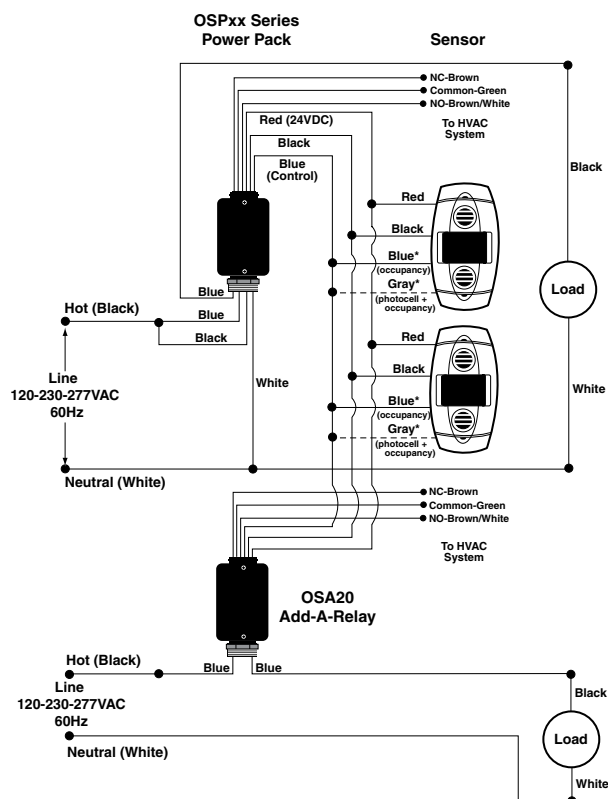
OPB15-øDW Power Base Adaptor
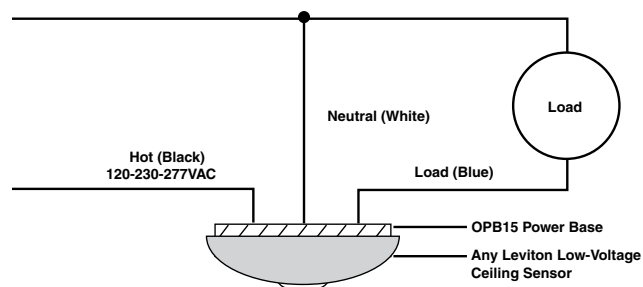
*When the photocell function is not being used, connect the Blue Occupancy Sensor lead to the Blue Power Pack lead. When using the Photocell function, connect the Gray Occupancy Sensor lead to the Blue Power pack lead–Do not use the Blue Occupancy Sensor lead for the photocell function.

† Consult with factory for 2ø8, 22ø, 23ø, and 24øV models.

Z-MAX™ PLUS RELAY CONTROL PANELS

EZ-MAX PLUS AND Z-MAX PLUS RELAY SYSTEMS

Offering Stand-Alone and Fully-Integrated Building-Wide Solutions
The EZ-MAX Plus stand-alone switched relay control panel provides scheduling of lights in a single area. Multiple network-ready Z-MAX Plus switched relay control panels are ideal for spaces where centralized lighting control, programming and monitoring, are required.

WHAT MAKES EZ-MAX PLUS AND Z-MAX PLUS RELAY SYSTEMS BETTER?

A Single Integrated Cost-Effective Solution
Where a separate time clock, cabinet, terminal blocks and contactors were used in the past, our EZ-MAX Plus and Z-MAX Plus Relay Control Panels replace them with a single integrated solution. That means labor costs are reduced to just wiring two lug wires in and out...and material costs are lowered as well.

For maximum equipment protection, the standard 3øA relay card has a short circuit current rating (SCCR) of 18,øøøA to allow it to withstand higher current inrushes caused by short circuit conditions. Low-voltage inputs allow connection of photocells, occupancy sensors, low-voltage switches and digital switches for a comprehensive yet easily installed energy management solution.

Ideal Uses
• Smart replacement for time clock/contactor installations
• Low-voltage control
• Site lighting
• Daylight harvesting
• Occupancy sensor integration
• Parking garage/parking lot lighting
• Any application requiring reliable and cost-effective automatic lighting control

ASTRONOMICAL TIME CLOCK INCLUDED AT NO ADDITIONAL COST

While other manufacturers offer an astronomical time clock (ATC) as an option in their relay systems, Leviton includes one built right into its Relay System Control module at no additional cost. The ATC allows the system's location to be quickly programmed in by entering your location information. ATC events can then be triggered by time of day or by a time offset from either sunrise or sunset, eliminating the need for additional photocells simply to perform routine dusk-to-dawn switching tasks. Z-MAX Plus is CEC Title 24 compliant, as well.

TESTED TO REAL-WORLD LOAD RATINGS

While our competitors only provide a general-purpose rating that meets UL916 Energy Management Equipment and UL924 Life Safety standards, our relays provide specific nameplate UL ratings based on testing with each type of load under real-world conditions. So, while many manufacturers claim compatibility with specific load types, only Leviton assures your complete compliance with this standard by providing specific UL Listings as per UL testing requirements for each type of load.

EFFORTLESS PROGRAMMING

Say goodbye to programming by coded input. Leviton's Z-MAX Plus and EZ-MAX Plus Relay Control Panels maximize programming flexibility and convenience with easy keypad programming via a bright LCD panel that displays clear on-screen instructions in plain English. Our free, easy-to-use PC-based Visual Programmer software also allows you to program all of your relay panels on a laptop and then upload the programming to each relay panel.

CONTRACTOR-FRIENDLY WIRING

All Leviton relay cabinets offer generous wiring space and robust, easy-to-wire terminals. Modular relay cards in Z-MAX Plus units come with a single circuit on each card for easy swap-out to simplify maintenance.

3øA Relay Card
(18,øøøA SCCR)

3øA Relay Card with Handle
(2ø,øøøA SCCR)

Z-MAX PLUS NETWORK-READY 8-, 24- & 48-RELAY CONTROL PANELS

Offering Timed Switched Control For Global Leviton Lighting Control Systems

Leviton Z-MAX Plus networkable Relay Control Panels enable lighting applications of all sizes to be easily controlled as a complete system, integrated with Leviton Dimensions D4200 and D8000 controls, or operated independently.

NEMA Type-1 enclosure with removable door

Modular connectors for wiring outside cabinet

Keyed lock

Multi-voltage power supply* (120/277/347V)

Revolutionary Z-MAX relay circuit provides unmatched durability

Contractor-friendly oversized lugs accept #8-16 AWG wire

Keypad with LCD and oversized buttons eases programming
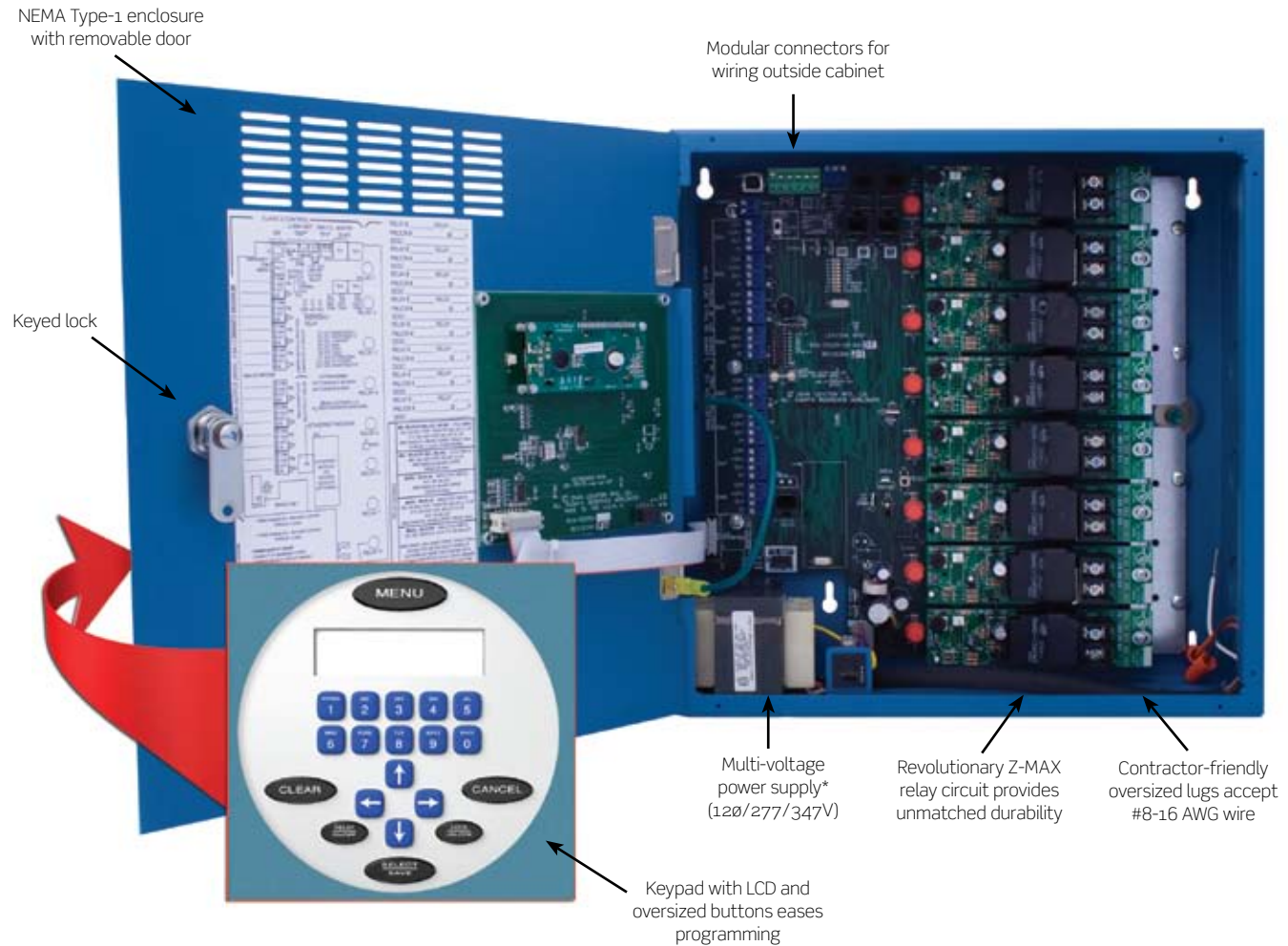
* Foreign: 230V ± 15%

Z-MAX NETWORK-READY 8-, 24- & 48-RELAY CONTROL PANELS

FEATURES

• 3øA relay cards short circuit current rated at 18,øøøA and 2ø,øøøA

• Revolutionary Z-MAX relay circuit provides unmatched durability

• Easy programming using wizard-driven LCD display or Leviton's free Visual Programmer PC-based software via USB port, optional TCP/IP board or optional modem board upload

• Integrated astronomical time clock

• Networkable for easy centralized lighting control, including programming and monitoring

• Individually replaceable relays rated for all light sources and motor loads simplify maintenance and expansion

• Single-pole and two-pole relays fit in the same location, providing cabinet capacity that is constant regardless of relay type.

• Compatible with occupancy sensors, discrete and analog photocells, Z-MAX Digital Entry Stations, low voltage switches, Dimensions D42øø and D8øøø, DMX and analog controllers and a variety of other input devices

• Non-volatile lifetime memory blackout protection

• Normal or emergency panel capability

• Multi-voltage power supply* (12øV/277/347V) 5ø/6øHz

• Factory wired and pre-tested

• Comes standard with Bacnet/MSTP to conveniently enable immediate integration to building automation systems (BAS) at no additional cost – no other protocol converter or external device needed; available as an option with competitor products

• Main control module handles 252 relays and 24ø switch inputs for increased lighting control and load capacity to control low voltage switches, occupancy sensors and photocells

• Native Luma-Net™ and DMX connectivity allows multiple relay panels to share lighting control information over a dataline network with Leviton's D42øø and D8øøø Architectural Lighting Controls, a-2øøø dimming cabinets, iSeries e Dimming Racks and any other DMX dimming racks for centralized control using Leviton's MSWindows® PC-based Lumagraphics® lighting control software.
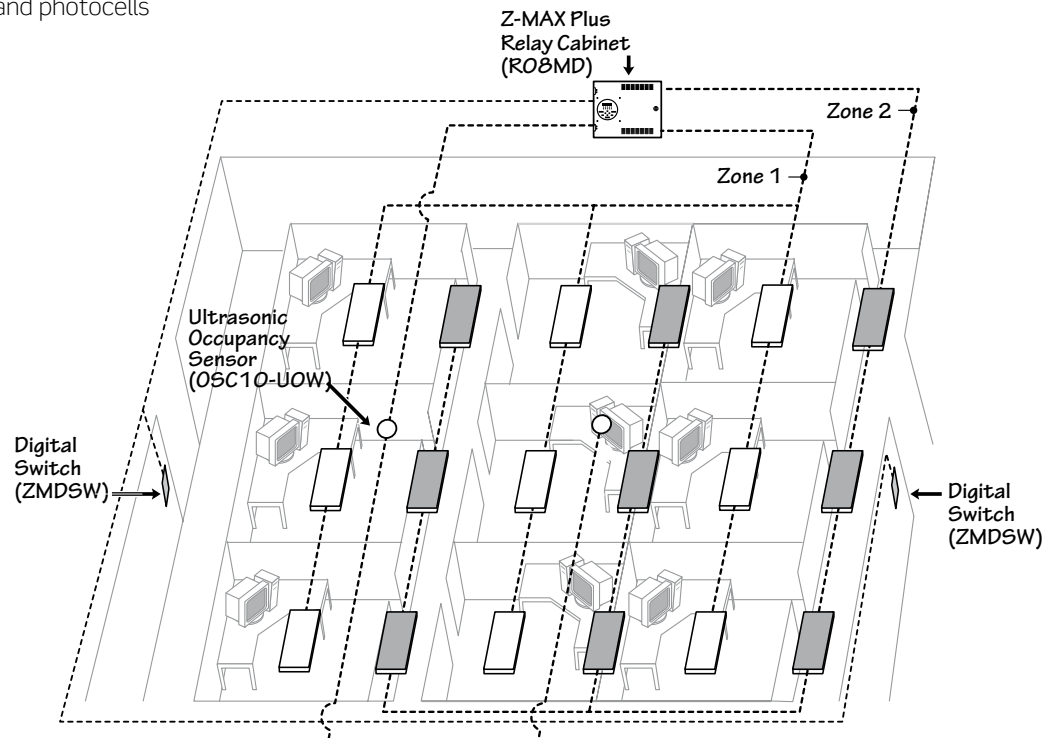
• Feed and load wiring only. No other wiring or assembly required

• Optional RRP 4-Relay Remote Panels lower installation costs and simplify setup

• Z-MAX Plus 24 and 48-relay panels available with optional integrated standard electrical distribution system that includes overload protection using Cutler Hammer breakers

• Rated UL 924 for emergency lighting to meet safety standards

• Listings for 12øV, 277V and 347V Panels

    - UL 924

    - UL and C-UL Listed (UL File EI23ø72)

    - CEC Title 24 compliant

    - ASHRAE 9ø.1 compliant

• 1ø-Year Warranty on Relays. 2-Year Warranty on Panels.

APPLICATIONS

• Office buildings or multi-building   • Retail stores

• Campuses   • Warehouses   • Commercial spaces

Z-MAX Plus Relay Cabinet (RO8MD)
Zone 2
Zone 1
Ultrasonic Occupancy Sensor (OSC1O-UOW)
Digital Switch (ZMDSW)
Digital Switch (ZMDSW)

* Foreign: 23øV ± 15%

Typical Z-MAX Plus installation

Z-MAX PLUS RELAY CONTROL PANELS

Z-MAX PLUS 8-RELAY CONTROL PANELS
with 8 switch inputs and 2øA output relays

DESCRIPTION	CAT. NO. for 12ø, 277, 347V Applications	CAT. NO. for 23øV Applications	COLOR
Z-MAX Plus 8 Panel, Networkable, No Relays	rø8nd-øøø	rø8nf-øøø	Blue
Z-MAX Plus 8 Panel, Networkable, (8) 3øA Relays	rø8nd-lø8	rø8nf-lø8	Blue
Z-MAX Plus 8 Panel, Networkable, (8) 2-Pole Relays	rø8nd-2ø8	rø8nf-2ø8	Blue

Z-MAX PLUS 24-RELAY CONTROL PANELS
with 12 switch inputs and 2øA output relays

DESCRIPTION	CAT. NO. for 12ø, 277, 347V Applications	CAT. NO. for 23øV Applications	COLOR
Z-MAX Plus 24 Panel, Master, No Relays	r24md-øøø	r24mf-øøø	Blue
Z-MAX Plus 24 Panel, Master, (12) 3øA Relays	r24md-l12	r24mf-l12	Blue
Z-MAX Plus 24 Panel, Master, (24) 3øA Relays	r24md-l24	r24mf-l24	Blue
Z-MAX Plus 24 Panel, Master, (24) 2-Pole Relays	r24md-224	r24mf-224	Blue
Z-MAX Plus 24 Panel, Remote, No Relays	r24sd-øøø	r24sf-øøø	Blue
Z-MAX Plus 24 Panel, Remote, (24) 3øA Relays	r24sd-l24	24sf-l24	Blue
Z-MAX Plus 24 Panel, Remote, (24) 2-Pole Relays	r24sd-224	r24sf-224	Blue

Z-MAX PLUS 48-RELAY CONTROL PANELS
with 12 switch inputs and 2øA output relays

DESCRIPTION	CAT. NO. for 12ø, 277, 347V Applications	CAT. NO. for 23øV Applications	COLOR
Z-MAX Plus 48 Panel, Master, No Relays	r48md-øøø	r48mf-øøø	Blue
Z-MAX Plus 48 Panel, Master, (24) 3øA Relays	r48md-l24	r48mf-l24	Blue
Z-MAX Plus 48 Panel, Master, (36) 3øA Relays	r48md-l36	-	Blue
Z-MAX Plus 48 Panel, Master, (48) 3øA Relays	r48md-l48	r48mf-l48	Blue
Z-MAX Plus 48 Panel, Master, (48) 2-Pole Relays	r48md-248	r48mf-248	Blue
Z-MAX Plus 48 Panel, Remote, No Relays	r48sd-øøø	r48sf-øøø	Blue
Z-MAX Plus 48 Panel, Remote, (48) 3øA Relays	r48sd-l48	r48sf-l48	Blue
Z-MAX Plus 48 Panel, Remote, (48) 2-Pole Relays	r48sd-248	r48sf-248	Blue

REMOTE 4-RELAY PANEL (RRP)
Networkable Z-MAX Remote Relay Panels with Local Switching Functions
The RRP provides remote, networked lighting control with local switching via occupancy sensors, photocells and manual switching. Up to 24 RRP's can be networked to a master Z-MAX Relay Control Panel to provide up to 252 relay circuits, offering a powerful and cost-effective distributed switching solution with central monitoring and control.

FEATURES
• Centrally controlled by a Z-MAX Plus master panel
• Network-ready, expandable relay control for up to 63 RRP's (252 total relays)
• USB port for software updates and network configuration
• 12ø/277V dual voltage standard; 347V available
• Available off-the-shelf with four 2øA relays or four 2-pole 2øA relays, providing up to 8 remote-controlled circuits
• Compact 1ø" x 1ø" enclosure engineered for quick, easy installation and networking
• 4 analog inputs for use with any combination of occupancy sensors, photocells and low-voltage switches
• Factory wired and pre-tested
• 1ø-Year Warranty on Relays. 2-Year Warranty on Panels.

