

Products and Systems for Lighting Controls



Digital Lighting Management

P. A31
Room
Controllers



P. A43
Occupancy
Sensors



P. A55
Personal
Controls



Lighting Control Panel Systems

P. B15
Lighting
Integrator



Complete Control Level



Automation Level



DMX512 Interface Level



Native BACnet Level



Low Voltage Switching Panel



Commercial Occupancy Sensors & Controls

P. C23
Wall Switch
Occupancy Sensors



Passive Infrared



Ultrasonic



Dual Technology

P. C53
Ceiling and Wall Mount
Occupancy Sensors



Residential Vacancy Sensors & Controls

P. D13
Vacancy
Sensors



Passive Infrared



Ultrasonic



Fixture Sensors & Controls

P. E13
High Bay
Occupancy Sensors



P. E23
Fixture
Occupancy Sensors



Daylighting Sensors & Controls

P. F15
Stand Alone
Controls



Single Channel Switching



Single Channel Dimming



Wallbox Dimmers & Fan Speed Controls

P. G11
Architectural
Dimmers



P. G25
Touch
Dimmers



Wireless Lighting Controls

P. H11
Wireless RF
Lighting Controls



Scene Controllers



Load Power Devices



Interfaces

P. A71
Daylighting
Sensors



P. A81
Configuration
Tools



P. A87
Network
Components



P. A93
Lighting
Control Panels



P. A101
Interfaces
and Accessories



P. B105
Lighting Integrator
Accessories & Services



P. B121
Peanut
Panels



Pre-packaged Systems

P. B125
Emergency
Lighting Controls



Passive Infrared

Ultrasonic

Dual Technology

P. C81 Power Packs
P. C97 Time Switches
P. C101 Hotel Card Key Switches



P. C103 Plug Load Controls
P. C105 Outdoor Sensors
P. C109 Accessories

P. D25
Convertible
Occupancy Sensors



Passive Infrared

P. D33
Time
Switches



P. E37
Fixture
Daylighting Sensors



P. E45
HID Bi-level
Controllers



P. F19
System
Controls

Multi Channel Switching



Multi Channel Dimming

P. G35
Paddle
Dimmers



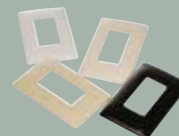
P. G45
Slide
Dimmers



P. H43
Wired (non-RF)
Dimmers and Controllers



P. H53
Wall
Plates



New from WattStopper

Digital Lighting Management

Imagine lighting controls that self-configure. Now imagine controls that automatically operate using the most energy-efficient profile. No matter what.

The world's first lighting controls smart enough to automatically save the most energy

You've just imagined Digital Lighting Management (DLM) from WattStopper, the first lighting controls that know how to save the most energy.

And, DLM scales from stand alone control of a single room to centralized network control of a floor, a building or an entire campus.

- **Fastest** - plugs together for quick error-free installation
- **Easiest** - automatically configures to maximize energy efficiency
- **Best** - saves energy beyond code requirements for the greatest ROI



Solutions for stimulus-funded public works projects

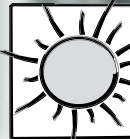
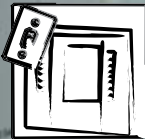
The federal government is the nation's largest property owner and landlord, owning and/or operating nearly three billion square feet of floor space.

Under the American Recovery and Reinvestment Act of 2009 (ARRA), federal agencies have funding to meet aggressive energy and sustainability goals through the renovation of existing buildings as well as new construction.



To meet this demand, WattStopper has developed specialized design and application guidance, as well as a specialized product offering.

Visit <http://www.wattstopper.com/Federal> for the most recent information on designing for federal projects, as well as product information on ARRA-compliant lighting controls.



Project Name	Project Number	Project Type
Office Building for ABC Corp	12345	Commercial
City Center Renovation	67890	Residential
Industrial Park Expansion	11111	Industrial

Energy-efficient lighting controls stop energy waste

It's our vision at WattStopper, where we make energy-efficient lighting controls for commercial and residential use.

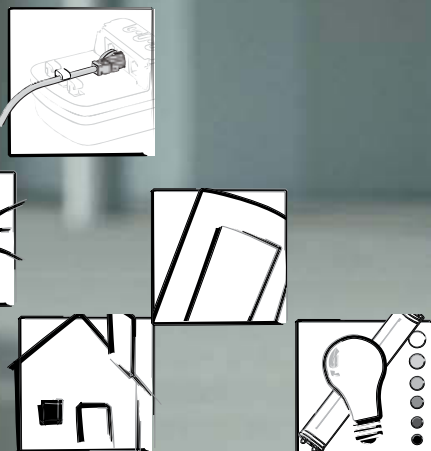
Energy-efficient controls ensure just the right amount of light when and where you need it. They are reliable and easy to use, provide safety and security, reduce expenses and are code compliant, sustainable and environmentally friendly.

WattStopper has everything you need to make your lighting control project a success, from a comprehensive range of products to informative and time-saving programs, tools and services.

Innovative services and technologies for sustainable lighting control

Table of Contents

Introduction	i-x
Services and Resources	xi-xvi
Using Lighting Controls	xvii-xxiv
Digital Lighting Management	A1-A112
Lighting Control Panel Systems	B1-B136
Commercial Occupancy Sensors & Controls	C1-C112
Residential Vacancy Sensors & Controls	D1-D38
Fixture Occupancy Sensors & Controls	E1-E50
Daylighting Sensors & Controls	F1-F28
Wallbox Dimmers & Fan Speed Controls	G1-G54
Wireless Lighting Controls	H1- H54
Glossary	I1-I14
Discontinued and Replacement Product Index	I16



How to use this guide

This product selection guide is a compilation of WattStopper product information, including individual cut sheets and design/application assistance. It was created with the specifier in mind, but may be useful for contractors, distributors and others.

What you'll find inside:

Introduction to lighting controls

This section will help you in selecting lighting control strategies and products for your projects.

Overview for each product line

We introduce each product line to you with a brief description of how the product works and where to use it.

Design information

There are numerous factors to consider when designing a lighting control system. We offer some guidelines for each of our product lines.

RESIDENTIAL WALL SWITCHES AND TIME SWITCHES

Stop energy waste with lighting controls

The easiest and most cost effective way to save energy at home is to replace standard switches with vacancy sensors and time switches.

Vacancy Sensors
You turn the lights on. The sensor keeps them on as long as motion is detected, and then turns lights off automatically after a room has been vacated.

Countdown Time Switches
You turn the lights on for a selected period of time. The time switch turns them off automatically at the end of the countdown.

Astronomical Time Switch
You program the switch to turn lights on and off according to a schedule. The schedule can include set times, or times relative to dusk and dawn.

An outdoor pushbutton in every device allows intuitive manual-off control at any time.

Energy Saving Potential
Lighting controls save energy in every room of the house as well as outdoors.

Bedrooms	40-58%
Bedrooms	40-58%
Clonets	30-38%
Laundry rooms	30-42%
Garage	30-42%
Pantry	30-38%
Outdoor lighting	30-58%

www.wattstopper.com 800.879.8585

LIGHTING CONTROL PANEL SYSTEMS

Designing with Lighting Control Panels

5. Provide Written Product Specifications

Written specifications provide a clear description of product function and features required for a project. These specifications are usually included in section 10000 of a standard architectural specification package.

WattControl Designer software automatically generates project specific documents based on your selections during the design process.

From The Tool Box:
Obtain complete technical guidelines specifications at www.wattstopper.com.

Designing with Lighting Control Panels

Use WattControl Designer software to generate project specific documents based on your selections during the design process. The software generates project specific documents based on your selections during the design process.

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6. Include Device Details on Lighting Plans

Include all switches, panels and accessories devices on a project's lighting plans, so the installer has the details of each device's actual location as well as its wiring.

Collect exact wiring through the lighting control panel.

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NEW CONSTRUCTION OR RETROFIT

Sensors and time switches can be installed readily and easily using new or existing wiring. Multiple-pole sensors and time switches are required by 3-way and 4-way switches. And, they can control most types of lighting, as well as motor loads such as fans.

CONVENIENCE AND RELIABILITY

WattStopper controls require little or no ongoing adjustments or replacements. With non-polarity initiation operation, these controls provide homeowners with years of trouble-free performance. All products are backed by a five year warranty.

CONTROLS COMPLIANT WITH CALIFORNIA'S TITLE 24-2008 ENERGY CODE

California requires the installation of high-efficacy lighting in homes unless approved lighting controls are installed. WattStopper can help you meet code in every room.

- Bedrooms, closets and 2000' garages, laundry rooms and utility rooms — control must be a vacancy sensor providing manual on control
- Other rooms — control may be a vacancy sensor or a dimmer
- Outdoor lighting — control may be an astronomical time switch

Color and styling

WattStopper controls feature low-profile switches in a choice of five decorator colors. Vacancy sensor frames are color-matched to the rest of the device, and the switches fit standard decorator facelates, so they can easily be ganged with other switches and controls. LED indicators make it easy to locate on/off buttons in the dark.

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Product cut sheets

Each cut sheet gives you pertinent product information (such as wiring diagrams, coverage patterns, system information, dimensions) as well as order information and specifications.

Product matrix

Most sections include a matrix of each product in the line. New products are prominently labeled for quick reference.

Digital Lighting Management

Plug n' Go™ automatic configuration for quick installation and maximum energy savings.

Plug n' Go™ Learn™ for simple personalization without sophisticated tools or expensive software.

Exclusive wireless tool for ladder-free configuration.

Integrated plug load and lighting control.

Plug n' Go and Plug n' Learn™

Digital Lighting Management (DLM) is an intelligent, distributed control system that automatically maximizes lighting energy efficiency. DLM includes room controllers, occupancy sensors, switches, daylighting sensors, plug load controls, interfaces and accessories that provide convenient, energy-saving control of dimmed and switched loads. System components plug together with Cat5e or Cat6 cables with RJ45 connectors.