APPLICATIONS
• Multiple classroom switching with central programming and control
• Distributed daylight responsive switching
• Distributed switching solution for remote networked lighting control by Z-MAX Plus Relay Control Panel with local switching by occupancy sensors, photocells and manual switching
• Central control of multiple corridor lighting
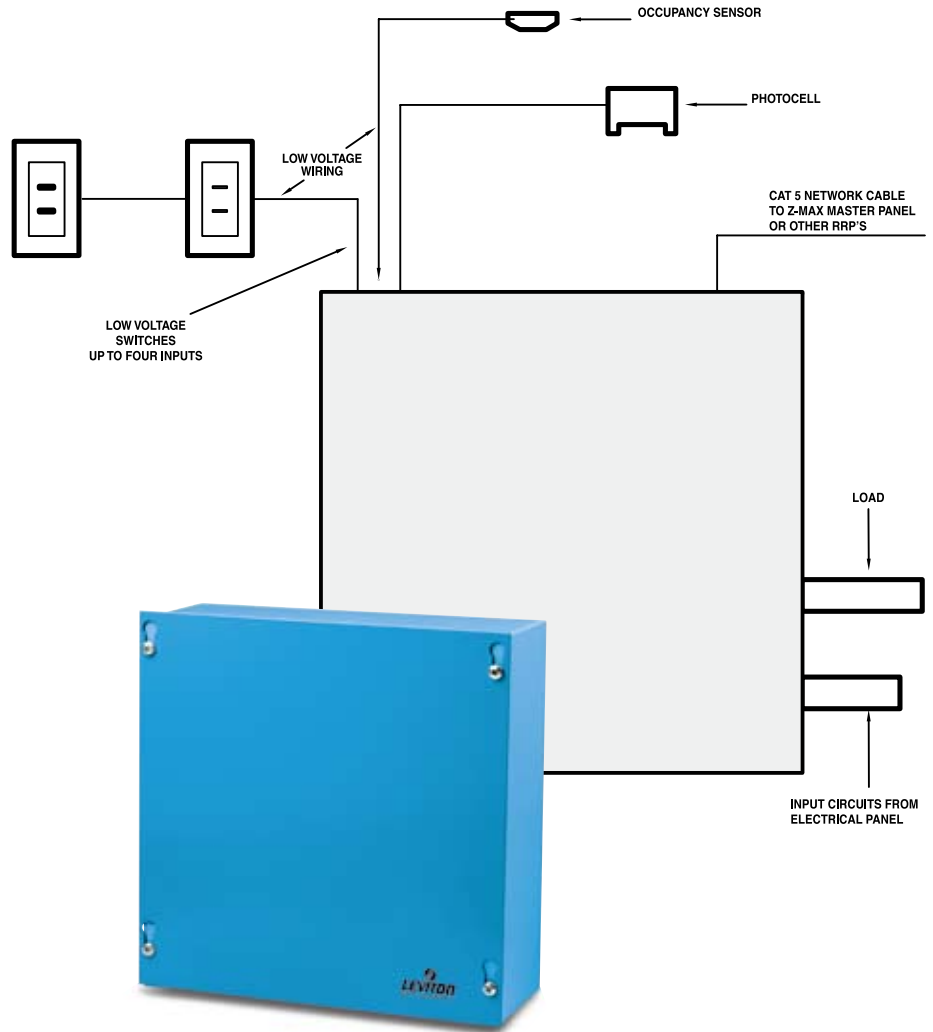
RRP REMOTE 4-RELAY PANELS
(for use with Z-MAX Plus Master Relay Control Panel)
with 4 switch inputs and 2øA output relays

DESCRIPTION	CAT. NO. NETWORK VERSION	CAT. NO. STAND-ALONE VERSION	INPUT POWER	COLOR
Remote Relay Panel with (4) 12ø/277V relays	—	re4sd-1ø4	12øV, 277V, 347V	Blue
Remote Relay Panel with (4) 2-pole relays, up to 277V per pole	—	re4sd-2ø4	12øV, 277V, 347V	Blue
Remote Relay Panel with (4) 347V relays	—	re4sd-3ø4	12øV, 277V, 347V	Blue

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Z-MAX PLUS RELAY CONTROL PANELS WITH INTEGRATED ELECTRICAL DISTRIBUTION

Combined Relay Control Panel and Circuit Breaker Solution Speeds Installation

Z-MAX Plus Relay Control Panels are integrated with a standard electrical distribution system and over current protection to offer the convenience of a single feed with the flexibility of a Z-MAX Plus relay control system.

FEATURES
- Single or three-phase configurations
- 12øV, 277V, or 347V systems
- Main lugs or main breaker
- Custom load center configuration
- Field replaceable standard breakers
- All standard Z-MAX Plus operational features (reference Z-MAX Plus data sheets)
- Uses Cutler-Hammer CH, GHQ, & GBH frame snap-in breakers, locked in place by the enclosure
- Ships as one complete pre-wired assembly
- Up to 1øø,øøøA AIC, Short Circuit Current Rating, available on all panel-boards. (Consult factory for details)
- 277/48øV panel-boards, main lugs,65kAIC @ 12ø/2ø8V
- 14kAIC @ 277/48øV standard
- 277/48øV panel-boards, main breaker, 35kAIC standard
- 12ø/2ø8V or 12ø/24øV panel-boards, main lugs, 1øK AIC standard
- 12ø/2ø8V or 12ø/24øV panel-boards, main breaker
- 25kAIC standard depending on main breaker
- 347/6øøV panel-boards, main lugs, 1økAIC standard
- 347/6øøV panel-boards, main breaker, 18kAIC standard
- UL & cUL listed
- Factory wired and pre-tested
- 1ø-Year Warranty on Relays, 2-Year Warranty on Panels

APPLICATIONS
- Retrofit and distribution system upgrades
- Project requiring integrated relays and breakers

120V CABINETS

48 Relay

Height when
using 24 Relay
Control Panel.

Relay Section &
Control Module

Locking Door

87"

67"

Bottom Feed,
KO's on top & sides
for load distribution

Locking Door

Breaker Section

Bottom Feed

24"   4" Deep

Weight w/48 Relay Panel: 195 lbs (88.6 kg)
Weight w/24 Relay Panel: 174 lbs (78.9 kg)

277V & 347V CABINETS

40.5"

40.5"

Breaker Section

Locking Door

60"   6" deep

Top feed, bottom feed optional and top, side,
or bottom load distribution as preferred
Weight: 335 lbs (152.2 kg)
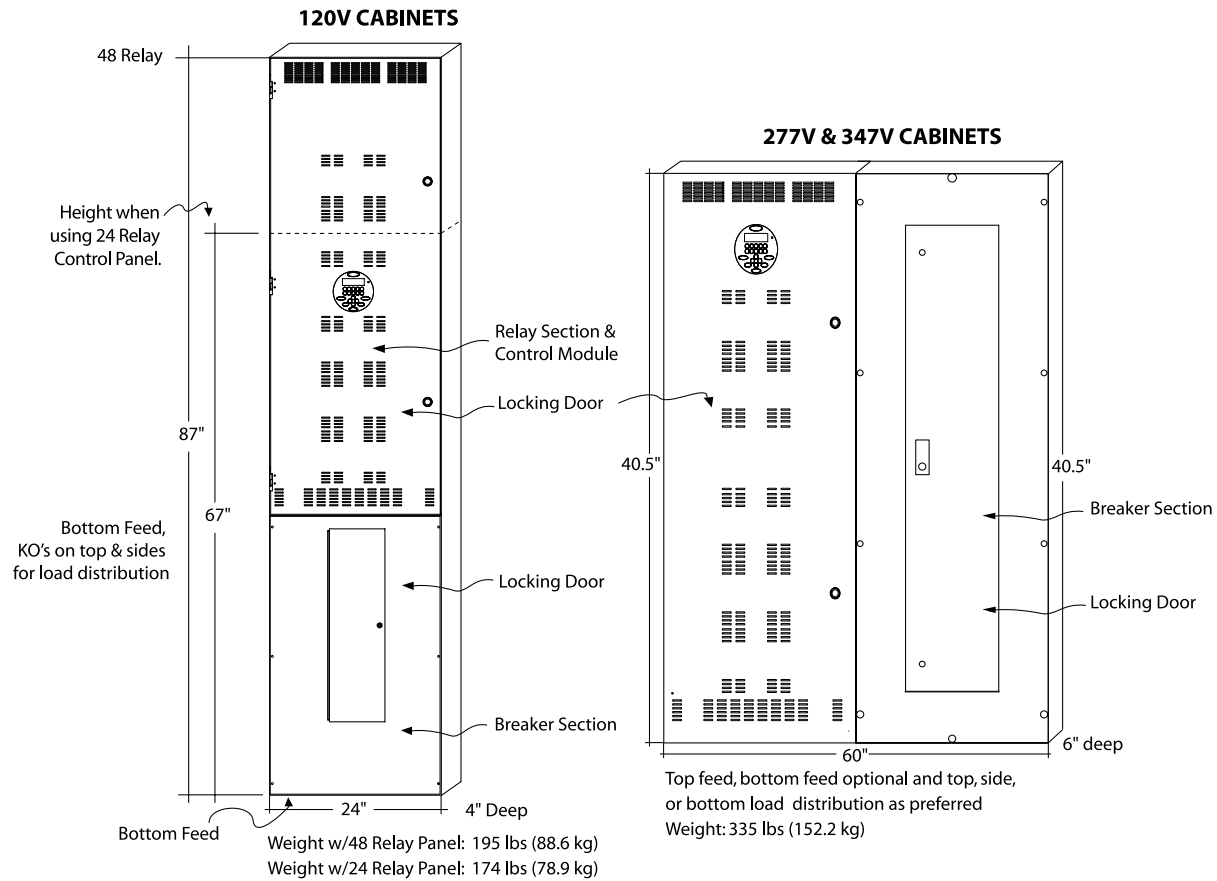
12ØV SYSTEMS STOCK CONFIGURATIONS

CAT. NO.	VOLTS	PHASE	POWER FEED	NO. OF CIRCUIT BREAKERS (2øA Single Pole)	NO. OF Z-MAX RELAY MODULES- (Standard Single Pole)
rb423-l11	12Ø/2Ø8	3Ø	Main Lug	42	42
rb423-b11	12Ø/2Ø8	3Ø	225A Main Breaker	42	42
rb421-l11	12Ø/24Ø	1Ø	Main Lug	42	42
rb421-b11	12Ø/24Ø	1Ø	225A Main Breaker	42	42
rb243-l11	12Ø/2Ø8	3Ø	Main Lug	24	24
rb243-b11	12Ø/2Ø8	3Ø	225A Main Breaker	24	24
rb241-l11	12Ø/24Ø	1Ø	Main Lug	24	24
rb241-b11	12Ø/24Ø	1Ø	225A Main Breaker	24	24

277V SYSTEMS STOCK CONFIGURATIONS

Cat. No.	Volts	Phase	POWER FEED	No. of Circuit BREAKERS (2øA Single Pole)	No. of Z-MAX Relay Modules- (Standard Single Pole)
rb423-l21	277/48Ø	3Ø	Main Lug	42	42
rb423-b21	277/48Ø	3Ø	2ØØA Main Breaker	42	42
rb243-l21	277/48Ø	3Ø	Main Lug	24	24
rb243-b21	277/48Ø	3Ø	2ØØA Main Breaker	24	24

Custom configurations are available upon request. Contact your local Leviton LMS representative for additional information or visit www.leviton.com/LMS.

EZ-MAX™ PLUS STAND-ALONE RELAY CONTROL PANELS

EZ-MAX Plus Relay Control Panels
EZ-MAX Plus relay lighting control panels combine the power and performance of the larger Z-MAX Plus relay lighting control panels in compact and cost-effective 4/8-circuit and 16/24-circuit models. EZ-MAX Plus is the ideal solution for smaller, stand-alone applications that do not require the field configuration or advanced networking features of the larger Z-MAX Plus panels.

Programming is easy with the EZ-MAX Plus with a large LCD screen on the panel or an off-line editor. EZ-MAX Plus includes standard programming configurations for occupancy sensors and photocells as well as a built-in astronomical time clock (ATC) with 101 major city and states programmed into the system.
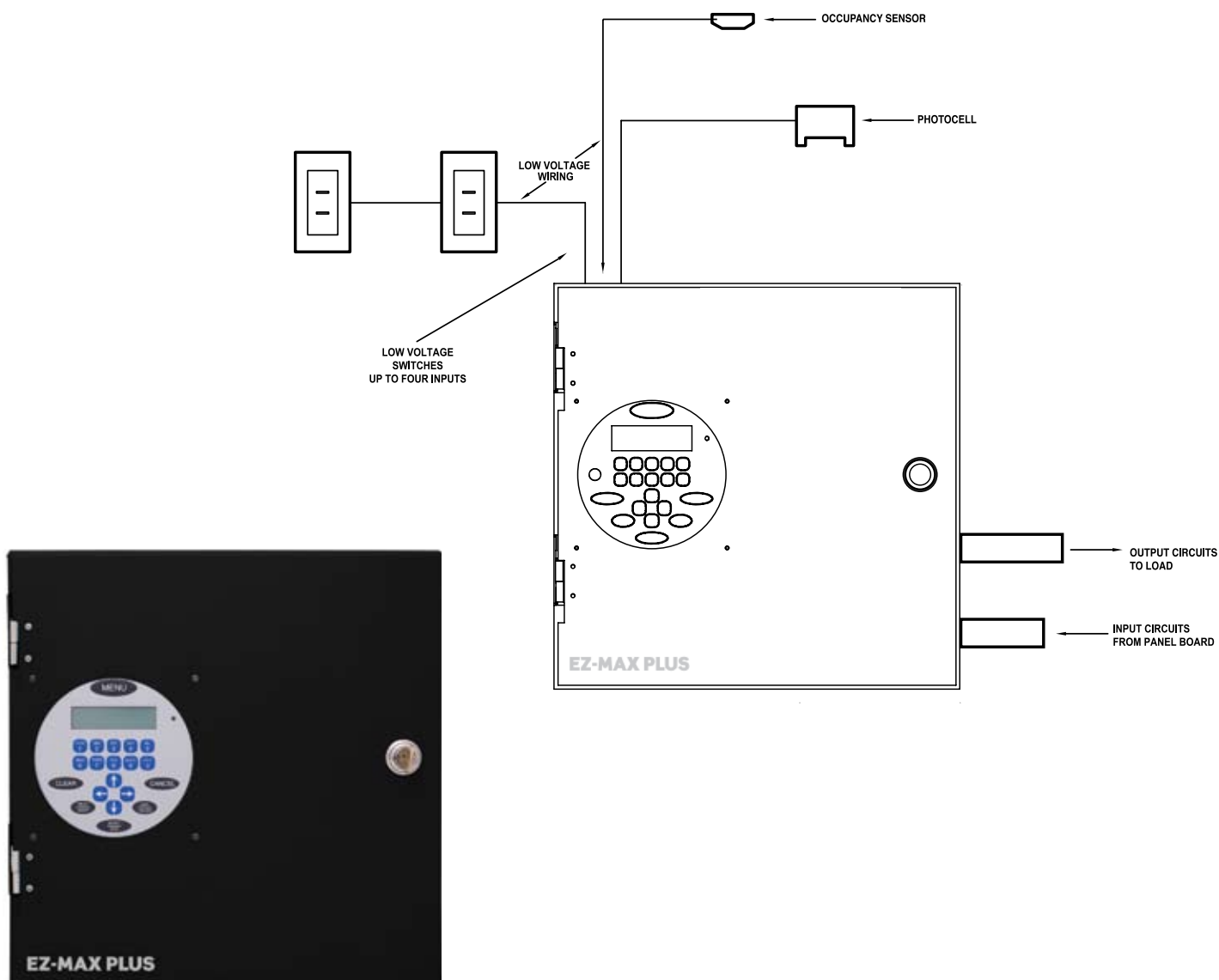
FEATURES

• Revolutionary Z-MAX Plus relay circuit provides unmatched durability

• Easy programming using an offline editor or wizard-driven LCD display and oversized buttons

• Easy standard programming configuration

    - Occupancy sensors: manual-ON or auto-ON applications

    - Photocells: interior or exterior application modes

    - Photocell light level trip points: on or off

• Built-in astronomical time clock

    - 1ø1 major city and states programmed for easy astronomical setup

• Time clock and scheduler

• Sunrise/sunset time clock events

• Auto-detection/auto-assign of installed network switches

• Enable/disable of low-voltage and digital input devices minimizes power consumption

• Optional modem for remote touch-tone control

• Integrated astronomical time clock

• Combines a clock, cabinet, terminal blocks and contactors in a single integrated solution to reduce labor and material costs

• Angled terminals for easy screwdriver access

• Completely removable interior, allowing the empty box to be roughed-in without risk to components

• Accepts input from momentary, maintained or toggle switches as well as low-voltage input from photocells and occupancy sensors for a comprehensive yet easily installed energy management solution

• Multi-voltage power supply* (12øV/277/347V)

• Factory wired and pre-tested

• Compact 1ø" x 1ø" standard electrical enclosure

• Rated UL 924 for emergency lighting to meet safety standards

*Foreign: 23øV± 15%

• Listings for 12ø, 277V and 347V Panels

    - UL and C-UL Listed Industrial Control Equipment and Emergency Lighting Equipment

    - ASHRAE 9ø.1 compliant

    - CEC Title 24 compliant

• 1ø-Year Warranty on Relays, 2-Year Warranty on Panels

APPLICATIONS

• Lower cost, higher performance alternative for time clock/contactor installations

• Low-voltage control

• Site lighting applications

• Daylight harvesting applications

• Occupancy sensor integration

• Parking lot lighting

• Parking garages

• Classrooms

• Gyms

• Any application requiring reliable and cost-effective automatic lighting control

Typical EZ-MAX Plus installation
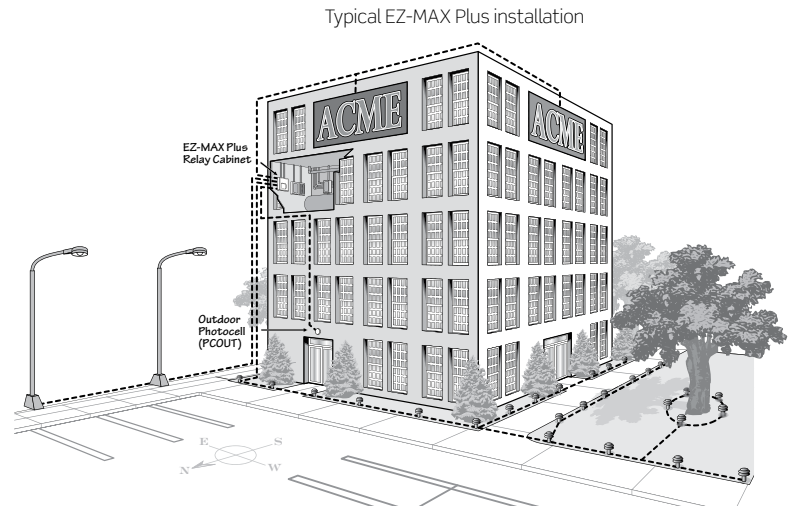
EZ-MAX PLUS RELAY CONTROL PANELS
WITH 4 SWITCH INPUTS AND 2ØA OUTPUT RELAYS

DESCRIPTION	CAT. NO. for 12ø, 277, 347V Applications	CAT. NO. for 23øV Applications	COLOR
EZ-MAX Plus 8 Panel, No Relays	rø8bd-øøø	rø8bf-øøø	Black
EZ-MAX Plus 8 Panel, (4) 3øA (NO/NC) Relays	rø8bd-lø4	rø8bf-lø4	Black
EZ-MAX Plus 8 Panel, (8) 3øA (NO/NC) Relays	rø8bd-lø8	rø8bf-lø8	Black
EZ-MAX Plus 8 Panel, (8) 2-Pole (NO) Relays	rø8bd-2ø8	rø8bf-2ø8	Black
EZ-MAX Plus 24 Panel, No Relays	r24bd-øøø	r24bf-øøø	Black
EZ-MAX Plus 24 Panel, (16) 3øA (NO/NC) Relays	r24bd-l16	r24bf-l16	Black
EZ-MAX Plus 24 Panel, (24) 3øA (NO/NC) Relays	r24bd-l24	r24bf-l24	Black
EZ-Max Plus 24 Panel, (16) 2-Pole (NO) Relays	r24bd-216	r24bf-216	Black
EZ-MAX Plus 24 Panel, (24) 2-Pole (NO) Relays	r24bd-224	r24bf-224	Black

Z-MAX RELAY CARDS

FEATURES
• Several new Z-MAX relay cards for additional application flexibility:

  - 3øA single-pole N/O or N/C with a short circuit current rating of 18,øøøA

  - 3øA single-pole N/O or N/C with handle with a short circuit current rating of 2ø,øøøA

  - 2øA single-pole N/C

  - 2øA 2-pole N/C

• Z-MAX standard 3øA relay card provides zero-cross circuitry eliminating arcing at mechanical contacts when loads are switched for unmatched durability

• Individual relay cards for each circuit for flexibility to meet any requirement

• Individually replaceable for easy maintenance and expansion

Z-MAX RELAY CARDS

DESCRIPTION	CAT. NO.
Single-Pole N/O or N/C Relay Card, 3øA, 12ø-277V	relay-ø3ø
Single-Pole N/O or N/C Relay Card with Handle, 3øA, 12ø-277V	relay-l3ø
2-Pole, N/O Relay Card, 2øA, 2ø8-48øV	relay-2pl
Single-Pole N/C Relay Card, 2øA, 12ø-277V	relay-1nc
2-Pole N/C Relay Card, 2øA, 2ø8-48øV	relay-2nc
347V Relay Card, 2øA, 347V	relay-347
Latching Relay Card, 2øA, 347V	relay-lat

Z-MAX ACCESSORIES

DESCRIPTION	CAT. NO.
Flush Trim Kit for 8-Relay Cabinet	racøø-ø8f
Flush Trim Kit for 24-Relay Cabinet	racøø-24f
Flush Trim Kit for 48-Relay Cabinet	racøø-48f
Switch Input Board with 36 discrete inputs	racøø-sib
Modem with Touch Tone input capability*	racøø-mod
Ethernet Module*	racøø-eth
Voltage Barrier between relay cards	racøø-vbr

*Consult factory for availability.

miniZ™ INTELLIGENT DAYLIGHT MANAGEMENT SYSTEM
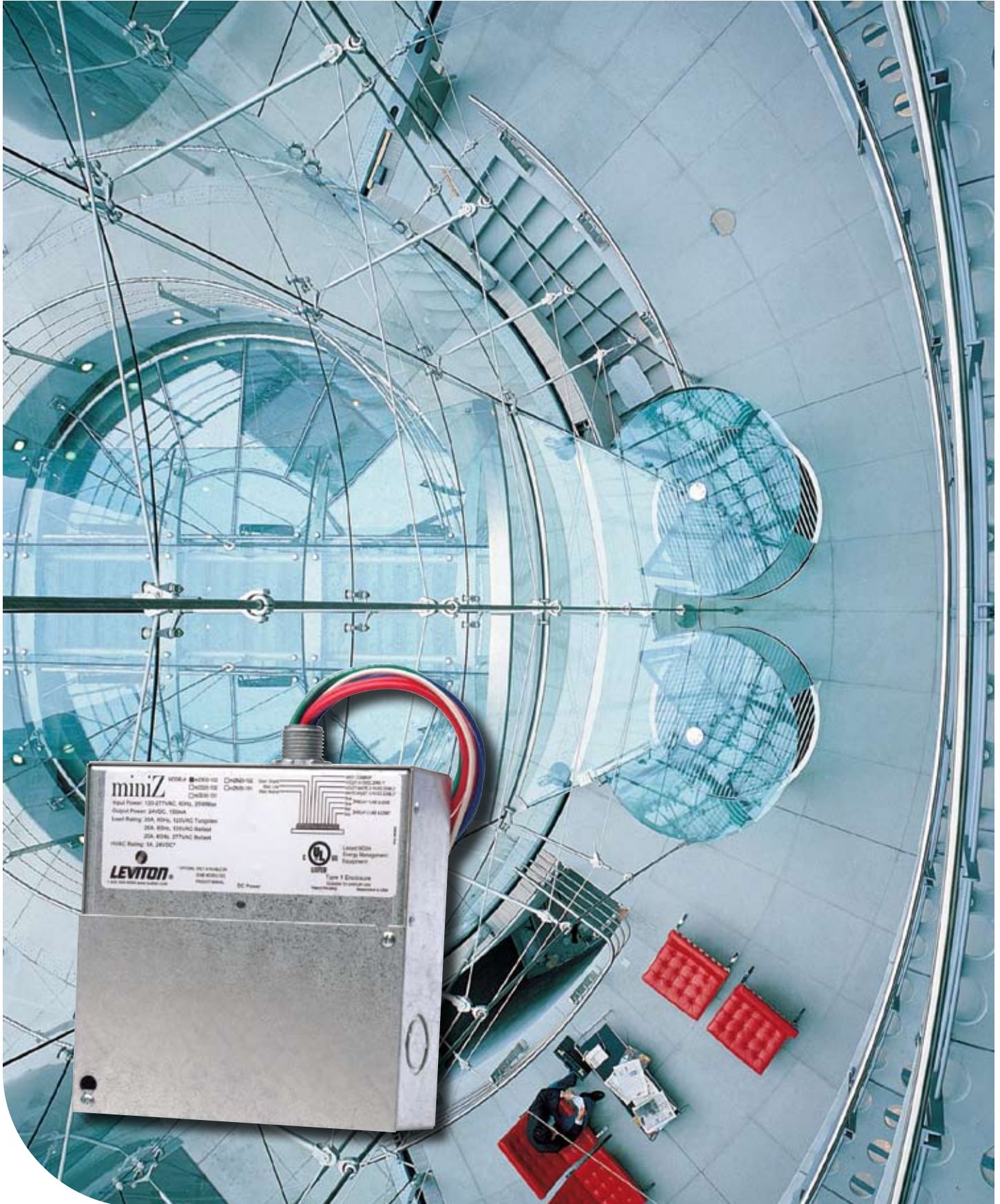
miniZ INTELLIGENT DAYLIGHT MANAGEMENT SYSTEM

Combines Occupancy Sensing, Daylight Harvesting and Flexible Lighting Control
The miniZ combines occupancy sensing, daylight harvesting and flexible lighting control functions in a single extremely easy-to-install package that features the world's first 1øø% self-configuring daylight harvesting system with ladderless commissioning for install-and-forget convenience. The performance, features and capabilities of the miniZ provide a powerful package at a price anyone can afford.

FEATURES
- Automatic correction for Light Loss Factor
- Recognizes and corrects for lumen maintenance issues
- Cost-effective energy code compliance
- Ladderless commissioning™ provides install-and-forget convenience
- Automatic closed- or open-loop, multi-zone daylight harvesting control
- Convenient occupancy sensor and photocell integration
- Simplified daylight harvesting with full range dimming
- Autocal™ (patent-pending) automatic photocell calibration
- Input for external time clock integration, load shedding and emergency override
- Simplified integration with emergency systems
- Controls maximum lighting output for additional energy savings potential
- Daylight switching, full range ø-1øV fluorescent dimming and network models available
- Accepts input from local momentary or maintained switches as well as low-voltage input from photocells and occupancy sensors for a comprehensive yet easily installed energy management solution
- Accepts multi-voltage (12ø, 277, 347V) input; 1øW Max, 5ø/6øHz
- Factory wired and pre-tested
- 5-Year Warranty

APPLICATIONS
- Offices
- Classrooms
- Skylit spaces

1/2" nipple for convenient connection to junction box

miniZ

Control Input (100-277VAC or 200-347VAC)*
Neutral
Circuit 1 Line
Circuit 1 Load
Zone 1 Output (0-10V)*
Circuit 2 Line
Circuit 2 Load
Zone 2 Output (0-10V)*
Zone 3 Output (0-10V)*

MINIZ BASIC MODELS

mzb00-102

mzb00-c02

mzb02-102

mzb02-c02

Low Voltage Terminal & Configuration Board

AutoCal – enable automatic self-calibration

Configuration Jumpers

HVAC and/or Emergency Output Relays*

Daylight Harvesting Target – Manual Adjustment

Emergency Input
Also can be configured as Occupancy Sensor disable

Photocell Disable
Temporarily disables daylight harvesting mode

Time Clock
Turns off lights when input receives +24VDC

Load Shed
When high, lights dim to load level

Low Voltage Common

Photocell Input
Supplies +24vdc
Expects +0-10vdc return

Occupancy Sensor Input
Supplies +24vdc
Expects +24vdc return

Switch Inputs
+ Momentary
+ Maintained
+ Supports SPDT Center Off Switches
+Annunciator/Pilot Light Support

*Varies depending on model

DUAL ROOM MINIZ MODELS

mzd20-102

mzd30-101

mzd20-c02

mzd30-c01

mzd22-102

mzd22-c02

½" nipple for convenient connection to junction box

Dual Room miniZ

Control Input (100-277VAC or 347VAC)*
Neutral
Room 1 Line
Room 1 Load
Room 1 Output (0-10V)*
Room 2 Line
Room 2 Load
Room 2 Output (0-10V)*

Low Voltage Terminal & Configuration Board

AutoCal
Enable automatic self-calibration

Configuration Switches

Daylight Harvesting Target
Manual adjustment for each room

Emergency Input
Also can be configured as Occupancy Sensor disable

Occupancy Sensor Input (2)
+24 VDC active high

Load Shed
When high, lights dim to set level

Photocell Input (2)
+0-10 VDC input

Zone Control Inputs (2)

Switch Inputs (2)
+ Momentary
+ Maintained
+ Supports SPDT Center Off
+ Annunciator/Pilot Light Support Switches

* Available only on dimming models.

miniZ

Network miniZ

1/2" nipple for convenient connection to junction box

RJ-45 Network Connections

Control Input (100-277VAC or 200-347VAC)*
Neutral
Circuit 1 Line
Circuit 1 Load
Zone 1 Output (0-10V)*
Circuit 2 Line*
Circuit 2 Load*
Zone 2 Output (0-10V)*
Zone 3 Output (0-10V)*

NETWORK MINIZ MODELS

mzn2ø-1ø2
mzn3ø-1ø1
mzn2ø-cø2
mzn3ø-cø1
mzn22-1ø2
mzn22-cø2

Low Voltage Terminal & Configuration Board

AutoCal – enable automatic self-calibration

Configuration Jumpers

HVAC and/or Emergency Output Relays*

Daylight Harvesting Target – Manual Adjustment

Emergency Input
Also can be configured as Occupancy Sensor disable

Photocell Disable
Temporarily disables daylight harvesting mode

Time Clock
Turns off lights when input receives +24VDC

Load Shed
When high, lights dim to load level

Photocell Input
Supplies +24vdc
Expects +0-10vdc return

Occupancy Sensor Input
Supplies +24vdc
Expects +24vdc return

Switch Inputs
+ Momentary
+ Maintained
+ Supports SPDT Center Off Switches
+Annunciator/Pilot Light Support

*Varies depending on model

Typical miniZ installation

miniZ Daylight Harvesting Controller (MZD20)

Zone 1

Zone 2

Photocell (ODCOP)

Multi-technology Occupancy Sensor (OSW12-MOW)

Low-voltage Switch (LV220)

miniZ INTELLIGENT DAYLIGHT MANAGEMENT SYSTEM

(2øA output relays (12ø/277V); 15A output relays (347V); Fluorescent, non-dimmed and 1-1øV dimmed (ø,2 or 3 zones); 12ømA/24V output for operation of occupancy sensors, etc.)

	2øA POWER CIRCUITS	ø-1øV CAT. NO. DIMMING CIRCUITS	CONTROL INPUT VOLTAGE	NETWORK FUNCTIONALITY
mzbøø-1ø2	2	ø	12ø/277VAC	No
mzd2ø-1ø2	2	2	12ø/277VAC	No
mzd3ø-1ø1	1	3	12ø/277VAC	No
mzn2ø-1ø2*	2	2	12ø/277VAC	Yes
mzn3ø-1ø1*	1	3	12ø/277VAC	Yes
mzbøø-cø2	2	ø	22ø/347VAC	No
mzd2ø-cø2	2	2	22ø/347VAC	No
mzd3ø-cø1	1	3	22ø/347VAC	No
mzn2ø-cø2*	2	2	22ø/347VAC	Yes
mzn3ø-cø1*	1	3	22ø/347VAC	Yes
mzbø2-1ø2	2	ø	12ø/277VAC	No
mzd22-1ø2	2	2	12ø/277VAC	No
mzn22-1ø2*	2	2	12ø/277VAC	Yes
mzbø2-cø2	2	ø	22ø/347VAC	No
mzd22-cø2	2	2	22ø/347VAC	No
mzn22-cø2*	2	2	22ø/347VAC	Yes

*Consult with factory for availability.

Faced with the skyrocketing cost of energy and environmental concerns, builders, architects and lighting specialists are increasingly turning to daylighting as a primary source of illumination in mainstream construction. Daylighting will provide tremendous operating cost reductions if properly integrated with an electrical lighting control system.

At the same time, proper daylighting can increase the comfort and productivity of a building's occupants. It provides superior quality light for a wide range of tasks in the workplace. Windows, skylights and other clearstories used for daylight integration can also improve ventilation, lower air conditioning costs, and provide workers with visual stimulation. Exposure to both daily and seasonal cycles of natural daylight has also been shown to positively affect both the mood and stress levels of occupants.

For successful daylight integration, certain principles need to be followed in terms of optimum building placement: the location, design and selection of materials for fenestration (windows, skylights, etc.) and electrical lighting design. In general, the earlier in the design process of new buildings that daylighting issues are addressed, the more successful the daylight harvesting project will be.

To take full advantage of daylight integration, buildings should have automated controls that either turn off or dim artificial lighting in response to the available daylight in the space. This is traditionally called "daylight harvesting."

A CLOSER LOOK AT THE ADVANTAGES OF DAYLIGHT HARVESTING

Greater Health, Well-Being and Productivity

There is strong evidence that daylighting can improve the health, well-being and productivity of occupants. Daylight generally has a high color temperature, high color rendition and is rich in blue radiation. Both good color identification and improved visibility are attributed to these factors. People generally describe daylight as providing better visual clarity and color differentiation. One 2003 study of office workers in California[1] confirmed that workers exposed to daylight through a window with a view versus those with no window performed 10-25% better on mental function-ing and memory recall tests. On the other hand, the study also found that glare from windows was associated with poorer office worker performance. Greater glare caused performance on three mental function tests to decrease by 15-21%. Clearly, daylighting needs to be carefully planned to reap its benefits while avoiding the pitfalls.

Although artificial lighting is an integral part of modern living, the positive effects of daylight remain unchanged. Daylight provides a connection to the outdoors and supplies occupants with information on time of day, the seasons and weather condi-tions. In so doing, it keeps occupants more alert by providing frequent changes in focal distance, which helps eye muscles to relax. Whether associated with a view or not, daylight also entrains and reinforces circadian rhythms, helps to maintain daily sleep cycles, avoids seasonal affective disorder and more. Lastly, research in Sweden measuring cortisol (a stress hormone) levels in school children also found that working in classrooms without daylight adversely affected concentration and cooperation and eventually impacted developmental issues and frequency of absences due to illness.

Increased Energy Savings

With lighting accounting for approximately 38% of all energy consumed in modern buildings, daylight harvesting can signifi-cantly lower energy costs by providing illumination while allowing electric lighting to be automatically dimmed or switched off. Daylight harvesting also produces a lower cooling load than electric lighting for the same amount of illumination, resulting in lower cooling costs. This assumes that the daylight integration will be thoughtfully designed to avoid glare and overheating. In the end, to achieve high quality lighting and produce energy sav-ings, daylighting and electric lighting systems must be designed together so they complement each other. Lighting controls are a major area of integration for these two sources of illumination.
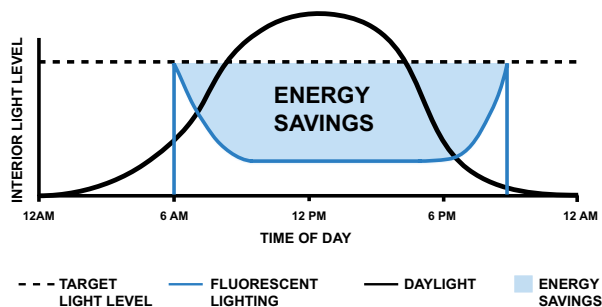

Daylight harvesting starts with lighting controls that are flexible enough to accommodate the changing requirements of occu-pants in a space. Factors such as bi-level and multi-level switching or dimming capability as well as separate circuiting of luminaires in daylighted zones enhance both the usability of a space and energy savings. Control flexibility improves lighting energy per-formance by establishing a base level of illumination and then encouraging the use of only those lights that are needed for the activity at hand. It also increases occupant satisfaction through user control.

On the other hand, while some occupants are quite conscientious about manually "tuning" lighting for their needs, including turning off or dimming lighting when not needed, automatic systems tend to result in greater energy savings over the long run. They should always be supplemented with manual override to ac-commodate individual differences. Automated systems usually include optical sensors (photocells) that read ambient light levels to both maintain a base level of illumination, by using as much free natural daylight as possible, and occupancy sensors to shut lights off when spaces are unoccupied. Depending on the level of sophistication of the system, it might also include time scheduling capability, load shedding, an HVAC interface, and other lighting control strategies to extend the energy-savings generated by a daylight harvesting system.

BENEFITS OF DAYLIGHT HARVESTING

• Improved environment/productivity

• Increased energy savings – 35-60%

• Code compliance

Source: Lighting Design Lab

KEY ISSUES OF DAYLIGHT HARVESTING DESIGN

From a lighting perspective, daylight can be treated as any other light source and used to compose lighting design solutions with illuminance, luminance, contrast, color and other lighting design elements. The best daylight harvesting designs are initiated early in the design process of new buildings when building orientation and location of fenestration – the glazed entry points of daylight – are decided. Designers should also fully assess the availability of daylight prior to design of the electrical lighting system.

OPTIMIZING A BUILDING'S ORIENTATION

A building's orientation must be optimized so that its position allows maximum daylight while minimizing unwanted solar gains. This is easiest to achieve with north-facing windows as sunlight only strikes a north-facing window in early morning and late evening during the midsummer period. South-facing windows are the next best option because of the high angle of the sun, which can be easily shaded using horizontal overhangs. Windows that face in an easterly or westerly direction, where the sun is low in the sky, are more problematic as overhangs or other fixed shading devices are of limited utility in controlling glare. Any window orientation that is more than 15° off of true north or south requires careful assessment to avoid unwanted sun penetration. Extreme northern latitudes are the exception and care must be taken in the design of south-facing windows because of the low altitude of the sun
during the winter.

OPTIMIZING THE EFFECTS OF FENESTRATION

In addition to windows, fenestration can also include glazed doors, skylights and other forms of top lighting. The placement, design and the selection of fenestration materials are also extremely important and can tip the balance between a high- and low-performance building. Fenestration impacts building energy efficiency by affecting cooling loads, heating loads, and lighting loads. Visual comfort is also strongly impacted by window location, shading, and glazing materials. Well-designed windows can be a visual appeal while poorly designed windows can create a major source of glare. Thermal comfort can also be compromised by poor fenestration design. Poorly insulated windows render a space too cool in the winter and too hot in the summer. Windows with low U-values can improve thermal comfort

by keeping glass surface temperatures closer to the interior air temperature. In addition, east-west windows and unshaded south windows can cause excessive cooling loads. Windows and skylights provide opportunities for natural ventilation, but they must also be designed to ensure a safe, secure, and easily maintained facility.

DEFINING THE DAYLIGHT HARVESTING OPPORTUNITIES OF A BUILDING

Daylight harvesting opportunities can be best described as standard, advanced or integrated depending on the following scenarios:

• **Standard:** The architecture, building orientation, fenestration and daylighting opportunities are "fixed" when the daylight harvesting design process starts. The focus is on lighting controls. The designer's key concerns are whether daylight can provide useful illumination during occupied hours and if any electric lighting can be circuited for manual or automatic dimming or switching in response.

• **Advanced:** The lighting designer has the opportunity to influence some of the building's glazing properties, shade controls and other features to improve the benefits of daylight harvesting. The focus is on quantifying the contribution of daylight harvesting and glare management. In this scenario, the designer would recommend external shading devices or internal window controls such as blinds to allow occupants to make adjustments to ensure comfort. For skylights or roof monitors, they would also recommend diffusing

glazing, baffles or louvers to diffuse sunlight. Working with the design team, they would also evaluate the impact of changes in glazing performance, assess the effect of potential glare sources such as white or bright reflective surfaces on occupants and help define any repositioning of occupant's activities needed to avoid potential sources of glare. Automated, daylight-responsive controls should be incorporated in areas with daylight contributions.

• **Integrated:** An in-depth analysis is performed on the daylight harvesting potential of a building at the earliest possible stage before construction. The focus is on architectural solutions and their full integration with electric lighting and lighting controls
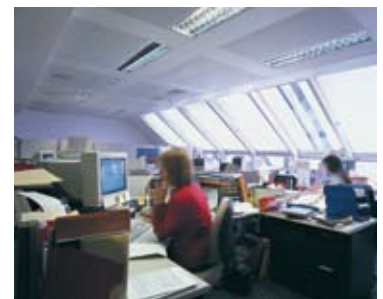
to provide high quality daylight illumination. The designer would evaluate if the quality, distribution or amount of daylighting could be improved during pre-design and schematic design phases. Modeling software would be used to evaluate the full integration of daylight harvesting and electric lighting controls with buildings characteristics. A thorough evaluation encompasses testing window placements for maximum distribution of daylight, including ceiling plane adjustments, the effect of adjusting light transmission levels of windows, and the consequences of the position and level of reflectivity of surfaces, either internally or externally, to direct daylight more deeply into the building's interior. Total building automated lighting controls are used to maximize daylight harvesting benefits and energy savings.

PREDICTING POTENTIAL SAVINGS FROM DAYLIGHT HARVESTING

From an energy perspective, the most obvious use of daylight is to permit dimming or switching off of the electric lighting system. However, predicting energy savings based on available daylight is not easy. As these savings often justify the added cost of daylighting integration elements, such as dimming ballasts and photoelectric controls, predicting potential savings with some certainty is a very important and powerful tool. The savings can best be described as providing minimal, good or optimal control depending on the following scenarios:

POTENTIAL SAVINGS FROM DAYLIGHT HARVESTING

STRATEGY	SAVINGS	ISSUES	PRODUCTS
Minimal Control: Either separate bi-level manual switching for overhead lights within 15' of all perimeter windows, or occupancy sensors with Ambient Light Hold-OFF feature. Task lights should have local switching.	Consumption will be reduced 10 to 20% in areas with daylight contribution.	Occupant preference and training in the use of daylighting controls will result in the most significant energy savings. This strategy is most beneficial in owner- occupied buildings.	Leviton standard line-voltage switch for bi-level approach. Leviton ceiling, wall or wall box occupancy sensors.
Good Control: Same as above, but add manual dimming in place of switching schemes.	The average savings has shown to be 25% with the addition of manual dimming.	Fluorescent dimming ballasts can add $0.25 to $0.75 per square foot to system cost. Energy savings can offset incremental costs quickly.	Same as above, plus Leviton wall box fluorescent dimmer controls.
Optimal Control: Automatic daylight harvesting controls in all areas with daylight. Should be connected to whole building automation controls with occupancy sensors for optimal savings.	Studies performed by LBL* have shown energy savings as much as 45% when an integrated daylighting control system is used with scheduling and occupancy sensors. *Lawerence Berkley Laboratory	Savings will be dependent on the typical occupant use of the space. Occupant satisfaction is very high with this approach.	Leviton miniZ Daylight Harvesting System networked with a Z-MAX Plus building lighting automation relay controller.