Digital Lighting Management components operate on a free-to-use IP local network. Each DLM local network is managed by one or more room controllers that, upon startup, automatically configure system components for the most energy-efficient sequence of operation using Plug n' Go technology. System may be personalized using Plug n' Learn™ pushbutton programming. DLM occupancy sensors and switching features may be infrared (IR) communication that enables personnel remote from keyboard controls as well as optional remote configuration. A handheld wireless configuration tool can be used to view, modify and store system parameters.

Features

- Sensors and switches include infrared (IR) communication for bi-directional communication
- Smart and learning control options
- Includes self-calibrating daylighting sensors
- Remotely configurable for use in non-compliance or non-compliance-free environments

Network Characteristics

- Communication and power delivered via Cat5e cables with RJ45 connectors
- Power provided by PoE or PoE+ (IEEE 802.3af/802.3at) PoE switches
- True load-capable ports for use and delay-chain connection patterns
- Up to 1200 feet of cable per network. Maximum of 1000 feet between communicating devices
- Supports Plug n' Go and Plug n' Learn™ point-to-point technologies
- Controls switch and dimming lighting loads and plug loads
- Load handling capabilities for constant frequency supplies

Connecting

DLM system with bi-level lighting, daylighting and plug load control.

System Components

Component	Model	Voltage	Description	Typical Applications
Room Controller	RC-100	24VDC	Room Controller	Small offices, conference rooms, meeting rooms, open offices, classrooms, etc.
Occupancy Sensor	OS-100	24VDC	Occupancy Sensor	Small offices, conference rooms, meeting rooms, open offices, classrooms, etc.
Daylighting Sensor	DS-100	24VDC	Daylighting Sensor	Small offices, conference rooms, meeting rooms, open offices, classrooms, etc.
Plug Load Controller	PLC-100	24VDC	Plug Load Controller	Small offices, conference rooms, meeting rooms, open offices, classrooms, etc.

Occupancy Sensors Product Matrix

Technology	Model #	Voltage	Description	Typical Applications
Passive Infrared	PI-100	24VDC	PI-100 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-2	24VDC	PI-100-2 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-3	24VDC	PI-100-3 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-4	24VDC	PI-100-4 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-5	24VDC	PI-100-5 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-6	24VDC	PI-100-6 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-7	24VDC	PI-100-7 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-8	24VDC	PI-100-8 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-9	24VDC	PI-100-9 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	PI-100-10	24VDC	PI-100-10 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
Dual Technology	DT-100	24VDC	DT-100 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-2	24VDC	DT-100-2 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-3	24VDC	DT-100-3 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-4	24VDC	DT-100-4 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-5	24VDC	DT-100-5 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-6	24VDC	DT-100-6 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-7	24VDC	DT-100-7 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-8	24VDC	DT-100-8 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-9	24VDC	DT-100-9 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms
	DT-100-10	24VDC	DT-100-10 Wall Mount Sensor	Small offices, small conference rooms, individual workstations, conference rooms

Lighting controls facilitate sustainability

Reducing unnecessary lighting energy use presents the best opportunity for owners of all types of buildings to save energy and help the environment.

- 30-39% of the electrical load in commercial buildings is lighting*
- Controls can cost-effectively cut lighting energy use by up to 50%
- Less lighting means less heat and less air conditioning, compounding savings
- Controls reduce peak energy demand providing cost savings and less need for more power plants
- Controls significantly and affordably reduce CO₂ emissions and can help slow global warming

* Energy Information Administration (EIA)



Discover the benefits of lighting controls

Each year, more building owners and managers install lighting controls because they recognize the wide range of benefits:

Energy efficiency

Eliminate energy waste via automatic lighting control so lights work smart: the right light levels at precisely the right times and locations.

Economic savings

Reduced lighting usage lowers operating costs and saves money. Additional savings stem from reduced air conditioning costs, lamp replacement, maintenance and power demand during peak hours. Installing the right lighting controls can provide an excellent return on investment.

Code compliance

Satisfy energy codes – ASHRAE Standard 90.1, IECC, California's Title 24 – by using lighting control panels, occupancy sensors, daylighting controls, and other WattStopper controls.



Sustainability

Lighting controls enhance sustainable building practices and contribute toward achieving recognition as 'green' buildings.

Security

Proper lighting is key to safety and security. Interior and exterior lighting control ensures lights are on exactly when needed.

Convenience

Occupants and facility managers enjoy WattStopper's easy-to-use, convenient, trouble-free lighting controls.

A specialized focus and a green tradition

Founded in 1984, WattStopper has consistently focused on energy-saving lighting controls. Our controls are helping customers meet sustainable design goals across a wide range of applications.

Sustainability considers the lifecycle of products as well as their operational benefits. WattStopper's RoHS-compliant products support sustainability by preventing hazardous materials from entering the environment in addition to saving energy.

WattStopper is also committed to treading lightly on the planet during the normal course of business. In 2009 the company earned an Energy Star rating at its Birmingham, Alabama, facility. Many of our sales, product marketing and technical support personnel have earned professional accreditation as LEED APs. We continually refine our procedures to produce and distribute products using minimal resources.

WattStopper Green



Count on the right products for each application

For every lighting control project, you'll want to use the products that are the best fit. And because different types of spaces are best served by different control strategies, most projects require multiple solutions to maximize energy savings and occupant satisfaction.

That's why we offer such a wide range of lighting control products. In fact, no other company has a larger selection, with more essential features than WattStopper, the trusted pioneer of energy saving controls. Whether you need a specific mounting style, options for different load types, or the ability to integrate with a building automation system, we have products that fit these and many more applications.

Comprehensive selection of energy-efficient lighting controls



And as your needs change, so do we. For 25 years we have continuously developed and enhanced our products to offer new and innovative solutions for lighting control.

Products include: digital lighting controls; lighting control systems; commercial, residential and fixture-mounted occupancy-based sensors and controls; daylighting sensors and controls; and wireless RF controls and wiring devices



Enjoy expert service and a full range of design tools

800.879.8585 is the number that countless lighting professionals call when they need help with controls projects. They appreciate the personal greeting and WattStopper's skilled support.

From the initial stages of design to the building owner taking occupancy, WattStopper is ready to help. In-depth assistance is available every step of the way.

Our services range from toll-free tech support, to free design services, to field service for commissioning. WattStopper's highly-trained staff is on call to address all your lighting control needs. With them on your team, you can be confident that



your project's controls will perform optimally, achieving requirements for performance, energy savings, code compliance and sustainability.

Local support

Responsive assistance from district managers and trained representatives, including building walk-throughs, training, payback analysis reports, and product demonstrations.

Design services

Free lighting control design and layout on blueprints or AutoCAD drawings. Design experts ensure code compliance and help you combine control strategies to maximize energy savings.

Technical support

Lifetime telephone technical support from dedicated team with over 100 years' combined experience. Personal guidance for applications questions, installation assistance or help troubleshooting.

800.879.8585

With our comprehensive suite of design resources it's never been easier to get the information you need.

Whether you're looking for wiring diagrams to place in your CAD drawings, sample design solutions or information about energy code control requirements, we have the tools and initiatives in place.

Best Practice Guides, available in print and as e-books, help you identify optimal control solutions for each application. Cut sheets, technical bulletins, whitepapers and more are online for quick access anytime.

Free Energy Calculators help you analyze different control strategies to achieve your energy savings goals. These powerful online tools calculate baseline energy use and potential savings from controlling lighting or plug loads, including simple paybacks and return on investment (ROI).

Whenever you're online, there's a wealth of materials at your fingertips, but that's just the beginning. Visit www.wattstopper.com or call us to find out more.



CAD resource center

Over 400 CAD drawings including wiring diagrams, coverage patterns, product dimensions and mounting diagrams are available for download. Drawings are available in multiple formats.

Field service

Factory-trained assistance during the critical startup and commissioning stages to ensure optimal system performance.

www.wattstopper.com

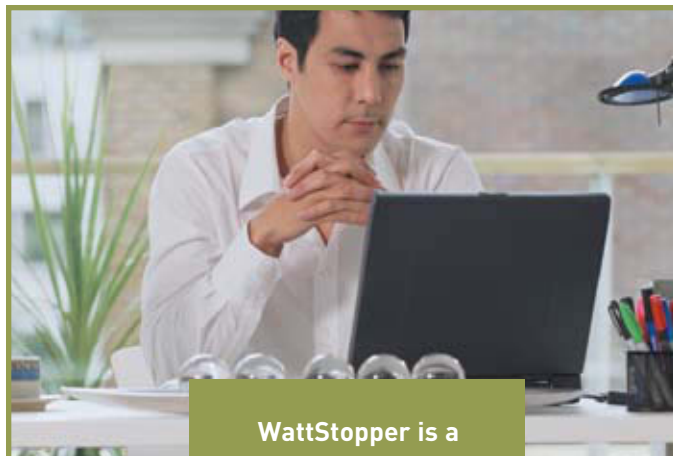
Take advantage of our commitment to education

Since its founding in 1984, WattStopper has recognized education as a critical ingredient in the effective use of lighting controls. Our educational programs focus on energy codes, green building initiatives and the proper application of lighting controls. Selected online and in person programs qualify for AIA/CEU and NCQLP credits.

In addition to the significant amount of education that we provide through our participation in industry organizations (see page xxv), WattStopper offers four basic educational opportunities:

- Local training
- WattStopper Education Centers
- eCampus
- Webinars

For other specific training opportunities, visit our website at www.wattstopper.com/education.



WattStopper is a registered provider with the American Institute of Architects continuing education program





Local training

We bring training sessions conducted by a WattStopper LEED accredited professional to your office. Sessions are available on a wide variety of code, sustainability, and product application topics, or a topic tailored to your specific requirements. To schedule a local training session, contact your WattStopper representative.

Education centers

WattStopper offers numerous lighting control courses at our Education Centers in Birmingham, Alabama and Santa Clara, California. Courses are offered for contractors, distributors, specifiers, representatives, and ESCOs. Most classes run a day and a half and cover the selection and application of lighting control products to meet code and maximize energy saving and return on investment. Classes combine lectures with hands on application and wiring exercises. Visit www.wattstopper.com/education for the most current course listing and descriptions.

eCampus

eCampus is our free, online education center where visitors can learn about lighting control technology and its application through self-paced eWards courses **and** earn rewards. eWards courses allow visitors to accumulate points that may be redeemed for WattStopper logo merchandise, including a variety of clothing and golf related items. The accredited course section, eCredited, offers continuing education credits.

Webinars

WattStopper webinars focus on energy codes, green building initiatives and lighting control solutions from the convenience of your office. Courses are offered to coincide with significant industry occurrences such as code changes. Visit www.wattstopper.com/education for the most current course listing and descriptions.

Utilize tools for success

CodeSmart

Now that most states have adopted either ANSI/ASHRAE/IESNA 90.1 (ASHRAE Standard) or the International Energy Conservation Code (IECC), design professionals, building owners and operators, and facility managers need up-to-date tools to ensure code compliance.

Turn to WattStopper's CodeSmart energy code initiative on line at www.wattstopper.com for information you can trust:

- up-to-date code requirements for all major codes
- design guidance in developing code-compliant projects
- technical expertise in implementing code-compliant projects

With mandatory energy code requirements on the state, regional, and local levels, virtually every facility must comply with lighting control requirements.

With federal tax incentives available under EAct, understanding, meeting, and exceeding code requirements represents a business opportunity as well.

Lighting control code provisions at a glance

ASHRAE Standard 90.1 (2004/2007/2010)

- Automatic lighting shutoff
- Space control
- Exterior lighting control
- Light level reduction control
- Automatic receptacle shutoff

IECC 2006/2009

- ASHRAE compliance OR:
- Automatic lighting shutoff
- Space control
- Exterior lighting control
- Light level reduction control
- Daylighting

California Title 24-2008

- Automatic lighting shutoff
- Space control
- Exterior lighting control
- Light level reduction control

Sustainability and GreenSense

Sustainable building practices have become mainstream as more and more people recognize that 'green' sense is simply common sense.

WattStopper's GreenSense provides guidance to design professionals working with the LEED rating system. In both the Energy and Atmosphere and Indoor Environmental Quality categories, lighting controls are critical for meeting prerequisites and earning credits. Design and application guidance includes examples of commercial applications and reviews the prerequisites and best practice solutions to achieve higher energy savings through lighting controls. Concepts of integrated design are covered with strategies for reduced mechanical ventilation, reduced cooling capacities, and intelligent building scenarios to reduce capital expenses.

GreenSense is supported through our education program and with our LEED-AP staff.

Building owners and operators benefit from a more valuable, efficient facility and may be eligible for significant tax advantages under the federal EAct of 2005. Occupants appreciate the enhanced work environment. The environment benefits from fewer construction-related impacts and the decreased ongoing demand for natural resources.

With green building initiatives such as the LEED program, building owners are seeking ways to enhance the efficiency of building systems. Since lighting consumes such a significant percentage of a facility's energy usage (30-39%), the lighting control strategies outlined online and in our GreenSense brochure are simply a matter of green sense.

LEED for New Construction & Major Renovations* Categories	Points Possible
• Sustainable Sites	26
• Water Efficiency	10
• Energy and Atmosphere	35
• Materials and Resources	14
• Indoor Environmental Quality	15
• Innovation and Design Process	6
• Regional Priorities	4

*LEED 2009 (v3)

Using lighting controls effectively: an overview



With mandatory energy code requirements on the state, regional, and local levels, virtually every facility faces lighting control requirements.

In addition, federal programs such as EPCRA tax incentives and ARRA funding opportunities, mean that understanding, meeting, and exceeding code requirements represents a money-saving opportunity as well.

These are the primary motivators for using lighting controls, as lighting systems account for a significant portion of total energy usage. Currently, approximately one-third of an average building's energy usage comes from lighting. Next to heating and air conditioning systems, lighting systems account for the greatest energy consumption and costs.

The starting point for any project will be whether the project is a retrofit or new construction.

For retrofit projects, many designers will want to begin with a lighting audit. This will identify how a facility's lighting energy is currently being used. During an audit, lighting will be connected to monitoring equipment to track a host of factors, such as how long the lights currently operate, what the space is used for, and what special equipment or fixtures may be located in the space.



Another important preliminary task – whether the project is a retrofit or new construction – is to identify the applicable energy code. In addition, it's important to identify at the outset whether any

additional standards, such as LEED or EPCAct, will be relevant to the project. This information will help drive the selection of lighting control strategies and technologies.

Lighting control strategies and technologies

In most cases, the control strategy will include automatic operation of the lighting, taking into account the needs of the space's occupants and what might be necessary to comply with mandatory energy codes. Further control strategy decisions will involve the control technology that will be used to satisfy those needs.

Control technologies typically refer to the type of device that will be used to carry out a specific strategy and what method the device will use to operate (passive infrared, ultrasonic or dual technology sensors, time switches, daylighting controllers or lighting control panels).



Control strategies

Occupancy-based control

Automatically switching lighting off and on in response to the occupancy of a particular space. This strategy is not dependent on time intervals or scheduled periods. In addition, implementing Manual-On with Automatic-Off improves energy performance and increases savings.

Vacancy-based control

Automatically switching lighting off in response to a space becoming vacant following manual switching to turn lighting on. This strategy is not dependent on time intervals or scheduled periods. Vacancy sensors are often used to meet California's Title 24 requirements for residential buildings.

Scheduled control

Managing lighting according to time schedules based on when buildings are open/occupied and closed/unoccupied.



Load shedding

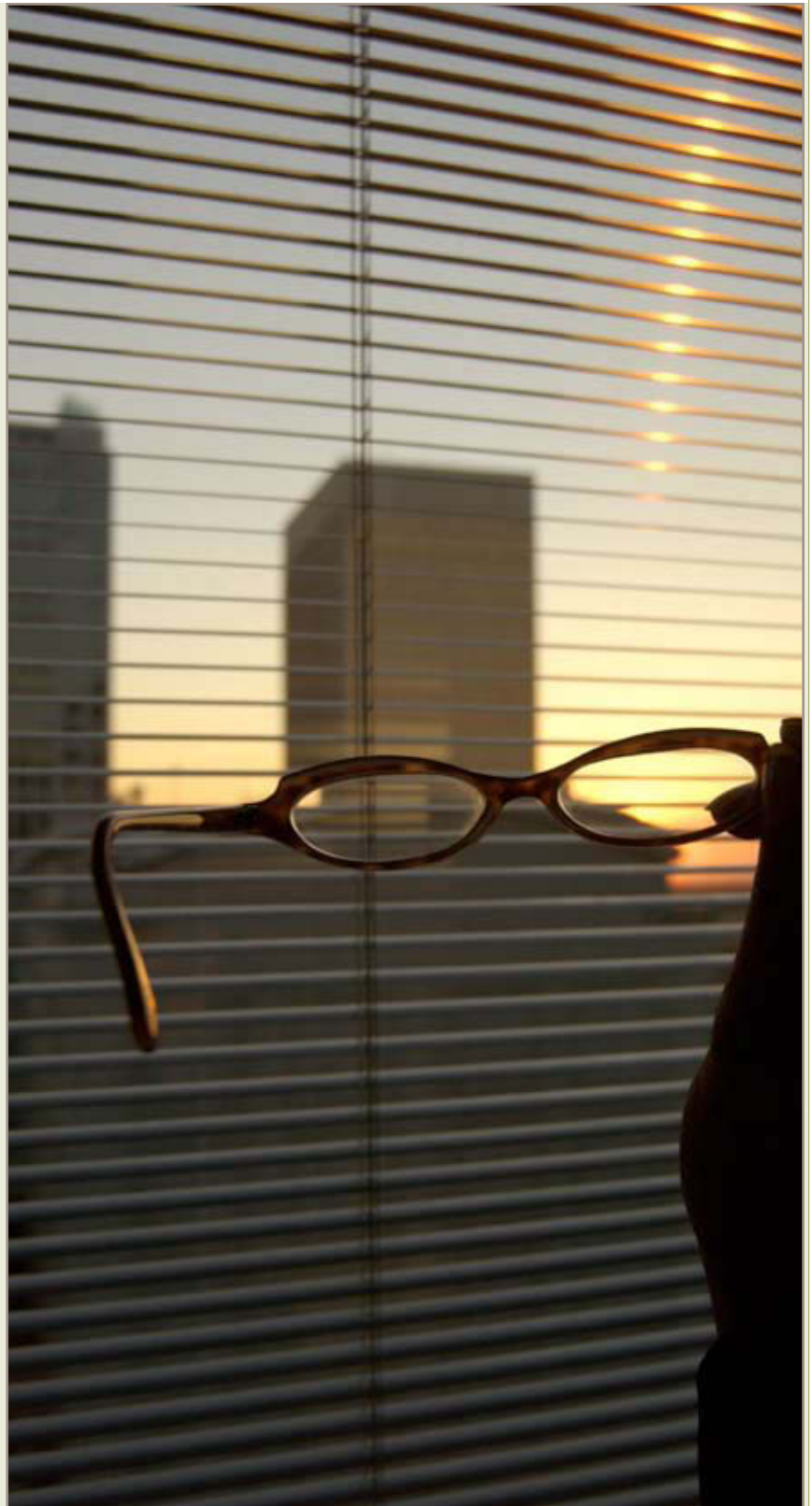
Reducing a facility's lighting load to achieve an overall reduction in demand, usually at peak usage times, such as midday.

Daylighting control

Adjusting the output of electric lighting in a daylit area adjacent to a window or skylight via a photosensor that detects light levels in the space (can be ON/OFF or dimming control).

Dimming and scene control

Adjusting lighting levels to achieve desired lighting effects or appropriate light levels for different occupant activities.