COMPARISON OF CONTROL OPTIONS IN PRIVATE OFFICES IN AN ADVANCED LIGHTING CONTROLS TESTBED
A study was conducted during a seven month period in a typical office building setting with five lighting controls scenarios.

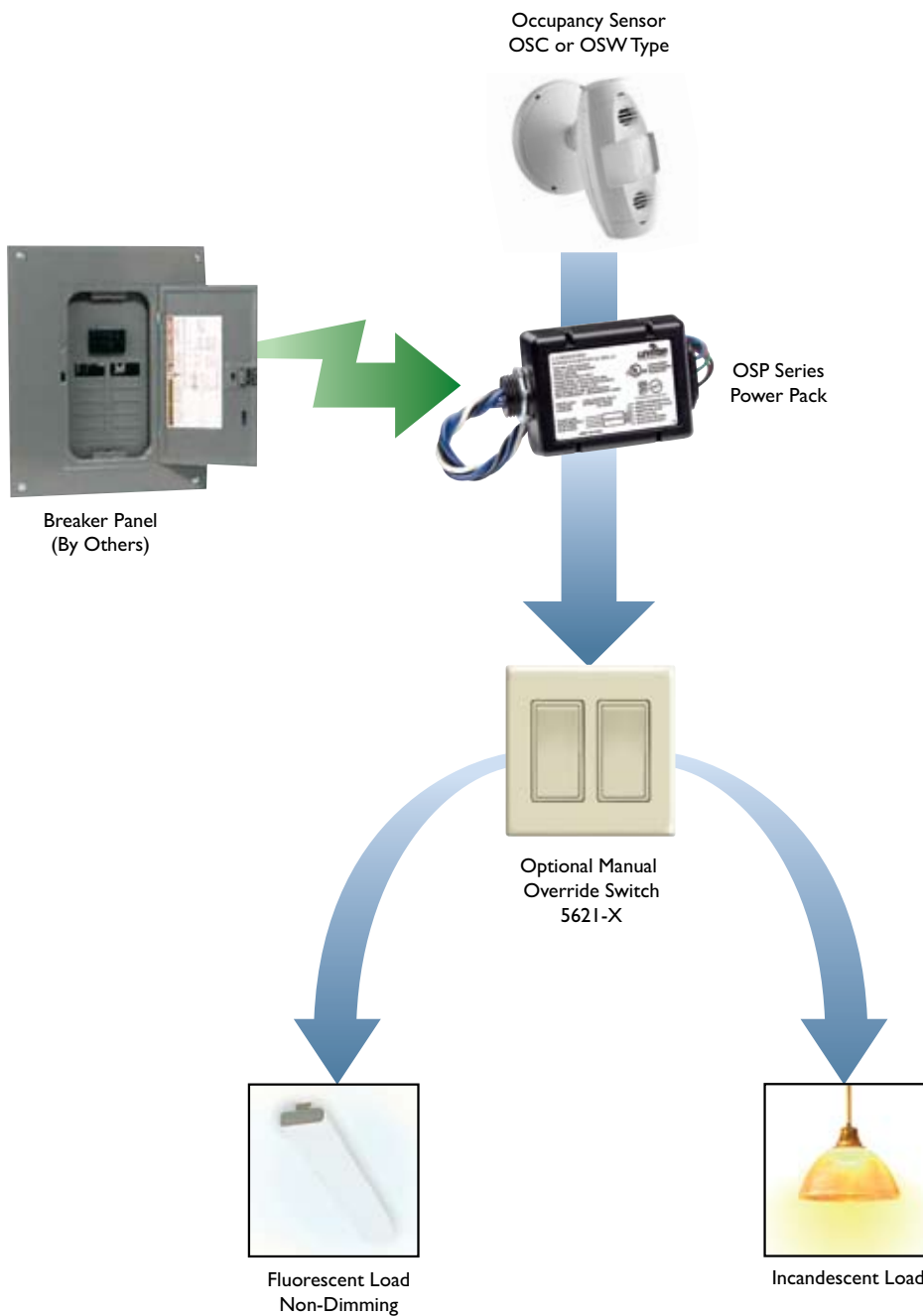| CONTROL STRATEGY	ENERGY SAVED
Single Level Switching	0%
Bi-Level Switching	23%
Occupancy Sensors	20-26%
Dimming – Photo Sensors	27%
Occupancy and Photo Sensors	46%
Dimming – Task Tuning	23%

Source: Lawrence Berkley National Laboratory

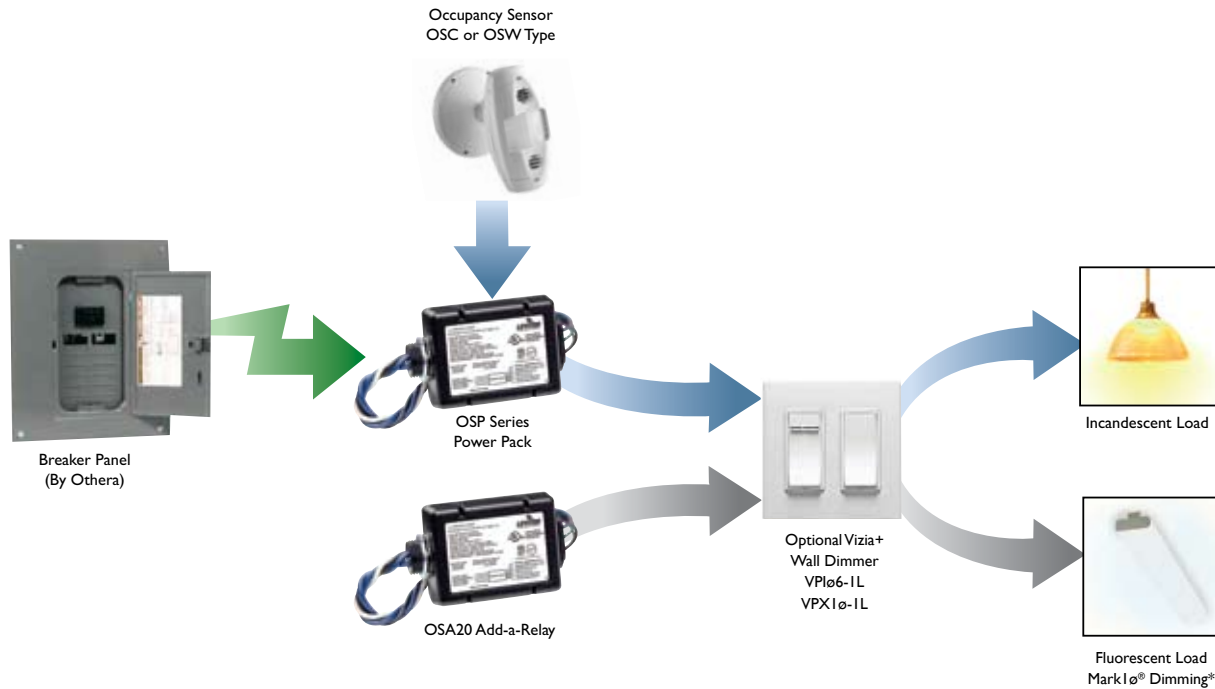## TYPICAL DIAGRAMS FOR MINIMAL, GOOD AND OPTIMAL CONTROL

Minimal Control with Photocell Hold-Off Feature
Basic bi-level switching is achieved with a mix of manual switches and Leviton Occupancy Sensors with Ambient Light Hold-Off.
This allows some or all of the lights to remain off when natural lighting reaches a comfortable level, reducing electrical consumption.
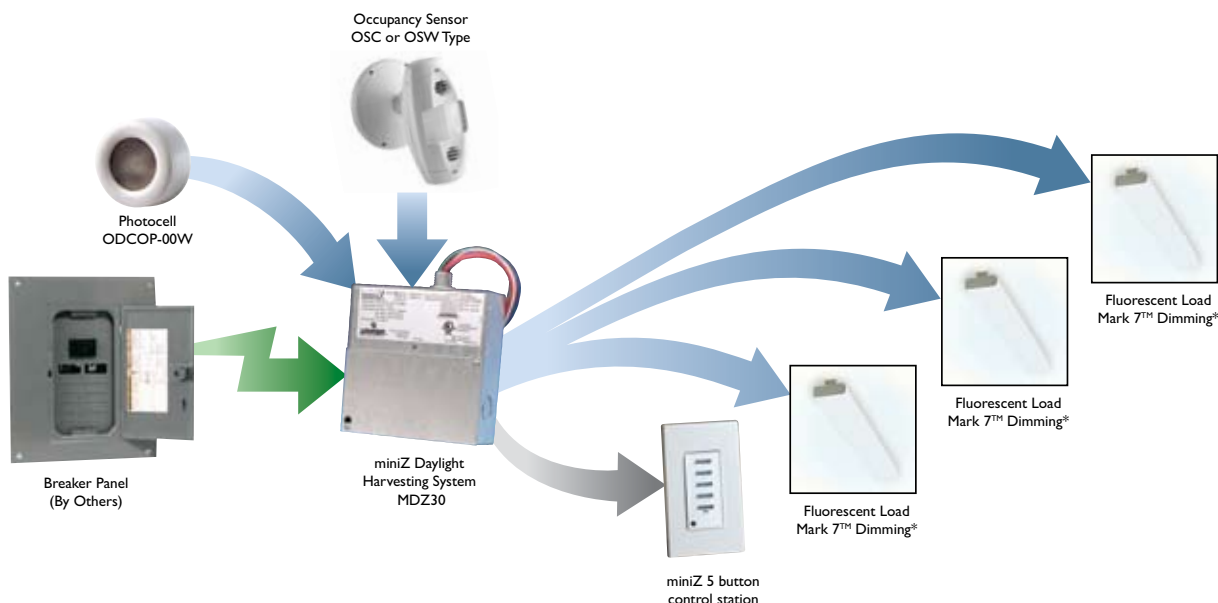

Occupancy Sensor
OSC or OSW Type

OSP Series
Power Pack

Breaker Panel
(By Others)

Optional Manual
Override Switch
5621-X

Fluorescent Load
Non-Dimming

Incandescent Load

GOOD CONTROL WITH PHOTOCELL HOLD-OFF FEATURE

Installing dimmers in place of ON/OFF switches enhances bi-level switching. Leviton Occupancy Sensors with Ambient Light Hold-Off allows some or all of the lights to remain off when natural lighting reaches a comfortable level. Dimmers provide occupants with the ability to fine-tune lighting levels for maximum comfort, further reducing electrical consumption.

Occupancy Sensor OSC or OSW Type

Breaker Panel (By Othera)

OSP Series Power Pack

OSA20 Add-a-Relay

Optional Vizia+ Wall Dimmer VPI∅6-1L VPX1∅-1L

Incandescent Load

Fluorescent Load Mark1∅® Dimming*

OPTIMAL CONTROL WITH AUTOMATIC DAYLIGHT HARVESTING

Leviton's miniZ Daylight Harvesting Controller provides optimal balance of natural and artificial lighting for maximum comfort and energy-savings. The photocell measures the ambient light and the miniZ adjusts dimmable fluorescent fixtures accordingly to achieve user-preset illumination levels. The occupancy sensor ensures that lights remain off when the space is unoccupied. Low-voltage wall switch stations provide convenient manual control. The miniZ features Ladder-less Commissioning – Illumination level can be easily set from wall switch station without having to use a ladder to access controller unit.


Occupancy Sensor OSC or OSW Type

Photocell ODCOP-00W

Breaker Panel (By Others)

miniZ Daylight Harvesting System MDZ30

miniZ 5 button control station

Fluorescent Load Mark 7™ Dimming*

*Mark 1∅® is a registered trademark of Advance Transformer Company.

DAYLIGHT HARVESTING APPLICATIONS

Basic Windowless Classroom

Multi-Technology ← Occupancy Sensor (OSW12)

PP ← Power Pack (OSP20)

← Junction Box

← On/Off Switches (5621)
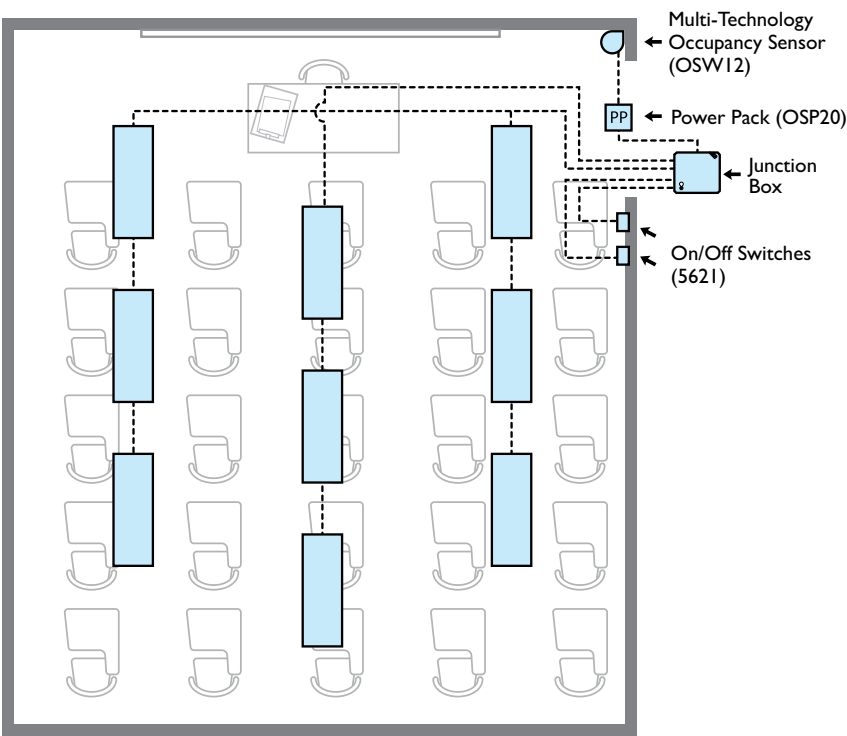
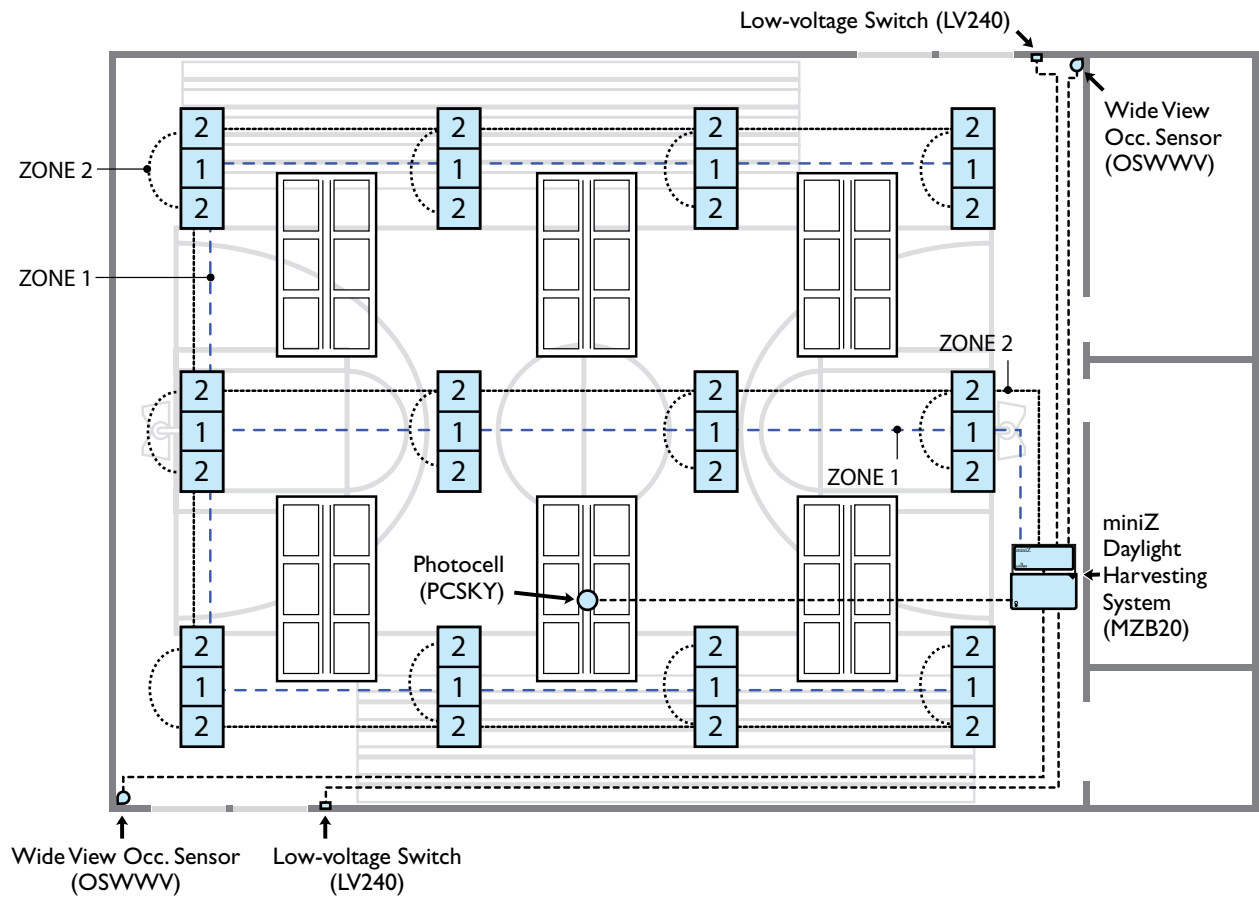| Quantity	Cat. No.	Description
1	OSW12-M0W	Multi-Tech Wall Mount Occupancy Sensor
1	OSP20-0D0	Power Pack for 120/230/277VAC System
2	5621	ON/OFF Wall Switch

Advanced Classroom with Windows

Whiteboard On/Off Switch (5621)

Low-voltage Dimmer Switch (LV200)

Wide-View Occupancy Sensor (OSWWV)

miniZ Daylight Harvesting System (MZD30)

Low-voltage On/Off Switch (LV240)

Photocell (ODC0P)

ZONE 1 ZONE 2 ZONE 3
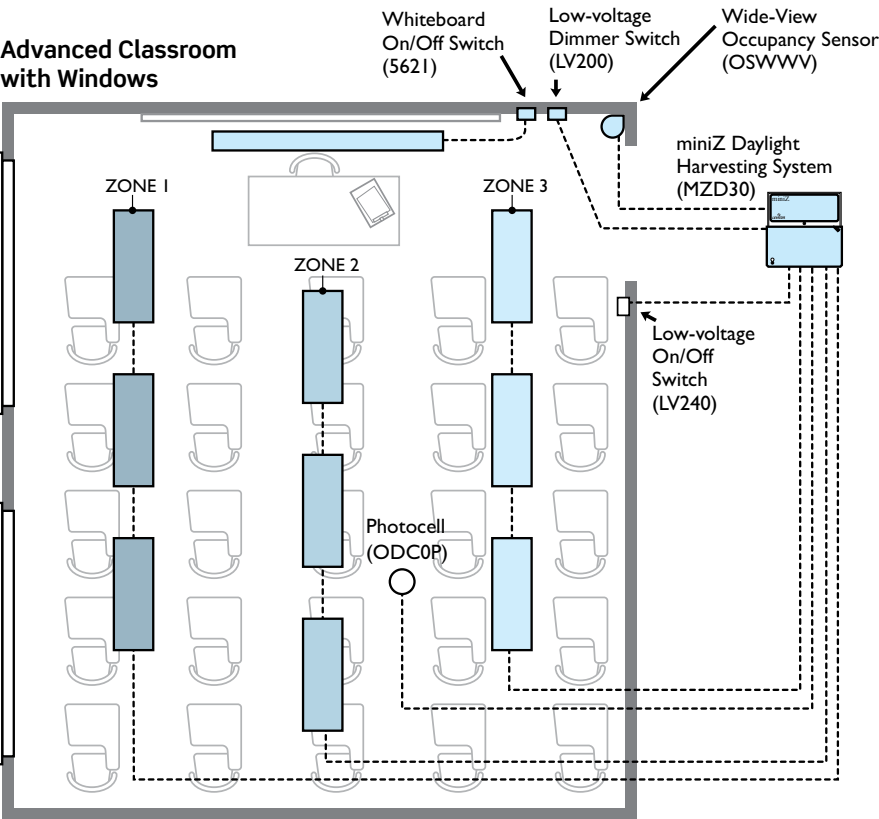
Quantity	Cat. No.	Description
1	MZD30-102	Dual Room miniZ
1	OSWWV-I0W	PIR Wall Mount Occupancy Sensor
1	ODCOP	Photocell
1	LV240-00W	Low-Voltage Switch
1	LV200-00W	Low-Voltage Switch
1	5621	ON/OFF Wall Switch

GYMNASIUM

Low-voltage Switch (LV240)

Wide View Occ. Sensor (OSWWV)

ZONE 2

ZONE 1

ZONE 2

ZONE 1

Photocell (PCSKY)

miniZ Daylight Harvesting System (MZB20)

Wide View Occ. Sensor (OSWWV)

Low-voltage Switch (LV240)

Quantity	Cat. No.	Description
1	MZB20-102	miniZ
2	OSWWV-I0W	PIR Wall Mount Occupancy Sensor
1	PCSKY	Photocell
2	LV240-00W	Low-Voltage Switch

NETWORKED SCHOOL

Advanced Classrooms

Photocell (ODC0P)
Photocell (ODC0P)

miniZ Daylight Harvesting System (MZN30)

Basic Classrooms

Junction Box

Remote Relay Panel (RRP)

Wide View Occ. Sensor (OSWWV)

Low-voltage Switch (LV240)

Gymnasium

Photocell (PCSKY)

ZONE 1   ZONE 2

ZONE 1
ZONE 2

Low-voltage Switch (LV240)

miniZ Daylight Harvesting System (MZN20)

Wide View Occ. Sensor (OSWWV)

Networkable Z-MAX Plus Cabinet with Breakers
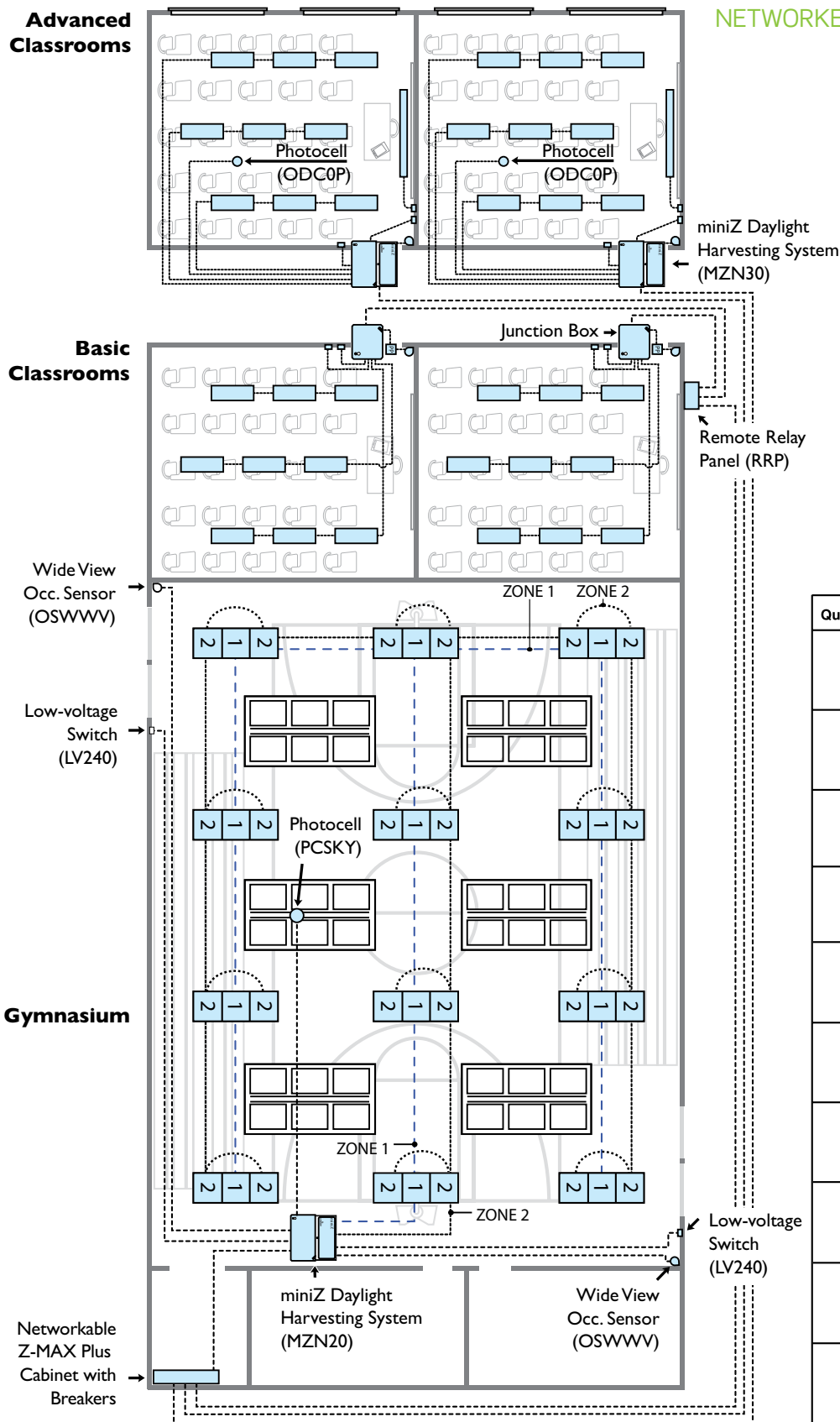
Quantity	Cat. No.	Description
1	RB241-B11	Z-MAX Plus Panels with Integrated Electrical Distribution
1	RE4SD-104	Z-MAX Remote Relay Control Panel
1	MZN20-102	Network miniZ
2	MZN30-102	Network miniZ
6	OSWWV-I0W	PIR Wall Mount Occupancy Sensor
1	PCSKY	Photocell
2	ODCOP	Photocell
4	LV240-00W	Low-Voltage Switch
2	LV200-00W	Low-Voltage Switch
6	5621	ON/OFF Wall Switch

ADVANCED OFFICE WITH WINDOWS

5-Button
Low Voltage
Dimmer Station
(LV200)

Ceiling
Occupancy
Sensor
(OSC20-U0W)

Photocell
(ODCOP)

miniZ
Daylight
Harvesting
System
(MZD30)

ZONE 1   ZONE 2   ZONE 3
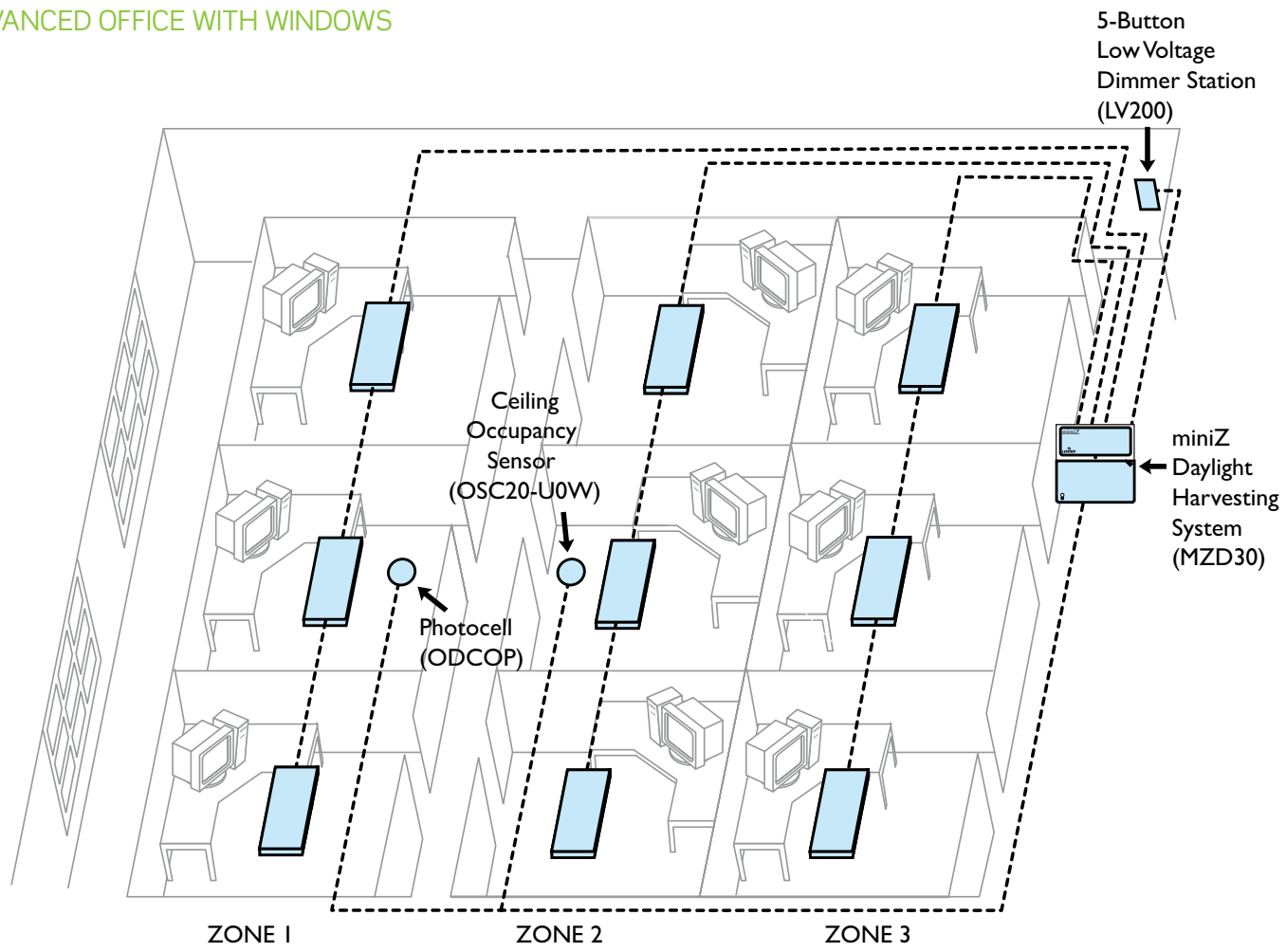
Quantity	Cat. No.	Description
1	MZD30-102	miniZ
1	OSC20-U0W	Ultrasonic Ceiling Mount Occupancy Sensor
1	ODCOP	Photocell
1	LV200-00W	Low-Voltage Switch
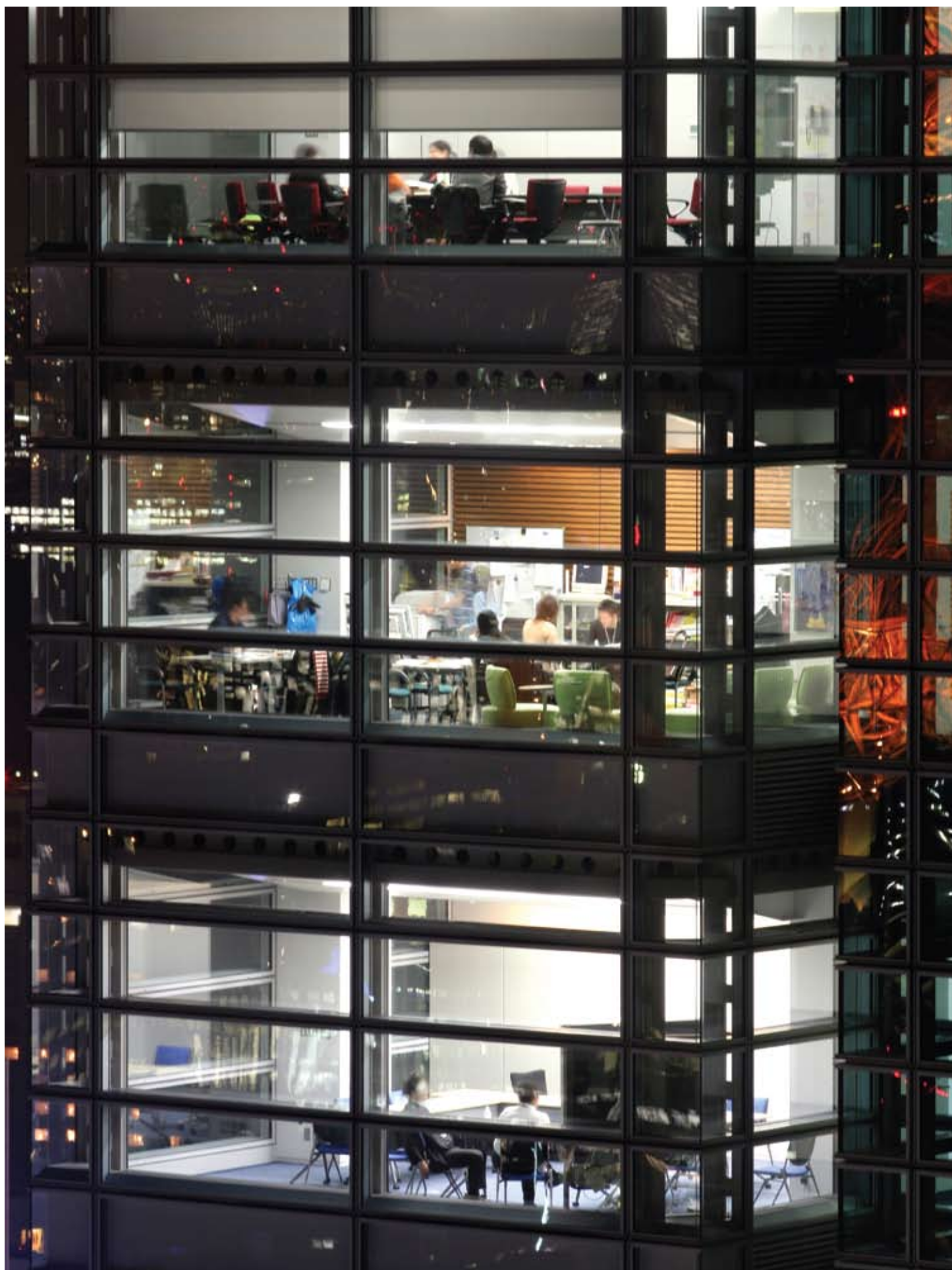
SECTOR INTELLIGENT BALLAST AND LIGHTING CONTROL SYSTEM

SECTOR INTELLIGENT BALLAST AND LIGHTING CONTROL SYSTEM

The Sector Intelligent Ballast and Lighting Control System line combines occupancy sensing, daylight harvesting and flexible dimming lighting control in one conveniently integrated system to easily save time, money and energy. This topology-free, polarity-free system allows the entire network to be installed using the same wiring for all components and accessories making it one of the easiest lighting control systems to install. All components are on a single bus, with accessories connected to the network, not the ballast. The Sector family of products provides a scalable solution that offers maximum flexibility and coverage in any application – from a single room to a campus of buildings in retrofit or new construction projects.

FEATURES

Sector Intelligent Lighting Control System

• Topology free

• Polarity free – Class 1 and Class 2 Wiring/standard building wiring in same conduit as power wiring

• No special terminations or installation requirements

• Personal workspace lighting control from user's desktop for user comfort

• Easy to commission – ultimate flexibility in design, installation and configuration using a drag and drop GUI interface with Illustrator layout tool

• Easy to design, easy to install and easy to maintain

Ideal Uses:

Hospitals, offices buildings, medical offices, universities, labs, restaurants, government facilities and any other location that could benefit from the cost savings and energy efficiency of a controlled lighting environment.

SECTOR COMPONENT FEATURES

SECTOR INTELLIGENT DIMMING FLUORESCENT BALLASTS
- Intelligent dimming offers higher energy savings and increased flexibility than traditional switching
- Dimming fluorescent ballasts allow 100% to 1% dimming capabilities
- Ballasts have a patent-pending addressable labeling system for easy programming and personal lighting control

SECTOR NETWORK BUS CONTROLLER
- Contains the brain and the power supply for the Sector system in one component
- Controls a maximum of 64 devices on a system with the ability to expand and include a maximum of 253 systems

SECTOR NETWORK OCCUPANCY SENSORS
- Turns lights ON/OFF based on vacancy or occupancy
- Multi-technology and Infrared models available
- Self-adjusting settings continuously analyze and adjust sensitivity, timer operation and long-term performance—reducing user complaints

SECTOR NETWORK PHOTOCELL
- Daylight harvesting capabilities
- Offers consistent lighting at desired level for greater visual comfort
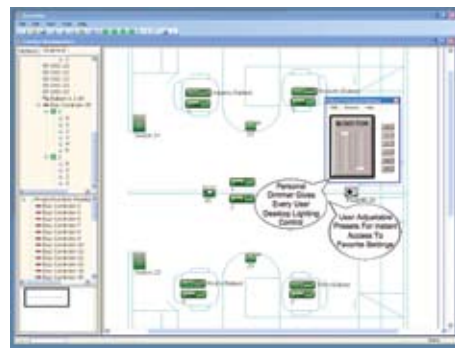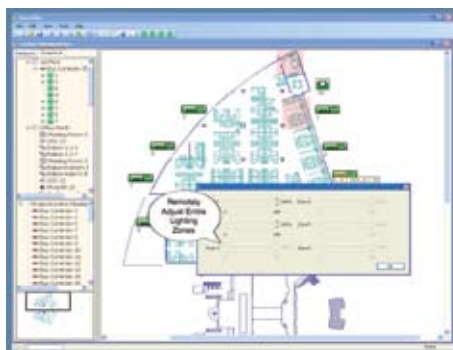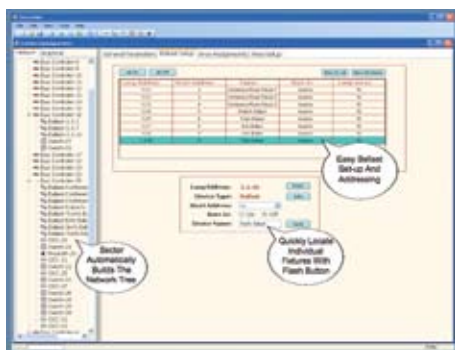
SECTOR NETWORK DIGITAL SWITCH
- User controls desired light level at the push of a button (ON, MAX, BRIGHT, DIM, OFF)
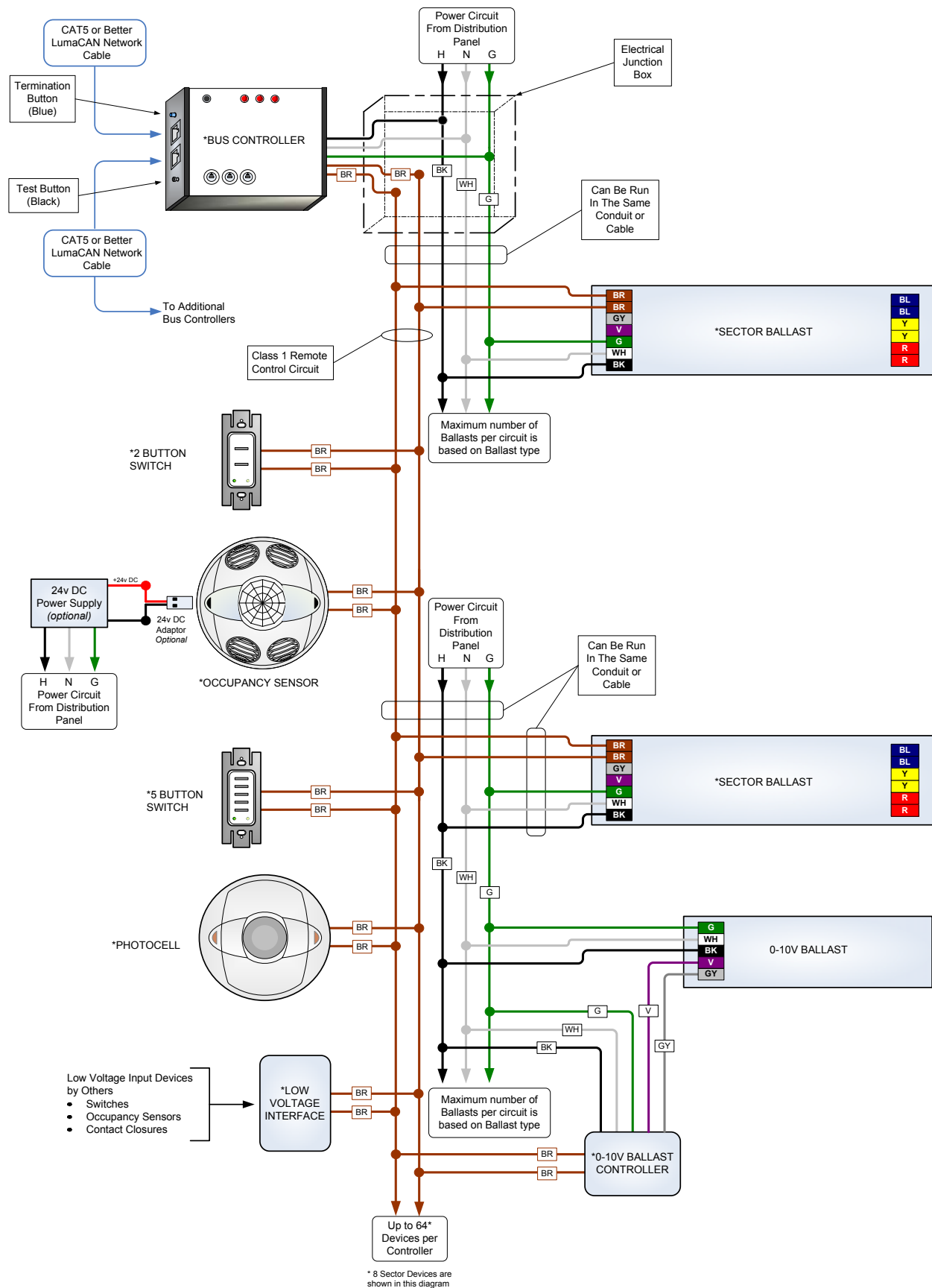
SECTOR HANDHELD REMOTE
- User controls desired light level at the push of a button (ON, MAX, BRIGHT, DIM, OFF)