Control technologies

Lighting Control Technologies & WattStopper Products			
Control Technology	Technology Description	Best Applications	In this Guide
Occupancy Sensors	<p>Detect occupants and send appropriate signals to area lighting to turn ON/OFF using sensing technologies such as passive infrared (PIR), ultrasonic, and dual technology.</p> <p>Digital (DLM) occupancy sensors offer additional functionality, such as automatic configuration for optimal energy efficient performance, easy adjustability, and effortless integration with other control devices such as switches.</p>	Spaces with intermittent occupancy (e.g. restrooms, offices, conference rooms, classrooms, etc.)	<p>Pages C1-C112</p> <p>A43-A54</p>
Vacancy Sensors	Detect when a space has become vacant after lighting has been manually turned on and turn lights off automatically after a preset time delay elapses.	Residential buildings and homes.	Pages D1-D38
Time Switches	These devices turn lights off after a specified interval, which can be varied from brief periods (e.g., 5 minutes) up to lengthy intervals (e.g., 12 hours).	Areas used frequently but for short periods of time, such as utility or control rooms, storage areas, and library book stacks.	Pages C97-C100
Daylighting Controllers	<p>Photosensors that adjust the output of electric lighting in a daylit area by detecting the light levels in the space. These controls can be ON/OFF switching or continuous dimming controls.</p> <p>DLM daylighting sensors offer additional functionality, such as effortless integration with other control devices such as occupancy sensors and switches</p>	Areas with access to natural light, such as atriums, perimeter offices, hallways, classrooms, and other types of areas with skylights.	<p>Pages F1-F28</p> <p>A71-A80</p>
Lighting Integrator Lighting Control Panels	Facilities managers achieve long-term scheduled control through the use of lighting control panels. These systems enable facility lighting management from a single location for days, weeks, and even months in advance. These products can also interface easily with building management, security and HVAC systems.	Areas with regular predictable hours of operation and/or occupancy, such as office buildings, retail operations, exterior lighting, and public buildings.	Pages B1-B136
Wallbox Dimmers	Individual dimmers and fan speed controls complement automatic-off controls, and allow occupants to customize light levels for comfort, convenience and additional energy savings.	Office, conference, retail, hospitality and residential spaces.	Pages G1-G54
Wireless Lighting Controls	For areas that need lighting variability and flexibility to meet changing requirements of the space, users can choose controls that switch lighting on, off, or dim light levels.	Multi-use spaces such as conference rooms, residences, lecture halls, multi-purpose rooms.	Pages H1-H54

Lighting control design principles

Project considerations

Space usage

What do facility occupants and homeowners expect from their lighting?

Expectations and needs can range from a preference for local override of a particular control to personal desktop controls or residential vacancy controls, and will vary depending on space type and those who utilize the space.

How do occupants currently use lighting? What are the operating schedules?

Lighting usage and occupants' schedules will help define control needs.

What are the occupancy patterns?

Spaces where occupancy is less predictable, such as conference rooms or restrooms, are better suited to control by occupancy sensors. Spaces with predictable occupancy patterns, such as retail operations, are suitable for scheduled control.



For instance,

If a space is intermittently and unpredictably occupied, an occupancy-based strategy provides the greatest opportunity for energy savings. If, on the other hand, the space is occupied on a regular basis, a scheduled control strategy may be more effective.



Lighting control design principles

Space characteristics

What type(s) of lighting will be used?

Different kinds of lighting have different operating characteristics, such as the lengthy restrike nature of HID lighting, or the various burn-in requirements of different lamps. Each of these qualities may be more suitably controlled by different control technologies.

What types of ballasts will be used?

Some control technologies require specific ballast types. For instance, electronic dimming ballasts are necessary to take advantage of dimming.

Where is the space located and what type of access is there to natural light?

Outdoor lighting can be controlled via astronomic or photo-sensitive control, while interior spaces with an abundance of natural light will be candidates for daylighting control.



General considerations

Applicable energy codes

- What energy code requirements must be met?
- Are specific types of controls required?

Green building approach

- Is the project seeking LEED or other sustainability certification?

Electric rate and demand charges

Understanding what your electric rate is and how your electricity costs are affected by demand charges is important to the decisions you'll make about the right lighting control system.

Whether you're a homeowner or a facility manager, the higher the electric rate, the greater the economic benefit and motivation there will be to reduce the lighting energy consumption. Energy demand and its impact on electric rates can spur building owners to adopt a load shedding control strategy that focuses on minimizing demand charges.



Supporting industry organizations

WattStopper is an active member in many industry and energy efficiency oriented organizations including:

<p>American Society of Heating, Refrigerating, and Air-Conditioning Engineers</p>	 <p>BACnet International</p>	 <p>California Lighting Technology Center (CLTC)</p>
 <p>Daylighting Collaborative</p>	 <p>Enlighten America</p>	 <p>eMerge Alliance</p>
 <p>EPA Energy Star</p>	 <p>Home Lighting Control Alliance (HLCA)</p>	 <p>Illuminating Engineering Society of North America (IESNA)</p>
 <p>International Code Council (ICC)</p>	 <p>Integrated Electrical Services, Inc. (IES)</p>	 <p>Lighting Controls Association (LCA)</p>
 <p>Lighting Industry Resource Council (LIRC)</p>	 <p>Lighting Research Center (LRC)</p>	 <p>National Association of Energy Saving Companies (NAESCO)</p>
 <p>National Electrical Manufacturers Association (NEMA)</p>	 <p>The Collaborative for High Performance Schools</p>	 <p>US Green Building Council (USGBC)</p>

WattStopper: a member of the Legrand group of companies



Legrand is the global leader in products and systems for electrical installations and information networks where people live and work. Employing over 30,000 people worldwide, the company holds over 5,000 active patents, with nearly 170,000 catalog items divided into 95 product families. Legrand has a strong presence in the North American market, with a portfolio of products that includes Cablofil, On-Q, Ortronics, Pass & Seymour, Vantage, WattStopper and Wiremold. The company is actively expanding its market divisions that include Electrical Wiring Systems, Home Systems, Lighting Controls and

Commercial Datacom. Committed to providing a steady flow of innovative new products with high added value, Legrand invests 4-5% of sales in R&D. Its comprehensive offering of solutions for use in commercial, industrial and residential markets makes it a benchmark for suppliers worldwide. Innovation for a steady flow of new products with high added value is a prime vector for growth. Legrand is listed on Euronext Paris and is a component stock of indexes including the SBF120, FTSE4Good and MSCI World (ISIN code FR0010307819). Visit www.legrandna.com.





Discover the benefits of Digital Lighting Management

■ **Fastest** - plugs together for quick error-free installation

■ **Easiest** - automatically configures to maximize energy efficiency

■ **Best** - saves energy beyond code requirements for the greatest return on investment



Table of Contents

Product Line Introduction	A3-A16
Product Matrix	A17-A24
Product Details	A25-A111



DLM: for a room, a building or an entire campus

Digital Lighting Management (DLM) is an intelligent, distributed control system that automatically maximizes lighting energy efficiency. Its powerful features provide a higher return on investment (ROI) than any other lighting control solution.

DLM is designed to scale from stand-alone control of individual rooms to centralized control of a floor, a building, or an entire campus. With DLM, you layer your choice of control strategies to meet project goals, from energy code compliance to building aesthetics, simplified maintenance and enhanced energy performance.

Control options include: room controllers for switched or dimmed lighting loads, or for plug loads; digital occupancy sensors; sleek switches and handheld remotes; versatile daylighting sensors; lighting control panels; tools for remote configuration, scheduling and system management; and interfaces providing connectivity to third party devices.



Digital occupancy sensors include **pushbuttons** and **LCD screens** for changing settings. A handheld remote allows ladder-free configuration.



The first truly digital system, with digital sensors, DLM controls both dimmed and switched loads. It even integrates plug load control, extending the benefits of code-compliant occupancy sensors farther than other systems.

Optional connection to an open protocol segment network enables **remote system management**, including current monitoring, adjustment of parameters and scheduling.



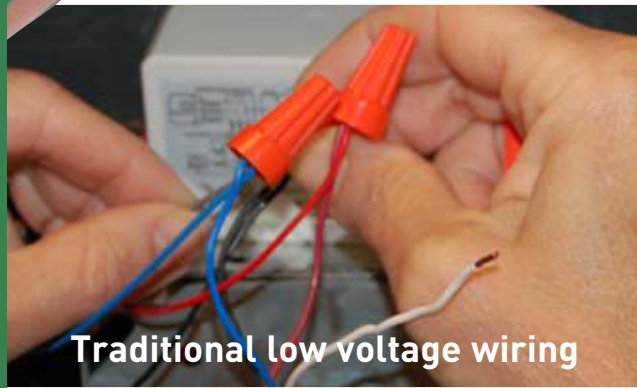


Eliminate wiring diagrams and requirements for special skills

Digital Lighting Management's modular design makes installation a snap. Gone is the need for complex wiring diagrams, different types of low voltage cable and expensive training or highly skilled specialty contractors.

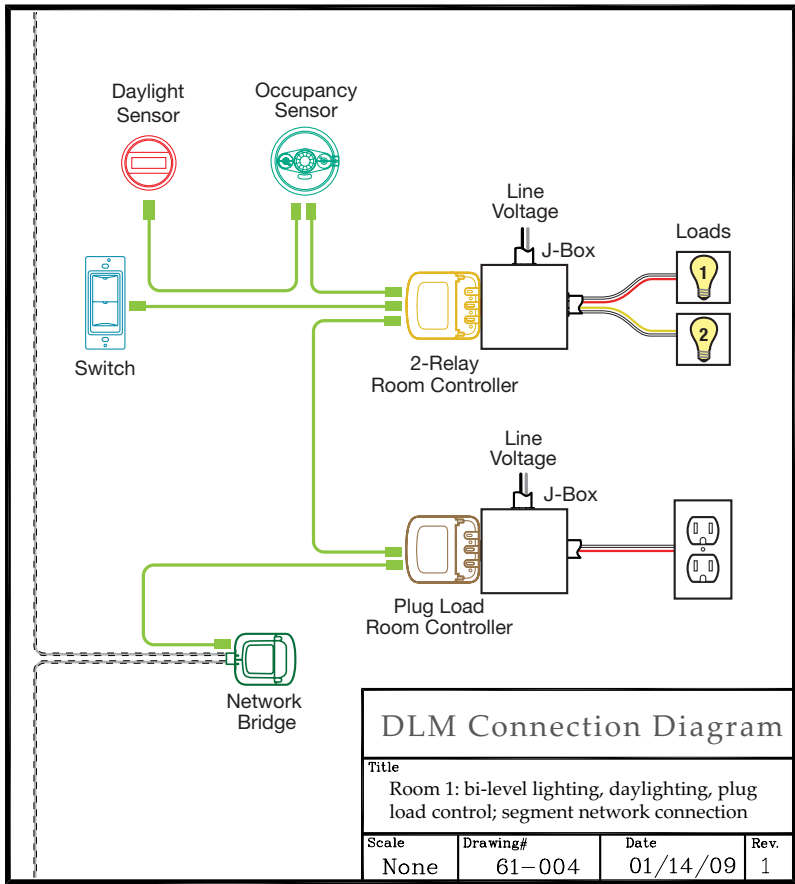
Within each room, components operate on a free-topology DLM local network. Simple diagrams replace cumbersome point-to-point wiring plans, speeding both design and installation.

Installers just plug components together in any order using Cat 5e cables with pre-terminated RJ45 connectors. They can complete each job quickly and accurately. Digital Lighting Management not only saves labor, it eliminates the headaches and costs of call backs.



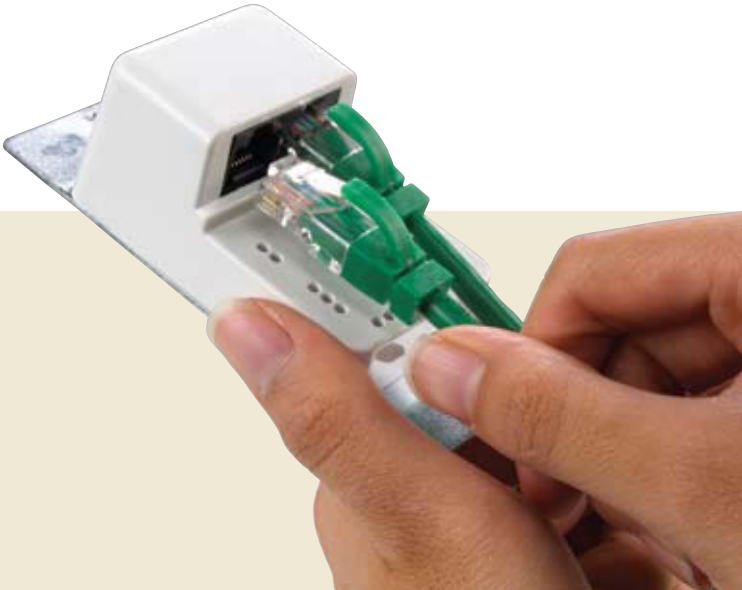
Traditional low voltage wiring

Free-topology means devices can be plugged together in both star and daisy-chain patterns, simplifying design, installation and maintenance.



On average, DLM can be installed in just half the time it takes to install traditional energy saving lighting controls.

Pre-terminated plenum-rated cables are available in various lengths.



The optional segment network dataline connects to just one component, a network bridge, on each DLM local network.



Let Plug n' Go™ configure the system

Digital Lighting Management is the first system that automatically configures itself to operate in the most energy-efficient mode. Plug n' Go establishes functionality based on the installed components.

Just include the controls you want to use. Plug n' Go will configure each system to take advantage of every available component, ensuring added savings when switches, dual relay room controllers and daylighting sensors are installed. For many applications, no additional configuration or adjustment will ever be needed.



Adding switches **accelerates payback.**
Research confirms that personal controls increase energy savings and improve occupant satisfaction.*

*According to studies by California Lighting Technology Center and Lighting Research Center



Plug n' Go Default Operation



DLM components provide optimal energy savings right out of the box.

Example #4

- Dual Relay Room Controller
- + Occupancy Sensor
- + Switch
- + Daylighting Sensor

Bi-level, auto-on to 50% unless light level is adequate/auto-off

Default Operation for Plug Loads

When a Plug Load Controller is added to any system, Plug n' Go will configure it for auto-on/auto-off operation of controlled outlets.

The segment network **configures itself automatically** too. And because DLM architecture is designed from the bottom up, it incorporates the Plug n' Go functionality of each local network.



Enjoy a quick payback from beyond code savings

With Digital Lighting Management you don't have to settle for typical system paybacks, and simply meeting code. DLM provides a superior return on investment (ROI) for both small installations and entire buildings or campuses.

DLM products designed for beyond code savings are extremely affordable. With DLM, it is actually more cost-effective to use lighting control strategies that exceed basic energy code requirements.

Not only will you quickly recapture your investment, but by dramatically curtailing energy use you'll save on operating costs for the life of the system. These savings go hand in hand with sustainability goals such as LEED certification.

According to the Energy Information Administration (EIA), 30-40% of electrical use in commercial buildings is for lighting.

Lighting Energy Savings

Control Strategy

Automatic on and off



Enhanced Control Strategies

Manual and bi-level control

By adding switches and bi-level lighting, you can use 52% less energy than you would using automatic-on occupancy sensors alone. ROI improves, as shown in the example on page 11.



Based on California Lighting Technology Center research

Begin with:
Occupancy Sensors



Room Controllers



add:
Wall Switches



Dual Relay Room Controllers

Basic code compliance

Selected codes; EPAct



How enhanced control strategies boost ROI: An open office example

A 1,600 sq. ft. open office space could be **automatically** controlled using four occupancy sensors and a room controller for **basic code compliance**.

The same space would be better controlled using **bi-level lighting, a dual relay room controller and a two-button wall switch**. Energy savings more than double providing a greater return on investment from these **enhanced control strategies**.

	Basic code compliance	Enhanced bi-level solution
Installed cost	\$903	\$1,119*
Annual energy savings	\$249	\$534
Payback	3.6 years	2.1 years *
Annual return on investment	28%	48%*

* If coupled with qualifying energy performance, an EPA tax deduction could offset much of the equipment cost for an even greater ROI.

Enhanced Control Strategy

Daylight harvesting



By adding daylighting controls, you can use 40% less energy than you would using automatic-on occupancy sensors alone. Manual and multi-zone controls compound the savings.

Based on case studies

add:
Daylighting Sensors



Selected codes;
LEED certification

Dimming
Room Controllers

Plug Load Energy Savings

Control Strategy

Occupancy-based plug load control



Plug load controls save energy by shutting off previously uncontrolled loads. They work with sensors installed for code compliance and allow you to further leverage your code-mandated investment.

Based on case studies

Up to 14% of electrical use in commercial buildings is for plug loads. (EIA statistic)

add:
Plug Load Controllers





Personalize functionality quickly and conveniently

While the Plug n' Go configuration serves most projects well, Digital Lighting Management includes unique features to simplify customization. Users can personalize DLM in one of four ways.

Pushbuttons on DLM components

Pushbuttons facilitate simple changes to default operation without the need for any tools. As an example, users or installers can quickly reassign loads to selected buttons on DLM switches using the switch buttons themselves. They can also change sensor assignments or parameters using buttons on the sensors.

Handheld wireless configuration tool

A wireless tool can be used to adjust occupancy sensor settings, dim selected loads and configure daylighting sensors from the floor. It can upload and download occupancy sensor settings, and is also the first tool in the industry that provides data storage capability.



Traditional sensor configuration

With DLM, sensor settings or system configuration can be changed **without tools or ladders.**



This means users can customize one DLM local network, and then quickly apply the same sensor settings to other DLM local networks throughout an installation or even on another project. There's no need for ladders or repeated entry of the desired parameters.

USB interface and PC software

Designers can configure DLM using a personal computer by connecting to each DLM local network through a USB key. This convenient option also simplifies the preparation of LEED documentation.

Remote control via DLM segment network

When each local network is connected to a segment network, facility managers can remotely monitor and adjust all system parameters using a segment manager and a browser-based interface. The BACnet-compatible segment network can be integrated with a building automation system if preferred.

Push n' Learn™ facilitates custom configuration, which may be performed using the programming pushbuttons on the installed controls, a specially designed wireless tool or a PC.

Using a wireless configuration tool, users can **apply the same sensor settings** throughout an installation.





Manage DLM remotely over the segment network

Digital Lighting Management's segment network connectivity lets a facility manager access DLM local networks and LILM lighting control panels throughout a building from the convenience of an office PC or a handheld PDA or smartphone. This simple addition expands functionality, and can increase energy savings and even reduce operating expenses.

With a segment manager and a web browser, users can not only fine-tune DLM parameters, they can also establish after-hours settings and schedules.

If local networks are equipped with current monitoring room and plug load controllers, users can observe and document actual power consumption in real time.

When lighting control panels are installed, the segment manager user interface is typically used to set up code-compliant schedules. The open protocol segment network also allows system integrators to quickly and easily incorporate DLM into BACnet networks. They can then schedule control via a building automation system (BAS) and adjust selected parameters available as BACnet objects.



Segment managers connect to a PC via Ethernet, a LAN or the Internet. The browser-based user interface **automatically discovers** DLM local networks and devices.



The segment network expands DLM capabilities without complexity. It capitalizes on the simplicity of Plug n' Go local networks, and adds unique functionality for convenience and added savings.

The open protocol segment network enables **easy integration with a BAS** and facilitates money-saving demand response.





Bring flexibility and energy savings to common applications using DLM

Starting with basic code compliance out of the box, DLM enables a seamless build up to the desired energy performance level, whether this is to achieve a faster ROI, earn a LEED rating or EPC Act tax deductions, or comply with code requirements in specific jurisdictions.

Basic code compliance (Baseline energy performance)

Team DLM occupancy sensors with room controllers, or schedule lighting control panels to achieve code-mandated automatic shutoff.

Enhanced energy performance

Access a range of lighting control strategies (also referred to as LCMs, or lighting control measures) for energy savings beyond basic code compliance.

Network DLM controls throughout a facility to create after hours parameters, monitor energy use, take advantage of demand response opportunities or coordinate control with a building automation system.