SECTORNET SOFTWARE
- Personal Dimming Option (PDO): individual control for the lights above a user's workspace right from their desktop PC
- Central control: facility personnel and lighting administrators can re-configure control as needed with drag and drop GUI interface with Illustrator layout tool
- A computer is only needed to initially configure the system. Once the system is configured, Sector can be ran as an independent system.
- Commissioning: quickly associates fixtures to Sector devices for easy configuration

CAT5 or Better
LumaCAN Network
Cable

Termination
Button
(Blue)

Test Button
(Black)

CAT5 or Better
LumaCAN Network
Cable

To Additional
Bus Controllers

*BUS CONTROLLER

Power Circuit
From Distribution
Panel
H   N   G

Electrical
Junction
Box

Can Be Run
In The Same
Conduit or
Cable

BR   BR   BK

WH

G

Class 1 Remote
Control Circuit

*SECTOR BALLAST

| BR |
| BR |
| GY |
| V |
| G |
| WH |
| BK |

| BL |
| BL |
| Y |
| Y |
| R |
| R |

Maximum number of
Ballasts per circuit is
based on Ballast type

*2 BUTTON
SWITCH

BR
BR

24v DC
Power Supply
(optional)

+24v DC

24v DC
Adaptor
Optional

H   N   G
Power Circuit
From Distribution
Panel

*OCCUPANCY SENSOR

BR
BR

Power Circuit
From
Distribution
Panel
H   N   G

Can Be Run
In The Same
Conduit or
Cable

*5 BUTTON
SWITCH

BR
BR

*SECTOR BALLAST

| BR |
| BR |
| GY |
| V |
| G |
| WH |
| BK |

| BL |
| BL |
| Y |
| Y |
| R |
| R |

BK

WH

G

*PHOTOCELL

BR
BR

0-10V BALLAST

| G |
| WH |
| BK |
| V |
| GY |

G   V

WH

BK   GY

Low Voltage Input Devices
by Others
- Switches
- Occupancy Sensors
- Contact Closures

*LOW
VOLTAGE
INTERFACE

BR
BR

Maximum number of
Ballasts per circuit is
based on Ballast type

BR
BR

*0-10V BALLAST
CONTROLLER

Up to 64*
Devices per
Controller

* 8 Sector Devices are
shown in this diagram

DESCRIPTION	CAT. NO.
Sector Dimming Ballast, T8, 9.5" A-Can (1 Lamp, 17W Linear or U-bent)	sd1f8-17m
Sector Dimming Ballast, T8, 9.5" A-Can (1 Lamp, 25W Linear or U-bent)	sd1f8-25m
Sector Dimming Ballast, T8, 9.5" A-Can (1 Lamp, 32W Linear or U-bent)	sd1f8-32m
Sector Dimming Ballast, T8, 16.5" B-Can (1 Lamp, 17W Linear or U-bent)	sd1j8-17m
Sector Dimming Ballast, T8, 16.5" B-Can (1 Lamp, 25W Linear or U-bent)	sd1j8-25m
Sector Dimming Ballast, T8, 16.5" B-Can (1 Lamp, 32W Linear or U-bent)	sd1j8-32m
Sector Dimming Ballast, T8, 9.5" A-Can (2 Lamps, 17W Linear or U-bent)	sd2f8-17m
Sector Dimming Ballast, T8, 9.5" A-Can (2 Lamps, 25W Linear or U-bent)	sd2f8-25m
Sector Dimming Ballast, T8, 9.5" A-Can (2 Lamps, 32W Linear or U-bent)	sd2f8-32m
Sector Dimming Ballast, T8, 16.5" B-Can (2 Lamps, 17W Linear or U-bent)	sd2j8-17m
Sector Dimming Ballast, T8, 16.5" B-Can (2 Lamps, 25W Linear or U-bent)	sd2j8-25m
Sector Dimming Ballast, T8, 16.5" B-Can (2 Lamps, 32W Linear or U-bent)	sd2j8-32m
Sector Bus Controller/Power Supply	sbpøø-øøm
Sector Multi-Technology Occupancy Sensor, 2øøøSF	osc2ø-msw
Sector Infrared Occupancy Sensor, 45øSF	oscø4-isw
Sector Photocell	odcøp-øsw
Sector 5-Button Digital Switch	sdsøø-15w
Sector Handheld Infrared Remote Controller	shhøø-øøø
SectorNET USB-to-LumaCan Adapter	slmøø-øøø
SectorNET Administrative Software (included with slmøø-øøø)	slføø-øøø
SectorNET Client Software (included with slmøø-øøø)	slfpd-øøø
Sector 4-Module Enclosure (to hold a maximum of 4 Bus Controllers (sbpøø-øøm)	senø4-øøø

ENERGY MANAGEMENT LIGHTING CONTROL APPLICATIONS

- **Commercial**
- **Institutional**
- **Industrial**
- **OEM**
- **Residential**

FOR COMMERCIAL APPLICATIONS

By some estimates, lighting accounts for over 38% of all energy used in offices. In many businesses lighting is actually the biggest draw on electricity. No matter what the business, lighting is a logical place to start when looking to improve electric energy efficiency. Leviton offers an extensive selection of commercial-grade lighting control devices that not only minimize energy consumption but also allow workers to maintain a degree of control over the lighting environment so that productivity is enhanced.

Another important benefit of lighting controls is that they can help you meet local building codes and regional and national electrical codes. They can also earn tax breaks and rebates from utility companies. Not only do these devices control lights, they can interact with building controls as part of a comprehensive building management system, mandated or otherwise. A byproduct of using less artificial light is that it decreases the need for air conditioning. This can add up to considerable savings in warmer climates.

PITTSBURGH CONVENTION CENTER

The Gold-LEED-certified Pittsburgh Convention Center incorporates a Leviton daylight harvesting system that enables extensive use of natural daylight in the upper exhibit, pre-function and lobby areas. This eliminates the need for artificial lighting on bright days—reducing electricity usage the equivalent of hundreds of thousands of dollars every year!

1. Dimensions D4000 Multi-zone & Dimming Controller for scene control.

2. Wireless Self-Powered sensor – no batteries or external power required.

3. Sector intelligent ballasts offer distributed fluorescent energy management control with point-and-click ease.

4. miniZ System makes daylight harvesting simple & cost effective.

5. Multi-technology Wall Switch with manual and automatic modes.

6. Occupancy Sensor ensures lights go on whenever someone occupies hallway.

7. High-Bay Occupancy Sensors mounted to fixtures for a simple, energy-saving retrofit.

8. Networked Z-MAX Plus Cabinet for building schedules and integrated control.

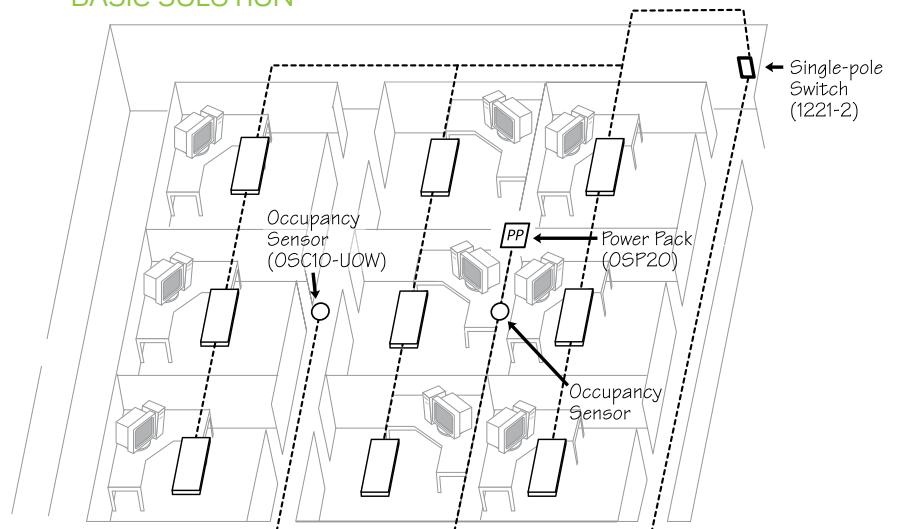**9.** Outdoor Occupancy Sensor/Photocell ensures lights remain off in daytime.
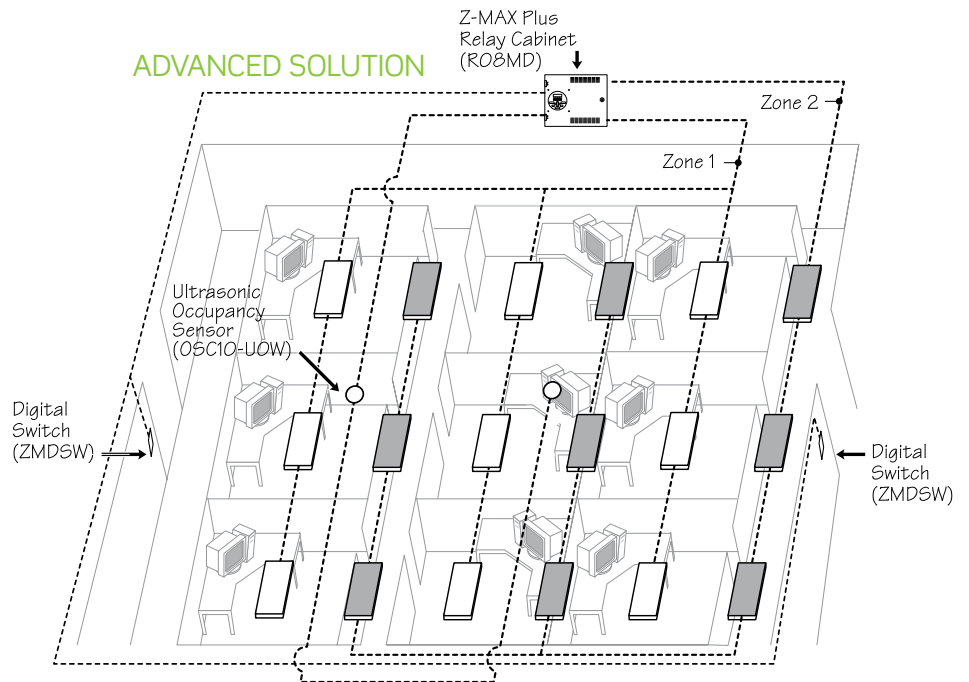
IN LARGE OPEN AREAS

The simple combination of occupancy sensors on the ceiling plus conveniently located wall switches ensures that lights stay on when a space is occupied and turn off when it's not. Ultrasonic sensors are the optimal choice for expansive areas because they can detect motion even where the line of sight is blocked by partitions and furniture. Selecting a sensor that adjusts to actual occupancy patterns prevents over-frequent switching, and including a basic switch gives workers personal control over lighting. Leviton commercial sensors offer ambient light override so that lights won't turn on when there is ample light in a space. For maximum savings, heating and ventilation systems can respond to occupancy by choosing a power pack with a built-in HVAC relay.

When code requires bi-level switching, a relay panel such as the Leviton Z-MAX Plus can be used to switch alternate rows of luminaires (or to separately switch at least half of the lamps in each luminaire) in response to occupancy, as detected by sensors or in response to programmed times. The optimal sensor for a modular office features ultrasonic technology and is mounted on the ceiling for maximum coverage. Digital switches can be added to enable manual selection of the ideal lighting combination when user needs differ from automatic settings. Z-MAX Plus systems can also provide advanced scheduling of a variety of loads as part of a total building schedule.

BASIC SOLUTION

Single-pole Switch (1221-2)

Occupancy Sensor (OSC10-UOW)

Power Pack (OSP20)

Occupancy Sensor

ADVANCED SOLUTION

Z-MAX Plus Relay Cabinet (R08MD)

Zone 2

Zone 1

Ultrasonic Occupancy Sensor (OSC10-UOW)

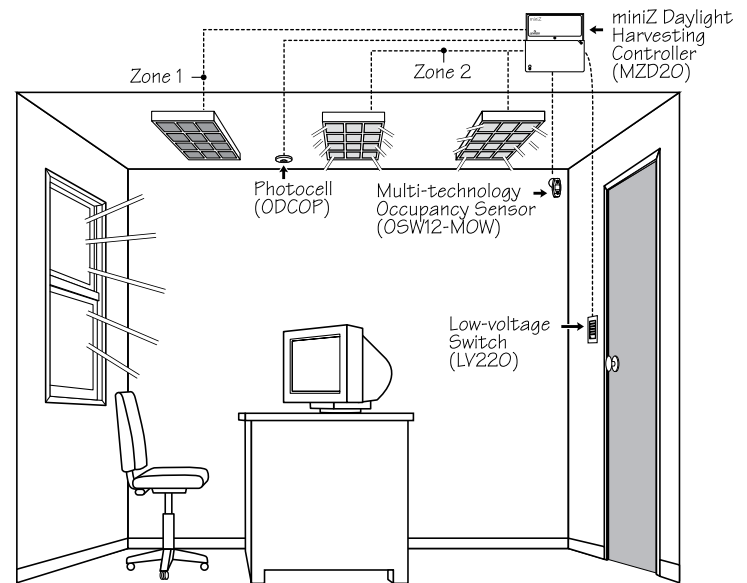Digital Switch (ZMDSW)

Digital Switch (ZMDSW)

IN ENCLOSED OFFICES

Substantial energy savings can be achieved with a lighting control system that takes natural sunlight into account to achieve predefined illumination levels. Daylight harvesting systems, such as those centered on Leviton's miniZ™, can be used to separately control dimmable fluorescent fixtures based on light levels measured by a photocell. When it's bright outside, artificial lighting inside the space will respond accordingly: the fixture closest to the window may dim substantially while fixtures farther from the window may stay on and at a brighter level. How the lights adjust also depends on where in the room the light level is measured: the photocell is normally placed above the desk (or task area) to ensure proper illumination. A low-voltage switch provides the employee with manual control over lighting to accommodate temporary needs. A daylight harvesting system with bi-level switching has the added advantage of meeting local electrical and regional codes such as California's Title 24.


DAYLIGHT HARVESTING SYSTEM

Zone 1
Zone 2
miniZ Daylight Harvesting Controller (MZD20)
Photocell (ODCOP)
Multi-technology Occupancy Sensor (OSW12-MOW)
Low-voltage Switch (LV220)

BASIC SENSOR OPTIONS

For basic yet functional daylighting and on/off switching, use an occupancy sensor with a built-in photocell. A sensor, such as the OCS2ø-MøW, not only turns lights off after a period of time, it also features ambient light override.

Power Pack (OSP20)
PP
Low-voltage Multi-technology Ceiling-mount Occupancy Sensor (OCS20-MOW)

The next step up is a dual-relay sensor, like the ODSøD, that controls two separate lighting loads so that a portion of the lights can remain off until required—based on occupancy and ambient light conditions.

Wall Switch Occupancy Sensor (ODSOD)
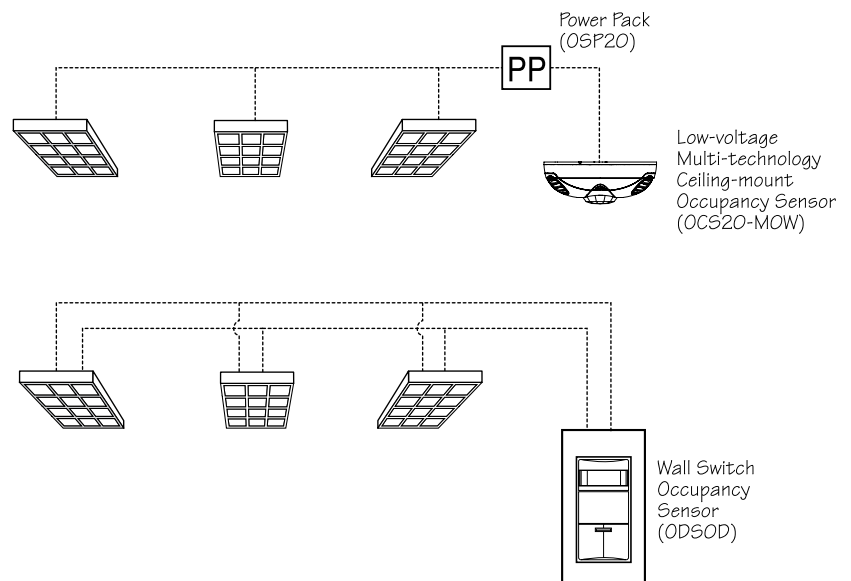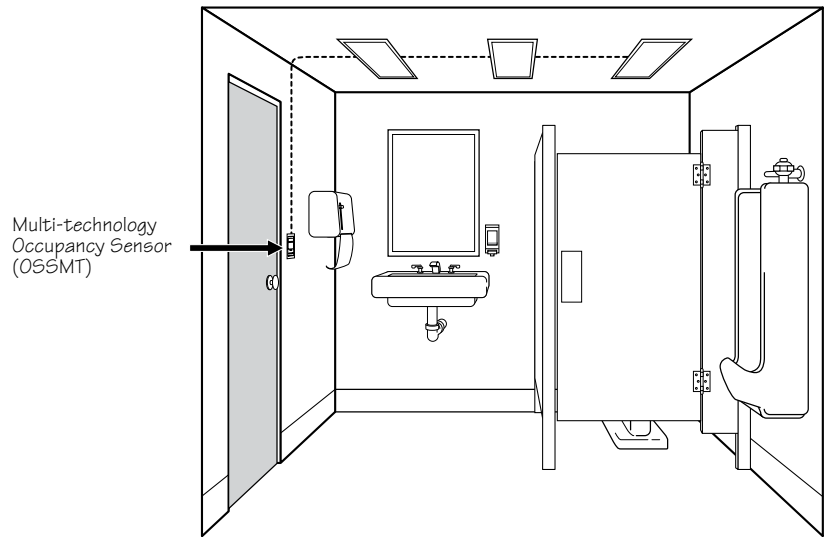
LIGHTING CONTROL SOLUTIONS

COMMERCIAL

IN THE RESTROOM

Without an occupancy sensor, a sporadically used single-stall bathroom can waste a significant amount of electricity because the lights are likely to be left on for long periods of time. The best choice is a multi-technology Wall Switch occupancy sensor. Its multi-technology sensing ensures that lights go off after a person leaves the room while also ensuring that the lights remain on when someone is in the stall. The sensor's infrared technology also prevents things like AC vents from triggering the lights.

SINGLE-STALL APPLICATION

Multi-technology
Occupancy Sensor
(OSSMT)

In a larger commercial bathroom, especially one with an offset entry, two or more ceiling sensors may be required to make sure that occupancy is detected throughout the entire space. As in the single-stall example, a multi-technology sensor is the ideal choice because it sees around stalls and is not prone to false triggers.

TYPICAL PUBLIC MEN'S ROOM APPLICATION

PP

Multi-technology
Occupancy Sensor
(OSC10-UOW)

Power Pack
(OSP20)

82
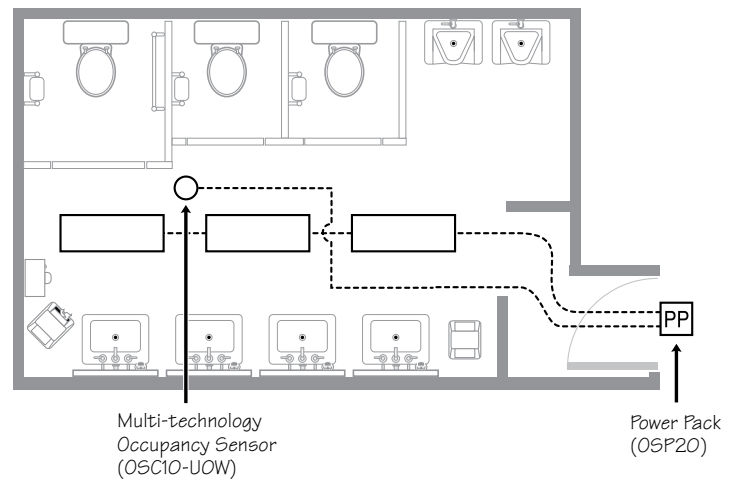
OUTSIDE THE OFFICE

In a commercial application, making sure that walkways and parking lots are well lit during the evening is a critical matter of safety and security. Turning them off during the dead of night or when the building is completely empty conserves electricity. A photocell on the north side of the building* measures the ambient light to ensure that, at the very least, lights go on when it gets dark and off again when it becomes light. The relay cabinet that links the photocell to the lights can also be used to execute sophisticated schedules using its astronomical time clock and holiday scheduling features.