Bi-level switching (auto-on to 50%/manual-on)

Implement more energy-efficient operating profiles by adding a wall switch. Energy codes (e.g., CA Title 24) and sustainability rating systems (LEED) increasingly utilize these strategies.

Plug load control

Extend occupancy-based control beyond lighting. With plug loads accounting for up to 14% of a building's total electrical load, turning them off boosts energy savings and ROI.

Integrated HVAC control

Leverage investments in occupancy sensors by integrating lighting and HVAC control. This increases energy savings and speeds ROI.





Daylight-responsive control (on/off, continuous dimming)

Boost energy savings dramatically with daylighting controls that turn lighting off, or dim it, when adequate daylight levels exist. This can increase energy savings by as much as 40%, for a stronger LEED rating or an EPC Act tax deduction.

Personal controls

Offer occupants wall-mounted or handheld manual controls for greater autonomy and comfort in controlling their work environment. Research indicates that personal controls typically increase energy-efficient operation as well as individual productivity.

Scene control and dimming






Provide occupants total adjustability of lighting levels for improved comfort and ambience as well as repeatable scenes. Energy savings are virtually proportional to the reduction in lighting output.










Digital Lighting Management

Product Matrix

Room Controllers					
Model #	LMRC-101  pages A33-34	LMRC-102  pages A33-34	LMRC-211  pages A35-36	LMRC-212  pages A35-36	LMRC-213  pages A35-326
Product Description	1-relay On/Off Room Controller	2-relay On/Off Room Controller	1-relay On/Off 0-10V Dimming Room Controller	2-relay On/Off 0-10V Dimming Room Controller	3-relay On/Off 0-10V Dimming Room Controller
Voltage	120/277VAC	120/277VAC	120/277VAC	120/277VAC	120/277VAC
Load Rating	Ballast: 20A Incan: 20A Motor: 1Hp	Ballast: 20A Incan: 20A Motor: 1Hp	Ballast: 20A Incan: 20A Motor: 1Hp	Ballast: 20A Incan: 20A Motor: 1Hp	Ballast: 20A Incan: 20A Motor: 1Hp
Features					
On/Off switching	X	X	X	X	X
Dimming			X	X	X
Plug Load Control					
Number of relays	1	2	1	2	3
0-10V dimming output			1	2	3
Current monitoring ¹			X	X	X
Network bridge ²					
Number of RJ45 ports	3	3	4	4	4
Plug n' Go	X	X	X	X	X
Push n' Learn	X	X	X	X	X
Relay/load status LED	X	X	X	X	X
Communication LED	X	X	X	X	X
Control button for each load	On/Off	On/Off	On/Off/Dim	On/Off/Dim	On/Off/Dim
Applications					
	Single zone On/Off	Single or multi-zone On/Off	Single zone dimming or switching	Single or multi-zone dimming and/or switching	Single or multi-zone dimming and/or switching

1. Current monitoring requires that the DLM local network be connected to a segment network via a network bridge.
2. Only one network bridge is required in each DLM local network for a segment network connection. For a stand-alone network bridge, see **Networking Components** section.








Room Controllers					
Model #	LMRC-311  pages A37-38	LMRC-312  pages A37-38	LMRC-313  pages A37-38	LMPL-101  pages A39-40	LMPL-201  pages A41-42
Product Description	1-relay On/Off 0-10V Dimming Room Controller with Network Bridge	2-relay On/Off 0-10V Dimming Room Control- ler with Network Bridge	3-relay On/Off 0-10V Dimming Room Control- ler with Network Bridge	Plug Load Room Controller	Plug Load Room Controller with Current Monitoring
Voltage	120/277VAC	120/277VAC	120/277VAC	120VAC	120VAC
Load Rating	Ballast: 20A Incan: 20A Motor: 1Hp	Ballast: 20A Incan: 20A Motor: 1Hp	Ballast: 20A Incan: 20A Motor: 1Hp	Ballast: 20A Incan: 20A Motor: 1Hp	Ballast: 20A Incan: 20A Motor: 1Hp
Features					
On/Off switching	X	X	X	X	X
Dimming	X	X	X		
Plug Load Control				X	X
Number of relays	1	2	3	1	1
0-10V dimming output	1	2	3		
Current monitoring ¹	X	X	X		X
Network bridge ²	X	X	X		
Number of RJ45 ports	4	4	4	3	4
Plug n' Go	X	X	X	X	X
Push n' Learn	X	X	X	X	X
Relay/load status LED	X	X	X	X	X
Communication LED	X	X	X	X	X
Control button for each load	On/Off/Dim	On/Off/Dim	On/Off/Dim	On/Off	On/Off
Applications					
	Single zone dimming or switching in networked projects	Single or multi-zone dimming and/or switching in networked projects	Single or multi-zone dimming and/or switching in networked projects	On/Off control of plug loads	On/Off control of plug loads

1. Current monitoring requires that the DLM local network be connected to a segment network via a network bridge.
2. Only one network bridge is required in each DLM local network for a segment network connection. For a stand-alone network bridge, see **Networking Components** section.









Digital Lighting Management

Product Matrix

Occupancy Sensor					
Model #	 LMPX-100 pages A45-46	 LMPC-100 pages A47-48	 LMUC-100 pages A49-50	 LMDX-100 pages A51-52	 LMDC-100 pages A53-54
Product Description	Corner Mount PIR Occupancy Sensor	Ceiling Mount PIR Occupancy Sensor	Ceiling Mount Ultrasonic Occupancy Sensor	Corner Mount Dual Technology Occupancy Sensor	Ceiling Mount Dual Technology Occupancy Sensor
Voltage	24VDC; 7mA	24VDC; 7mA	24VDC; 20mA	24VDC; 20mA	24VDC; 20mA
Features					
Sensing Technology	PIR	PIR	Ultrasonic	Dual	Dual
Number of RJ45 ports	1	2	2	1	2
Coverage	LMPX-100: high density lens, up to 1,000 ft ² LMPX-100-1: long range lens, up to 90 ft. LMPX-100-3: 2-sided aisleway lens, up to 60 ft. LMPX-100-4: 1-sided aisle lens, up to 60 ft.	LMPC-100: extended range lens, up to 1,200 ft ² LMPC-100-1: high density lens, up to 500 ft ²	LMUC-100-2: up to 1,000 ft ²	LMDX-100: up to 2,000 ft ² (walking) up to 1,000 ft ² (desktop)	LMDC-100: up to 1,000 ft ²
Plug n' Go	X	X	X	X	X
Push n' Learn	X	X	X	X	X
Infrared transceiver	X	X	X	X	X
Communication LED	X	X	X	X	X
LCD display	X	X	X	X	X
Mounting type	Corner	Ceiling	Ceiling	Corner	Ceiling
Applications					
	Large areas (e.g., large offices, computer rooms, kindergarten classrooms, aisleways, warehouses, open offices)	High and low ceiling spaces (e.g., open offices, computer rooms, classrooms, warehouses, conference rooms)	Ceilings up to 10' (e.g., restrooms, open offices)	Conference rooms, private offices, classrooms, computer rooms	Conference rooms, private offices, open offices, classrooms







Personal Controls						
Model #	LMSW-100 Series  pages A57-58	LMDM-101  pages A59-60	LMSW-105  pages A61-62	LMRH-102  pages A65-66	LMRH-101  pages A67-68	LMRH-105  pages A69-70
Product Description	Digital Wall Switches	1-button Dimming Wall Switch	5-button Scene Switch	2-button IR Remote Control	Dimming IR Remote Control	Scene IR Remote Control
Voltage	24 VDC; 5mA	24 VDC; 5mA	24 VDC; 5mA	3 AAA batteries	3 AAA batteries	3 AAA batteries
Features						
Load switching	X	X	X	X		
Load dimming		X	X		X	X
Scene control	X		X			X
Number of RJ45 ports	2	2	2	N/A	N/A	N/A
Plug n' Go	X	X	X	X	X	X
Push n' Learn	X	X	X	X	X	X
Infrared transceiver	X	X	X	X	X	X
Communication LED	X	X	X	X	X	X
Applications						
	Switch loads and/or scenes on and off	Switch or dim loads	Switch or dim loads and scenes	Switch loads	Dim loads	Switch or dim loads and scenes





Digital Lighting Management



Product Matrix

Daylighting Sensors				
Model #	LMLS-105  pages A73-74	LMLS-305  pages A75-76	LMLS-400  pages A77-78	LMLS-500  pages A79-80
Product Description	Single-zone On/Off Closed Loop Photosensor	Single-zone 0-10V Dimming Closed Loop Photosensor	Single-zone On/Off and Dimming Closed Loop Photosensor	Multi-zone On/Off and Dimming Open Loop Photosensor
Voltage	24 VDC; 7mA	24 VDC; 30mA	24 VDC; 7mA	24 VDC; 7mA
Features				
On/Off switching	X		X	X
Dimming		X	X	X
0-10V outputs		1	N/A	N/A
Number of RJ45 ports	1	1	1	1
Plug n' Go	X	N/A	X	
Push n' Learn		using LMCT-100	using LMCT-100	using LMCT-100
LCD display	X			
Infrared transceiver			X	X
Relay/load status LED			X	X
Communication LED	X		X	X
Applications				
	Peripheral offices, cafeterias, warehouses	Private offices, classrooms	Peripheral offices, cafeterias, classrooms	Sidelit and skylit open offices, classrooms, cafeterias, warehouses



The following products are available to support or augment the DLM local network devices described on the previous pages. **Configuration Tools** facilitate customizing local networks. **Network Components** enable centralized control and monitoring of multiple local networks over a segment network connection. **Lighting Control Panels** coordinate control of lighting in common areas and exteriors. **Interfaces and Accessories** provide additional connectivity.