EZ-MAX Plus
Relay Cabinet

Outdoor
Photocell
(PCOUT)

ACME
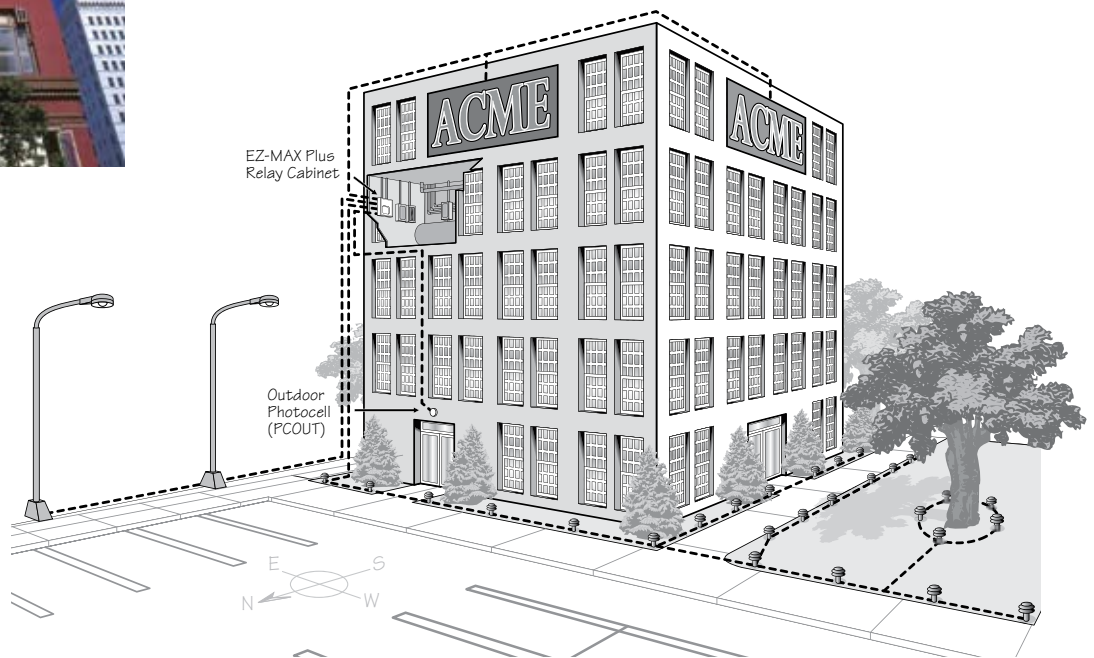
* In the northern hemisphere, photocells should generally be placed on the north side of a building to avoid direct sunlight so that the ambient light measurement is more accurate.

FOR INSTITUTIONAL APPLICATIONS

Despite the fact lighting in schools and other public buildings is primarily energy-efficient fluorescents, the largest single source of energy consumption in those buildings remains lighting. Leviton offers an extensive line of lighting controls that can be used to create dimming and daylight harvesting systems that can produce substantial energy savings that are not only good for the environment, but for the taxpayers who support these institutions. Leviton lighting controls can interface with other building controls, such as HVAC systems, to achieve additional savings and to meet building and electrical codes.

THE LIBERTY BELL CENTER

When Philadelphia's Independence Mall reopened the Liberty Bell Center after a massive renovation the public was treated to a beautiful new exhibit space. This uniquely green building is America's only national landmark powered by 100 percent renewable energy.* The Center relies on a sophisticated mix of Leviton lighting controls to reduce energy consumption. Leviton photocells throughout the huge space monitor ambient light and a Dimensions™ D8000 adjusts the lights to achieve the dramatic lighting effects that illuminate the bell in all its glory.

CARDOZO SCHOOL OF LAW

The Cardozo School of Law selected a Leviton dimming system to ensure their lobby would be appropriately lit during all hours, while taking full advantage of the light that streams in from its floor-to-ceiling windows. Building personnel use the Dimensions D4200 or a convenient wall controller to choose the right pre-programmed lighting scene for the space at the time. The lobby is used for banquets and receptions, as well as a study hall.
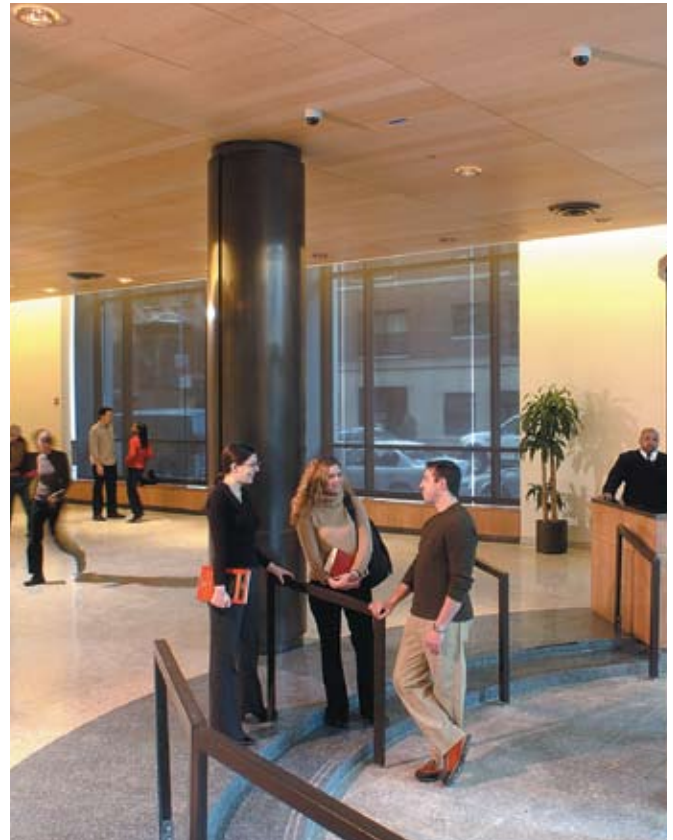

* As of October 2003 according to PR Newswire.

HEALTH CARE

There has been a significant effort in hospitals across the country over recent years to cut budgets, and this has made Leviton's energy-saving lighting controls an even more attractive option in this market. Not only do intelligent lighting controls save energy, they also help create a pleasant and functional environment in which to treat patients. Due to the fact that healthcare facilities vary greatly depending on the scope of the facility and the type of medicine practiced, lighting control systems installed here must factor in diverse safety, diagnostic and equipment requirements. Leviton also offers a full line of hospital-grade and tamper-proof wiring devices.

Low-voltage Switch (LV220)

ZONE 1

ZONE 2

Photocell (ODCOP)

miniZ Daylight Harvesting Controller
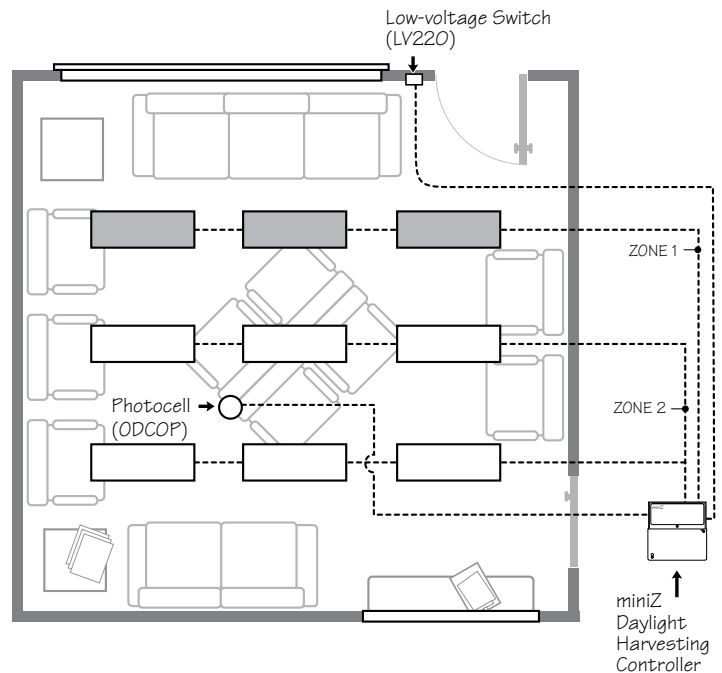
IN THE WAITING ROOM

It's not uncommon for a waiting room to have a wall of windows; and that daylight can be exploited to reduce electricity bills. A basic daylight harvesting system can include a miniZ relay cabinet attached to a photocell and switch for manual control of lights. Based on available daylight, a two-zone miniZ can provide proportional dimming of the lights with a single photocell and occupancy sensor. The lights closest to the windows would dim more and the interior lights would dim less. The miniZ controller can also connect to a Z-MAX for automatic on/off schedules. In facilities that do not operate 24 hours a day, this system can be networked into a Z-MAX controlling the entire facility to enable automated time sweeps as required by ASHRAE and IECC energy codes.

IN AN EXAM ROOM

A basic exam room should have a dimmer so that lights can be adjusted to accommodate the type of exam or procedure being performed. Unlike most non-residential facilities for which automatic shutoff is fast becoming the norm, most spaces within a healthcare environment are excluded from such code requirements and thus occupancy sensors are less likely to be used. A good option for facilities that desire the convenience and energy savings of these sensors is a Leviton occupancy sensor with a manual delayed-off-time setting to ensure lights won't switch off prematurely and compromise patient safety.
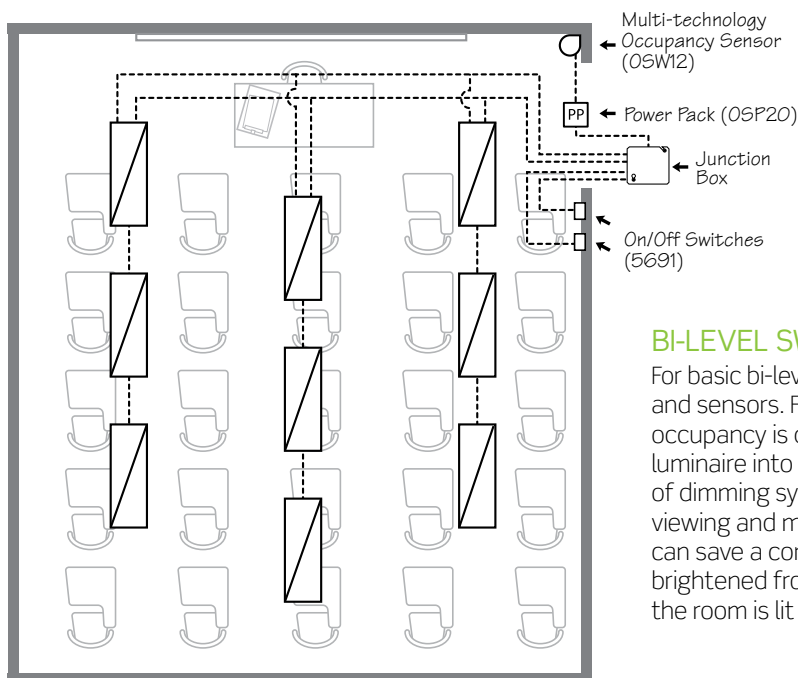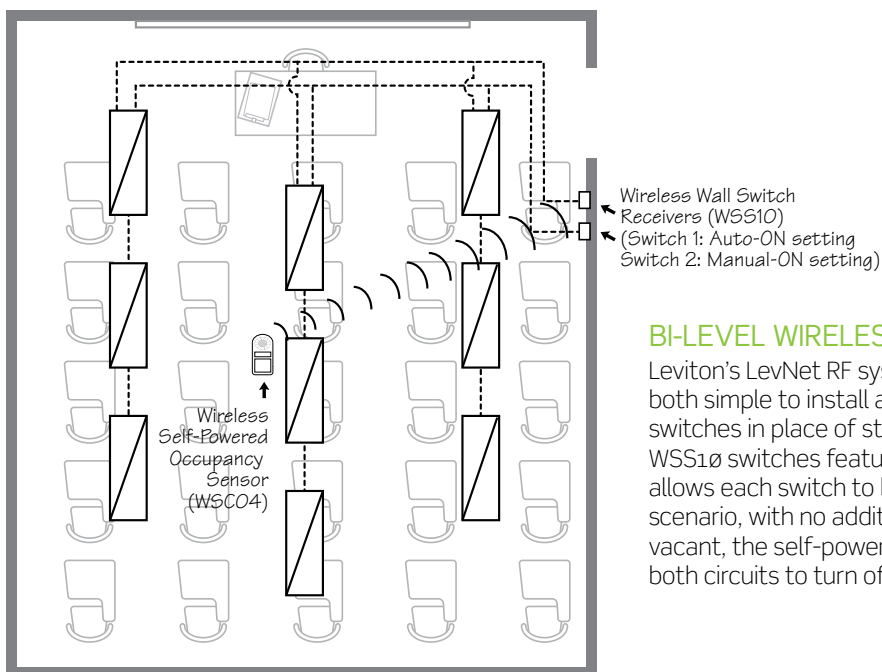

Fluorescent Dimmer/Switch (Vizia +)
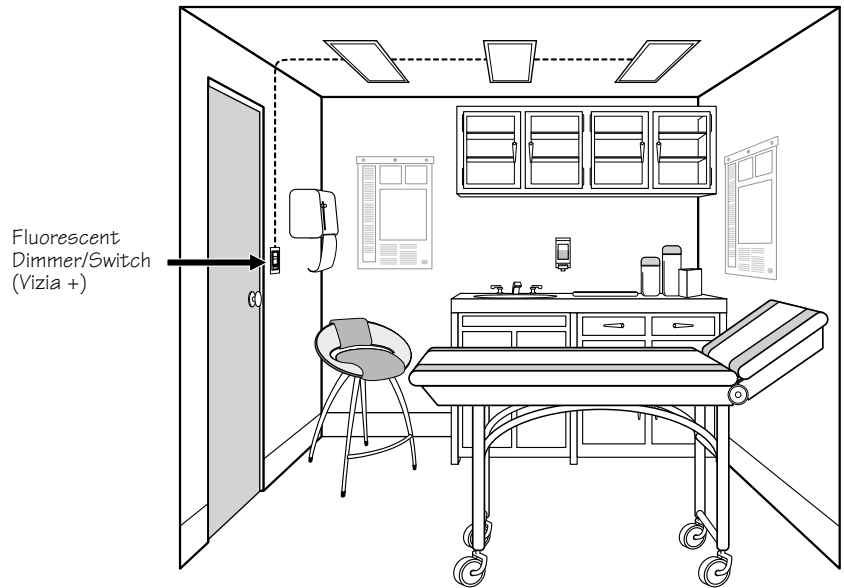
EDUCATION

There's little doubt that schools of all types spend a significant portion of their operating budgets on electricity, and that much of it is spent on lighting. The right system not only saves energy, it also provides functions like daylight harvesting and dimming that actually enhance the educational experience. With daylighting, the lights in the classroom will automatically adjust themselves on a miniZ to a comfortable, user-defined light level in which students can thrive. Giving teachers the ability to override automatic settings lets them create the ideal atmosphere for a wide variety of classroom activities.

Multi-technology Occupancy Sensor (OSW12)

Power Pack (OSP20)

Junction Box

On/Off Switches (5691)

BI-LEVEL SWITCHING IN A WINDOWLESS CLASSROOM

For basic bi-level switching, a classroom can contain a simple mix of switches and sensors. For maximum energy savings, lights will turn on only when occupancy is detected and the switch is in the "on" position. Dividing each luminaire into two zones controlled by separate switches creates a sort of dimming system. This can be useful to accommodate nap times, movie viewing and much more. In a classroom with windows, a system like this can save a considerable amount of electricity: when the room is naturally brightened from sunlight some or all of the lights can remain off so that the room is lit to a comfortable level while reducing electricity consumption

Wireless Wall Switch Receivers (WSS10) (Switch 1: Auto-ON setting Switch 2: Manual-ON setting)

Wireless Self-Powered Occupancy Sensor (WSC04)

BI-LEVEL WIRELESS SWITCHING

Leviton's LevNet RF system provides a solution for bi-level lighting that is both simple to install and highly flexible. Simply use the WSS1ø receiver switches in place of standard switches for each switching circuit. The WSS1ø switches feature selectable manual or automatic-ON modes. This allows each switch to be set to meet the user or code-required switching scenario, with no additional wiring or hardware required. When the space is vacant, the self-powered wireless occupancy sensor automatically signals both circuits to turn off.

DAYLIGHTING IN A CLASSROOM WITH WINDOWS

A more sophisticated system might be used in a classroom with windows to achieve even greater savings and flexibility. A Leviton miniZ relay cabinet with dimming modules can be used to create an innovative daylight harvesting system that can also incorporate time-based scheduling when connected to a Z-MAX control cabinet. A photocell provides an accurate measurement of ambient light and low-voltage switches give the teacher the ability to manually override the system. By incorporating dimming and multiple zones, the classroom should remain evenly lit at all times.
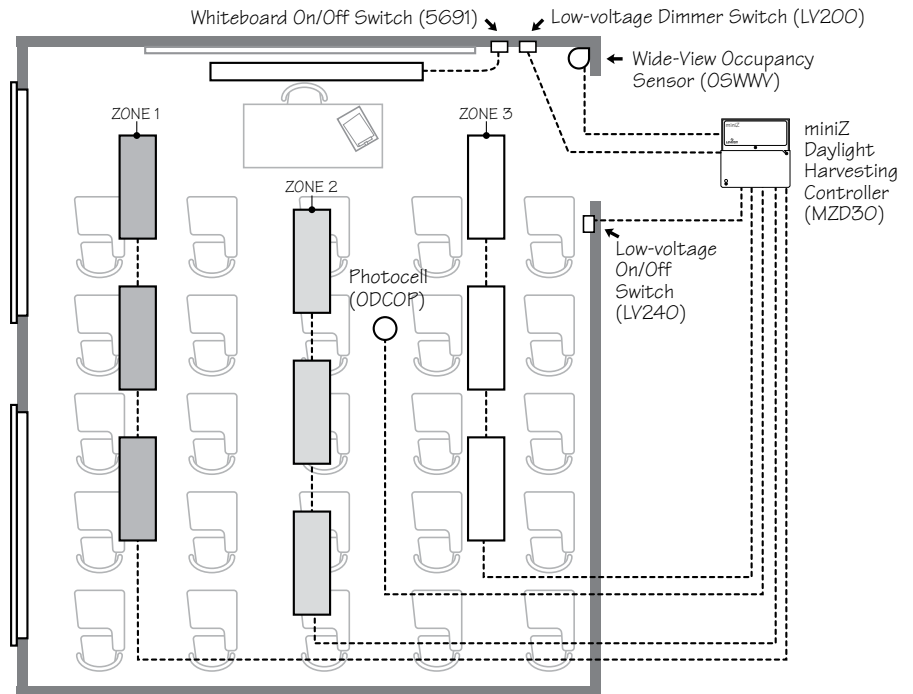
NETWORKED SCHOOL

Leviton systems are highly flexible. To institute advanced scheduling of lighting and integrated building systems to accommodate week-ends, holidays and vacation periods, classrooms can network miniZ or remote relay panels to a Z-MAX cabinet with breakers. For local relay control, use a miniZ when daylight harvesting is required or a Leviton Remote Relay Panel when it's not.
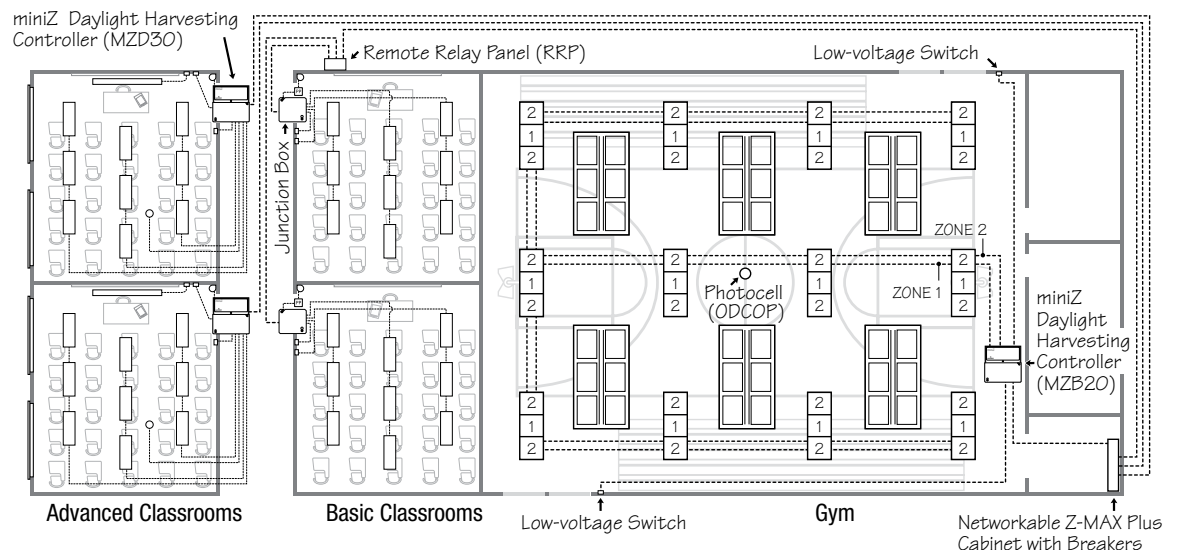
FOR INDUSTRIAL APPLICATIONS

Nearly 4ø percent of the electricity used in a typical warehouse is consumed by lighting equipment according to a 1999 survey by the U.S. Government's Energy Information Administration. That means companies can save an awful lot of money by incorporating energy-saving lighting controls in their facilities. And because companies tend to upgrade lighting in most other areas first, true industrial applications may present a relatively untapped market for lighting controls.
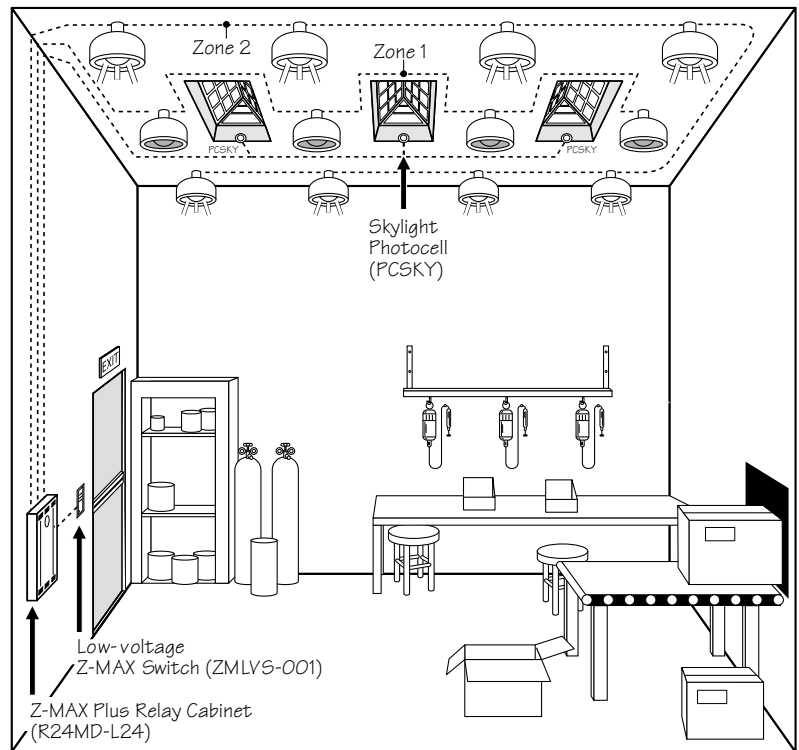

ROCHESTER MEDICAL

Rochester Medical estimates it saves well over 5ø% on its electricity bills by using Leviton occupancy sensors in its warehouse. Prior to installing these sensors, the lights remained on most of the time throughout the entire warehouse. Because some of the aisles saw little traffic a lot of electricity was wasted. After retrofitting their HID fixtures to fluorescents, the company had Leviton occupancy sensors installed and their utility bills have since dropped dramatically.

ON THE FACTORY FLOOR

Lighting a large industrial space can be expensive, but good lighting can improve productivity. If the numerous fixtures likely to be present in these vast spaces are divided into separate zones, a combination of automatic switching and manual adjustments can ensure optimal lighting at all times. If the space receives natural light, photocells can be used to measure that light and a re-lay panel, such as the Z-MAX Plus, can be programmed to switch specific zones on and off to produce a preset level of illumination. The relay panel can also be used to schedule lighting based on work schedules and can tie into other building control systems.

Zone 2   Zone 1

Skylight
Photocell
(PCSKY)

Low-voltage
Z-MAX Switch (ZMLVS-001)

Z-MAX Plus Relay Cabinet
(R24MD-L24)

IN THE WAREHOUSE

Leviton has the perfect solution for retrofitting industrial and other high-ceiling places with occu-pancy sensing without going behind a single wall: our high-bay occupancy sensor. This sensor mounts directly to a high bay fixture via an adapter to provide individual and automatic on/off switching of each fixture. It's the automatic-off feature that provides considerable energy savings and enables you to meet codes including ASHRAE 90.1 and California Title 24.

Fixture-Mounted High-Bay
Occupancy Sensor and Adapter
(OSFHU and OSFOA)
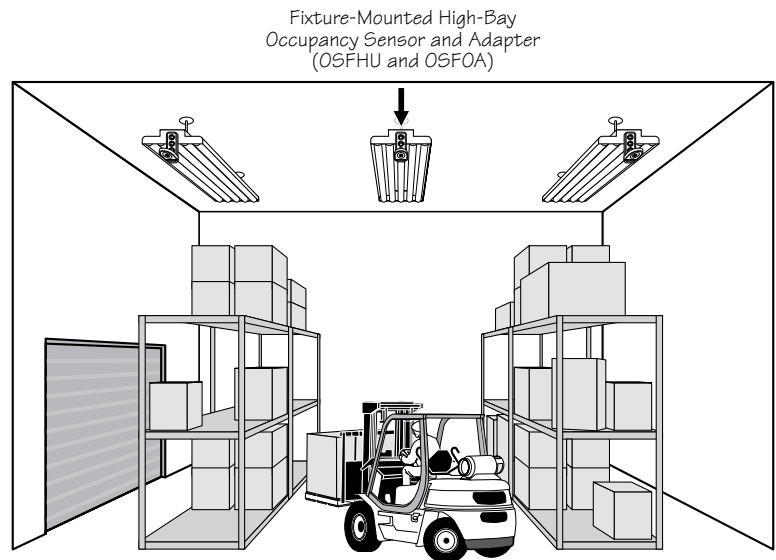
FOR OEM APPLICATIONS

Leviton offers a range of devices for fixture manufacturers designed to help you capitalize on the growing demand for energy efficient lighting. Through intelligent design of innovative products that keep pace with the latest trends in lighting, Leviton OEM products can help you control costs and streamline the assembly process—all while adding value to your products.

FLUORESCENT LAMPHOLDERS

Lamp and ballast technologies have evolved significantly during the last ten years and their improved efficiency ratings have made it attractive for businesses and institutions to replace their old, fluorescent lamps with new, more energy-efficient lamps. With strong demand for T-8 and T-5 linear fluorescent bulbs and fixtures in this highly competitive market, any device that lowers your cost and increases profitability can be important to your business. Leviton's extensive line of fluorescent lampholders includes:

- Miniature bi-pin fluorescent T-5 lampholders
- T-8-to-T-5 lampholder adapter
- 2G11-based fluorescent lampholders
- Dedicated T-8 bi-pin fluorescent lampholders
- Medium bi-pin and slimline fluorescent T-8/T-12 lampholders
- A full line of compact fluorescent lampholders

DIMMERS

Packaging box-mounted dimmers with your fixtures and selling them as one lets you offer an attractive option to those seeking a complete lighting energy management solution. Leviton's wide selection of dimmers for incandescent, fluorescent and low-voltage fixtures come in slide, rocker, rotary, toggle and touch pad styles. With a variety of colors and finishes from which to choose, there's a dimmer to complement just about any fixture.

OCCUPANCY SENSORS

Leviton's Fixture-Mounted Infrared High-Bay Occupancy Sensor is designed specifically for pre-wiring or retrofitting in high-mounting areas such as warehouses, manufacturing and other high-ceiling applications where the energy savings and safety benefits of automated line-of-sight, occupancy sensor-controlled ON/OFF switching of lighting is desired.

NOTE: Leviton offers a wide selection of electrical and electronic products for original equipment manufactures. See our OEM catalog for details.

FOR RESIDENTIAL APPLICATIONS

In addition to the inherent benefits of increased efficiency, such as conserving precious resources and minimizing air pollution, green lighting controls deliver big savings. According to the American Lighting Association, lighting accounts for 25 percent of the average homeowner's electric bill. Between the rising cost of energy and an increased concern for the environment, it's no wonder that home-owners have become eager to incorporate energy-efficient lighting controls and devices in their homes.

Although they are not as "green" as their fluorescent counterparts, many homeowners find incandescent lighting much more appealing because of the warm quality of the light itself and because of the wide selection of designer fixtures. Leviton's incandescent lighting controls allow homeowners to save on electricity while enjoying the lighting they really want. Occupancy sensors, motion sensors and timers are not only convenient and safety-enhancing, but they also reduce electricity consumption. And there's one more reason to use lighting controls in new construction: even in the residential arena, energy efficiency codes are increasingly becoming the law of the land. Lighting control devices can make a significant contribution to a home's ability to meet energy efficiency standards including California's Title 24.
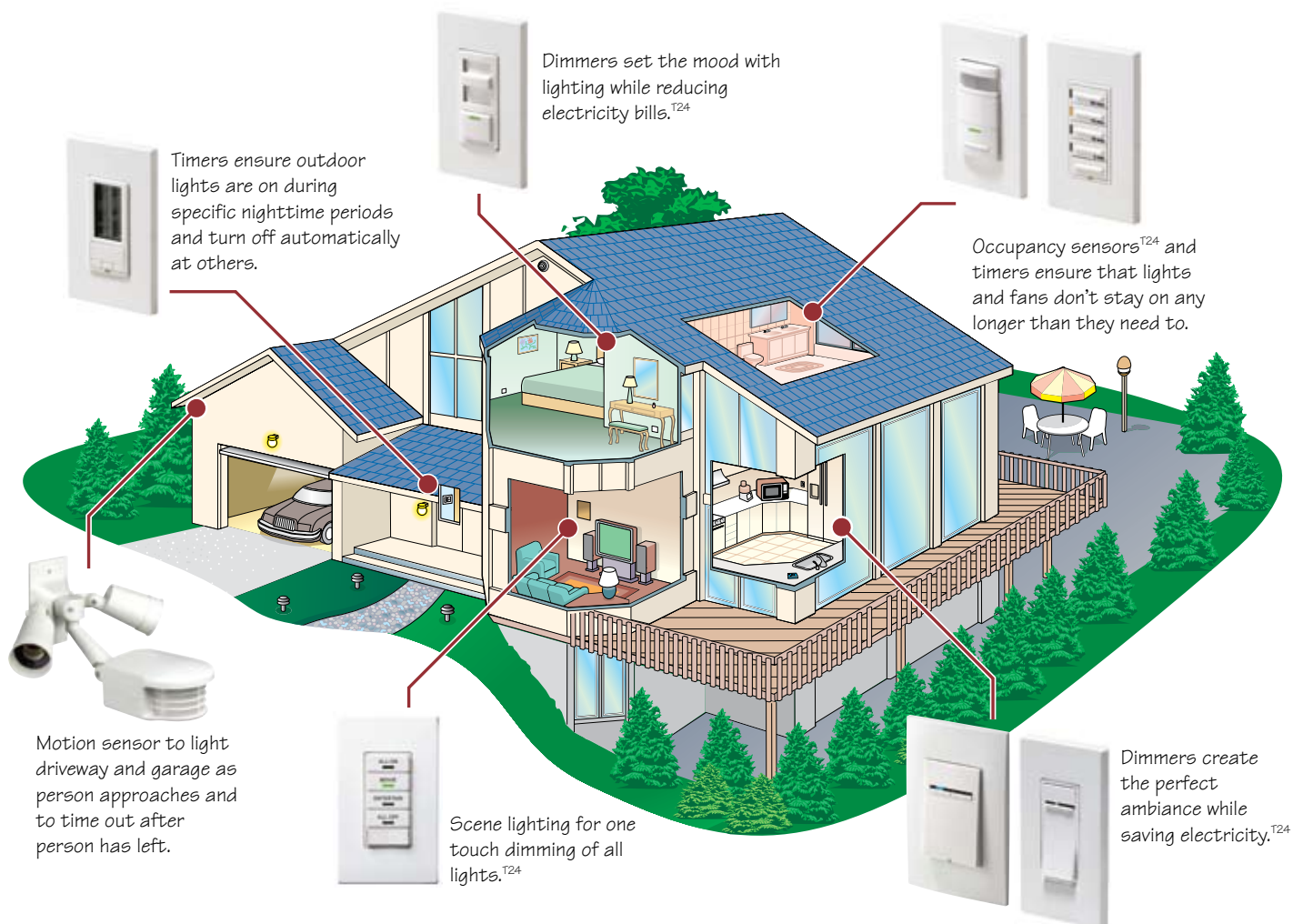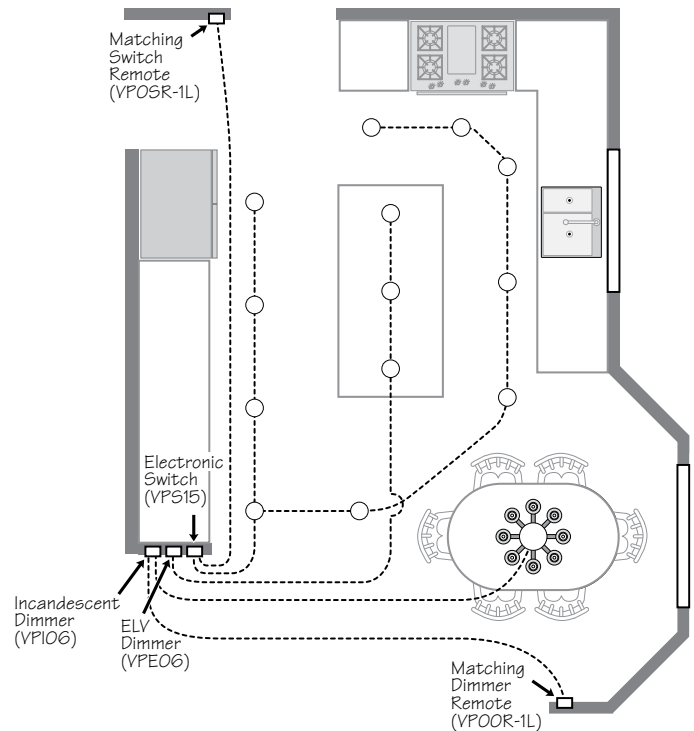
SINGLE- OR MULTI-FAMILY HOMES OF STYLE

Every day, in homes all across the country, people rely on Leviton's lighting controls to illuminate their way and reduce their electricity bills. Our extensive line of reliable Decora® controls includes residential occupancy sensors, timers and dimmers—and our Acenti® and Vizia +® designer lines provide the ultimate in aesthetics and state-of-the art technology.

Dimmers set the mood with lighting while reducing electricity bills.[T24]

Timers ensure outdoor lights are on during specific nighttime periods and turn off automatically at others.

Occupancy sensors[T24] and timers ensure that lights and fans don't stay on any longer than they need to.

Motion sensor to light driveway and garage as person approaches and to time out after person has left.

Scene lighting for one touch dimming of all lights.[T24]

Dimmers create the perfect ambiance while saving electricity.[T24]

TITLE 24 COMPLIANT

T24: Complies with California Title 24.

IN THE KITCHEN

Cooking, cleaning, eating and doing homework: there's a lot going on in the typical kitchen. In a large kitchen, there may be several banks of lights for illuminating different areas. To meet standards such as California's Title 24 up to one half of all lights in this room must be fluorescent; the other half may be incandescent or low-voltage fixtures, which may be dimmed to suit the task at hand while minimizing electricity usage. Dimmers give the homeowner the ability to control each bank of lights separately. Matching on/off switches can be installed to control required, high-efficacy lighting.

Matching Switch Remote (VPOSR-1L)

Electronic Switch (VPS15)

Incandescent Dimmer (VPI06)

ELV Dimmer (VPE06)

Matching Dimmer Remote (VPOOR-1L)

IN THE BATHROOM

Dimmers, timers and occupancy sensors can all be combined to reduce energy consumption in the bathroom. With a Vizia + or Acenti dimmer attached to a manual-on occupancy sensor remote, lights can be kept down low except when needed for tasks that require extra light, like shaving and applying makeup. They can turn off by themselves after the room is vacated. To combat excess humidity, the exhaust fan can be wired to a Decora Plus timer so it can run for a set period of time before automatically shutting off.


Dimmer (VPI06)

Preset Timer (6260M)
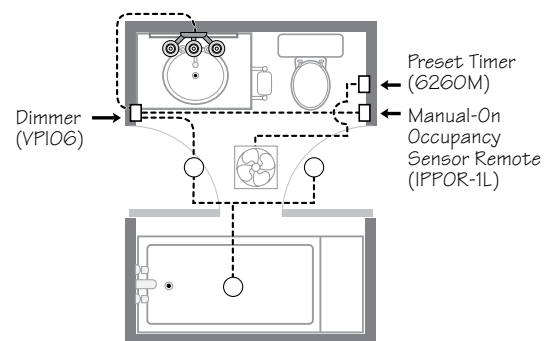
Manual-On Occupancy Sensor Remote (IPPOR-1L)

IN THE LAUNDRY ROOM

People often leave the laundry room with their hands full so it's easy to see why the lights there are prone to being left on. The easy solution is to install an occupancy sensor: a manual-on sensor to ensure maximum energy savings. If meeting codes such as California Title 24 is not an issue, consider installing a standard Leviton Wall Switch occupancy sensor (PR15ø or PR18ø). Either of these sensors will turn on the lights when motion is detected, which is convenient when carrying a heavy basketful of laundry.

Manual-On
Occupancy
Sensor
(IPP15-1L)
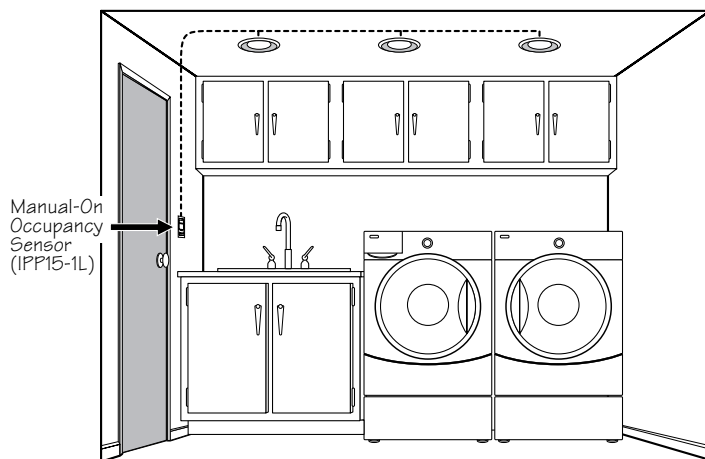
OUTSIDE THE HOUSE

Exterior lighting is one of the most basic home security measures but there's a downside: if left on, these lights can waste a lot of electricity. Adding sensors and timers to the scenario allows exterior lights to turn and remain on only when they have value from a security or safety perspective. With outdoor motion sensors, lights turn on only when needed and for a limited period of time. Timers, on the other hand, can illuminate entrances to deter would-be trespassers. A manual on occupancy sensor inside the garage can automatically turn the lights off when a car or person exits the garage. Another option for extra convenience and safety is to use a standard on/off sensor so that lights also turn on automatically when a vehicle or person enters the garage.

Motion Sensor
with Integral Light
(RS110-1F)

Manual-On
Occupancy Sensor
(IPP15-1L)

Programmable
Timer (6124H)

SERVICE AND SUPPORT DURING EVERY STEP OF THE PROCESS

There is much more to making lighting more energy efficient than just installing a simple device or two. System design, product selection, installation and service: it has all got to come together. That's where Leviton service and support options come in. We'll help you design your system and make the right product selections so you can create a lighting control system that does exactly what you want it to do while saving electricity, meeting codes and standards, and even garnering rebates.

It all starts with the Leviton sales representative and they're in every city, suburb and county in the United States. Our regional lighting control specialists are here to support you every step of the way. They can perform on-site facility audits and suggest specific products and strategies for improving lighting energy efficiency.

EXCLUSIVE WEALTH OF RESOURCES

- Occupancy sensor layout services – have a team of experts create occupancy sensor layouts directly on your CAD drawings, complete with a List of Equipment at no cost – go to portal.leviton.com
- Dollars & Sensors software – get an accurate estimate of your energy-savings potential with this exclusive payback analysis tool – go to www.leviton.com/dollarsandsensors
- ez-Learn – get sensor smart in just 9ø minutes from the comfort of your home or office with this exclusive 24/7 online training – go to www.leviton.com/ezlearn
- ASAP Lighting Design software – point-and-click software allows you to quickly and simply design, specify and enter orders with a seven-day turnaround time – go to www.leviton.com/asap
- Find more exclusive no cost design tools at www.leviton.com/lmsdesign
- Lighting control specialists at your disposal
- Field service engineers for top-level support
- Factory commissioning service
- Dedicated technical support via phone at 8øø 959-6øø4

CONTACT YOUR LOCAL LEVITON LIGHTING CONTROL SPECIALIST TO GET YOUR FREE ENERGY AUDIT, OR CALL 8ØØ-323-892Ø.

LEVITON LIGHTING ENERGY MANAGEMENT PRODUCTS:

- LevNet RF Wireless Self-Powered Solutions
- Wall Switch, ceiling-mount, wall-mount and fixture-mount occupancy sensors
- Outdoor motion sensors
- Box-mounted dimmers including Acenti®, Vizia +®, Monet™, Renoir™, Van Gogh™, Mural®, True Touch™, ToggleTouch™, IllumaTech™, SureSlide™ and Trimatron™
- Dimensions dimming systems
- Preset and programmable electronic timer switches
- Relay Systems including Z-MAX™ Plus, EZ-MAX™ Plus, miniZ™ and RRP Remote Relay Panel
- Sector Intelligent Ballast and Lighting Control System
- Fluorescent Lampholders

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