Configuration Tools					
Model #	Product Description	Voltage	Function	Compatibility/Required Products	Applications
LMCT-100  pages A83-84	Wireless Configuration Tool	3 AAA batteries	Enables convenient system and device modifications via pushbutton. Stores up to nine sensor profiles.	Communicates with any DLM local network via infrared transceiver. LMCT-100 is required for calibrating LMLS-500 photosensor.	Changing sensor settings, load configurations and dimming parameters without ladders or tools; replicating sensor settings
LMCI/LMCS  pages A85-86	Computer Interface Tools and Software		Enables PC connection to DLM local network in order to modify or document device and system settings.	Communicates with any DLM local network via USB interface	Changing sensor settings, load configurations and dimming parameters without ladders or tools; creating commissioning documentation, especially for LEED projects


Network Components					
Model #	Product Description	Voltage	Function	Compatibility/Required Products	Applications
LMBC-300  page A88-89	Network Bridge	24 VDC; 30 mA	Provides segment network connectivity to one DLM local network	LMRC-100, LMRC-200 series room controller(s)	Facilities requiring centralized management or BACnet connectivity
LMSM-201  LMSM-603 pages A90-91	Segment Manager, one MS/TP segment network Segment Manager, three MS/TP segment networks	15 VDC; includes 120 VAC power supply	Provides browser based remote control and management for DLM devices connected to a segment network	DLM local networks with network bridge (LMBC-300 or LMRC-300 series room controller) LILM panels	Facilities requiring centralized configuration, scheduling and monitoring







Digital Lighting Management

Product Matrix

Lighting Control Panels

Model #	Product Description	Voltage	Function	Compatibility/Required Products	Applications
LILM8 LILM24 LILM48  pages A93-100	LILM Series Lighting Integrator Panels Interiors and Enclosures	115/277 V, 115/347 V, 240 V	Switches lighting in areas not suitable for room controllers Can be scheduled by segment manager or BAS	LMSM-201 or LMSM-603 segment manager DLM occupancy sensors and switches	Office building lobbies, corridors, loading docks, school gymnasiums, common areas

Interfaces and Accessories

Model #	Product Description	Voltage	Function	Compatibility/Required Products	Applications
LMRL-100  pages A103-104	Isolated Relay Interface	24 VDC; 7mA	Single-pole, double throw relay communicates occupancy status	All occupancy sensors on DLM local network	Integration with 3rd party devices including HVAC or exhaust fans
LMIO-101  pages A105-106	Input/Output Interface	24 VDC; 20mA	Single-pole, double throw relay communicates occupancy status of selected sensor(s) Accepts inputs from up to three 3rd party devices	Any occupancy sensors and selected loads on DLM local network	Integration with 3rd party devices including BAS, time clocks, key switches, HVAC or exhaust fans
LMIO-301  pages A107-108	Photocell Input Module	24 VDC; 17mA	Reads input from analog photocells	LMSM-201 or LMSM-603 segment manager LMPO-200, LMPS-6000 photocells	Exterior lighting or interior lighting installed in brightly daylight spaces photocells
LMIR-100  page A109	Digital IR Ceiling Mount Receiver	24 VDC; 5 mA	Infrared transceiver accepts commands from DLM IR remote controls and transmits them over DLM local network	LMCT-100, LMRH-101, LMRH-102, LMRH-105	Spaces where DLM remote control may not have line-of-sight to DLM IR-enabled device





Take a closer look at the DLM suite of controls

The following section of cut sheets includes details about each DLM product, but before you plan a system, take a few minutes to review some pertinent details about how the local network components operate together, and how they differ from traditional energy saving lighting controls.

Power and communication network

Room controllers replace traditional power packs, and are the intelligent heart of a DLM system. They provide power to the control devices over the DLM local network, which also carries the bi-directional control signals.

Room controllers wire to the loads conventionally, but have no traditional individual low voltage wire leads, just RJ45 jacks for connection to other DLM devices. Some room controllers also have a terminal for connection to the BACnet-compatible segment network.

Occupancy sensors, switches and daylighting sensors operate on DLM local network power. An installation with just one room controller will have more than enough power for multiple sensors and switches.



DLM products are RoHS compliant to best support the cradle to grave philosophy of sustainable construction. RoHS compliance prevents hazardous waste as a result of manufacturing operations, protects the health of workers and facilitates the recycling of products at the end of their life cycles.



**Load assignments and configuration options**

Digital occupancy sensors allow reconfiguration of load assignments from the sensor, as well as changes to system and sensor parameters. These configuration changes within each local network may also be made using a wireless configuration tool or PC software.

Switch button load assignments are always configured from the switch buttons themselves.

DLM local network parameters may also be adjusted remotely over the segment network. A building automation system or a PC accessing a segment manager's browser-based user interface can be used to manage the devices on DLM local networks that are connected to the segment network.

Additional wiring

If 0-10 volt dimming ballasts, or other 0-10 volt devices will be used, low voltage wiring will be required from the ballast to a room controller. Traditional wiring is also used between DLM interfaces and other non-DLM building systems.



Digital Lighting Management

Plug n' Go™ automatic configuration for quick installation and maximum energy savings

Push n' Learn™ for simple personalization and exclusive wireless tool for ladder-free configuration

Optional networking for scheduled control and remote system management

First suite of digital room controllers, occupancy sensors, switches, panels and more



Plugs together using Cat 5e cables with RJ45 connectors eliminating wiring errors

Integrates plug load and lighting control

PROJECT
LOCATION/TYPE

Product Overview

Description

Digital Lighting Management (DLM) is an intelligent, distributed control system that automatically maximizes lighting energy efficiency. DLM includes room controllers, occupancy sensors, switches, daylighting sensors, plug load controls, lighting control panels, interfaces and accessories that provide convenient, energy-saving control of dimmed and switched loads. DLM can be used for stand-alone control of individual building spaces, or for centralized control of a floor, a building, or an entire campus.

Operation

Digital Lighting Management components operate on a free-topology DLM local network. Each DLM local network is managed by one or more room controllers that, upon startup, automatically configure system components for the most energy-efficient sequence of operation using Plug n' Go technology. Devices may be personalized using Push n' Learn pushbutton programming. DLM sensors and switches feature two-way infrared (IR) communication that enables personal control from handheld remotes. An optional handheld IR wireless configuration tool may be used to view and modify system parameters, and store occupancy sensor settings. Additionally, multiple local networks may be connected to a BACnet-compatible segment network for centralized monitoring and management (see Segment Network section).

Plug n' Go and Push n' Learn

Plug n' Go establishes default functionality based on the installed components. If a local network includes only a room controller and an occupancy sensor, it will default to auto-on/auto-off operation. If it includes a single relay room controller, an occupancy sensor and a switch, it will default to manual-on/auto-off operation. A dual relay room controller, an occupancy sensor and a switch will default to bi-level auto-on/auto-off operation; relay 1 turns on automatically while relay 2 defaults to manual-on (both automatically shut off). Push n' Learn mode allows any load to be selected and assigned to any sensor(s), switch(es) and switch button(s). It also allows load parameters such as operating mode (manual- or auto-on), blink warning and daylighting setpoints to be modified.

Energy Savings Beyond Code

Digital Lighting Management has been engineered to meet and exceed energy codes, facilitate sustainable development and provide an unprecedented return on investment for both new construction and retrofit projects. Features, such as bi-level control, daylight harvesting, plug load control and dimming are provided by a range of room controllers, sensors and switches that control virtually all lighting sources in a wide variety of applications. DLM simplifies designing for ASHRAE 90.1, IECC, EAct, California Title 24 and LEED.

Features

- Sensors and switches include infrared (IR) transceiver for bi-directional communication
- On/off and dimming control options
- Handheld remotes for personal control
- Digital sensors feature easy-to-read LCD displays
- Includes self-calibrating daylighting sensors
- Components plug together in any configuration on free-topology Category 5e DLM local networks
- Boot loading capabilities for firmware upgrades
- All DLM products are RoHS compliant



Network Characteristics

WattStopper DLM Local Network Parameters

- Communication and power delivered via Cat 5e cables with RJ45 connectors
- 24VDC power provided by room controller(s)
- Room controllers provide cumulative current output; maximum network capacity 800mA
- Free topology permits both star and daisy-chain connection patterns
- Up to 1,000' of cable per DLM local network; 150' allowance per communicating device
- Supports Plug n' Go and Push n' Learn patent pending technologies

When only LMRC-100 Series and/or LMPL-101 Room Controllers are used:

- 150mA per room controller (maximum 4)
- Up to 24 communicating devices
- Up to 8 loads

When LMRC-2xx, 3xx Series and or LMPL-201 Room Controllers are used:

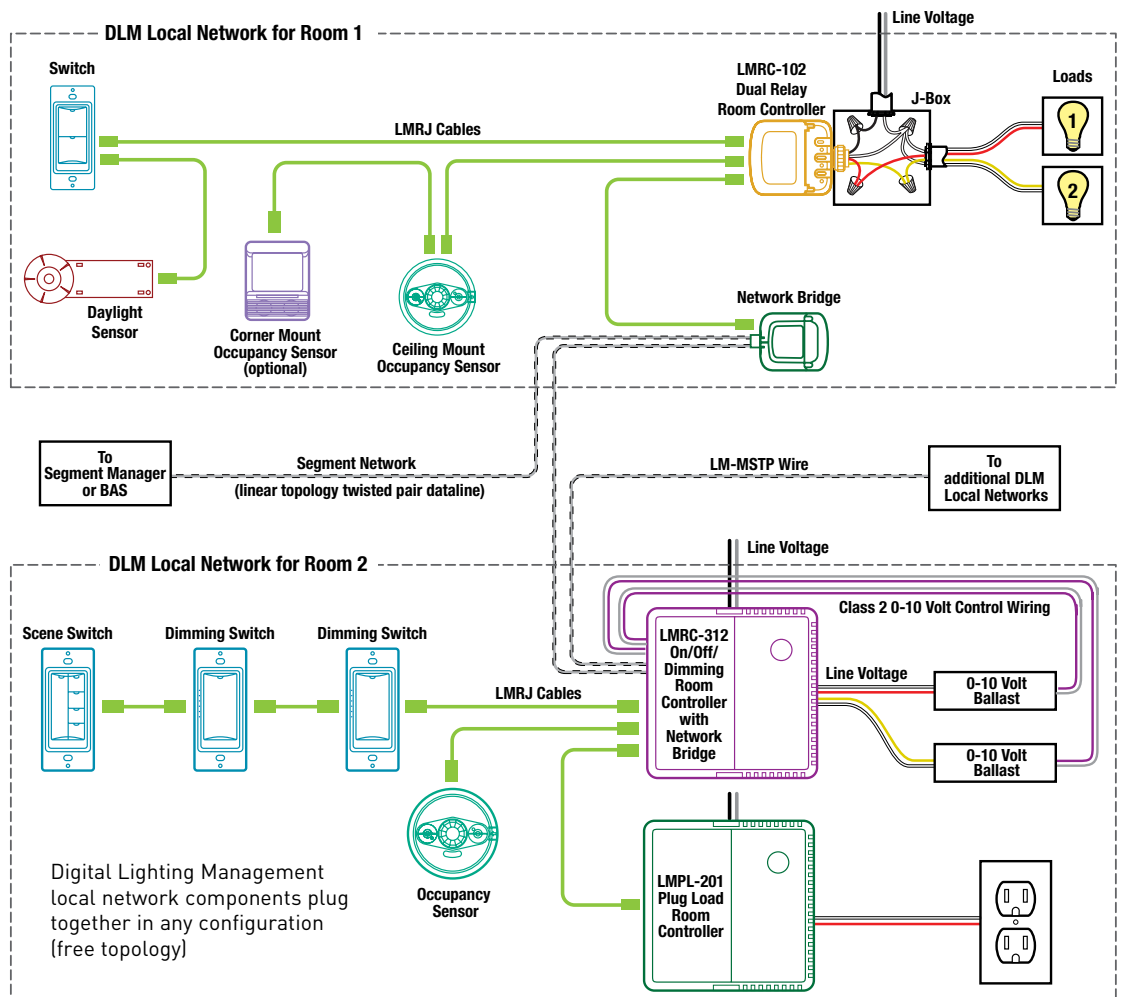
- Up to 250mA per room controller (output is limited if network is fully powered)
- Up to 48 communicating devices
- Up to 64 loads
- Up to 4 LMRC-100 Series and/or LMPL-101 Room Controllers

DLM Segment Network (MS/TP) Parameters

- RS485 network, BACnet MS/TP twisted pair, baud rate 9600, 19200, 38400 or 76800 selectable
- WattStopper LM-MSTP wire, or equivalent rated for BACnet MS/TP (RS485)
- Linear topology (daisy chain wiring); 4,000' maximum per segment
- Up to 127 DLM local networks, connected via LMBC-300 Network Bridge or LMRC-3xx Series Room Controller, or LILM panels per segment

Connecting

Two DLM local networks connected to optional DLM segment network



Each segment network can connect up to 127 local networks for centralized monitoring and control

Segment Network Control Options

Description

Digital Lighting Management is designed to scale from individual rooms to whole buildings. For building-wide monitoring and management, multiple DLM local networks may be connected to an industry standard open protocol network for control by a segment manager or building automation system (BAS). Networking also allows lighting control panels to be incorporated into a DLM system.

Operation

Because DLM architecture is designed from the bottom up, segment network operation is simple, and builds on the Plug n' Go and Push n' Learn functionality of each local network. Building operators can create normal and after hours lighting control schedules and conveniently monitor and fine tune DLM operation for even greater energy savings. They can also monitor power consumption in real time.

BACnet Compatibility

System integrators can quickly and easily incorporate new or existing DLM systems into BACnet MS/TP networks. DLM Network Bridge devices are standard MS/TP master devices, and the MS/TP MAC address and communication baud rate are automatically configured through arbitration with other devices on the network.

Applications

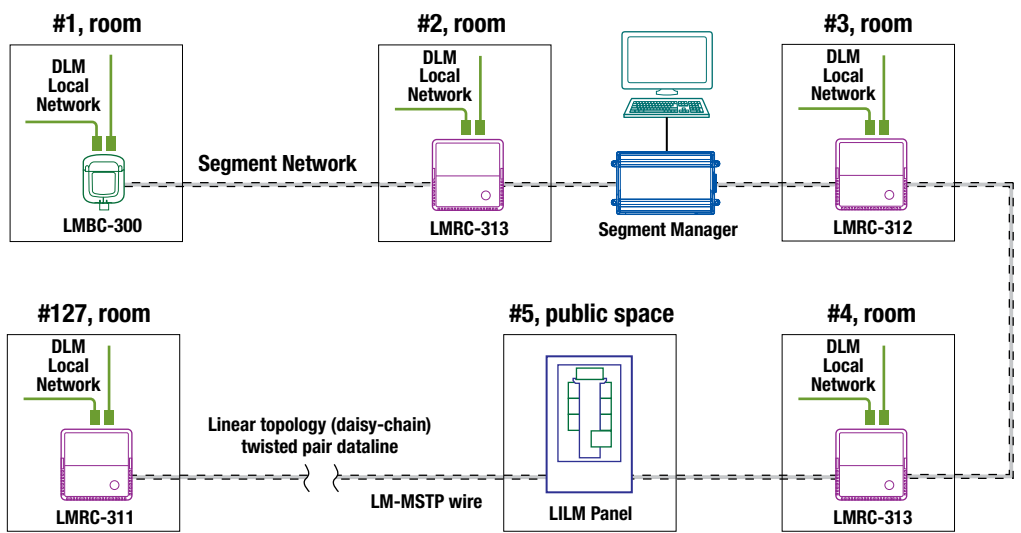
Network capability is an ideal solution when remote access to DLM local networks is desired. It can help energy managers take advantage of demand response opportunities and help cut operating costs. It is also recommended for control of lighting in areas best suited to schedule-based control, such as lobbies, corridors and exteriors.

Features

- Enables centralized control of individual DLM local networks
- Connects to LILM lighting control panels
- Allows scheduling of DLM devices
- Enables remote system management that includes real-time current monitoring
- Web browser user interface can be accessed via direct TCP/IP connection, local LAN or via the Internet
- Easy integration with BAS through use of standard BACnet objects to represent DLM local network device settings and states

Network Wiring

DLM segment network with optional segment manager

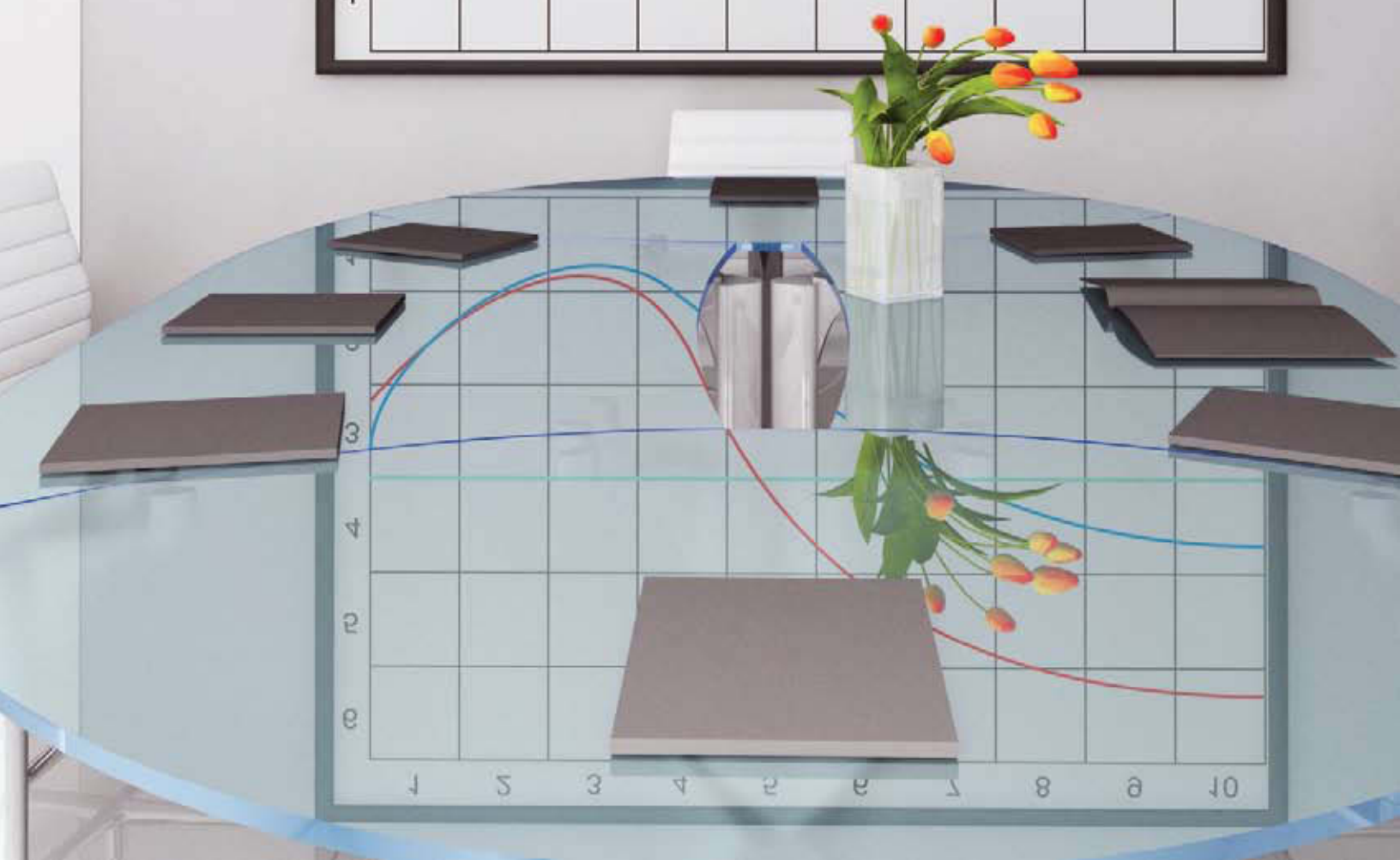
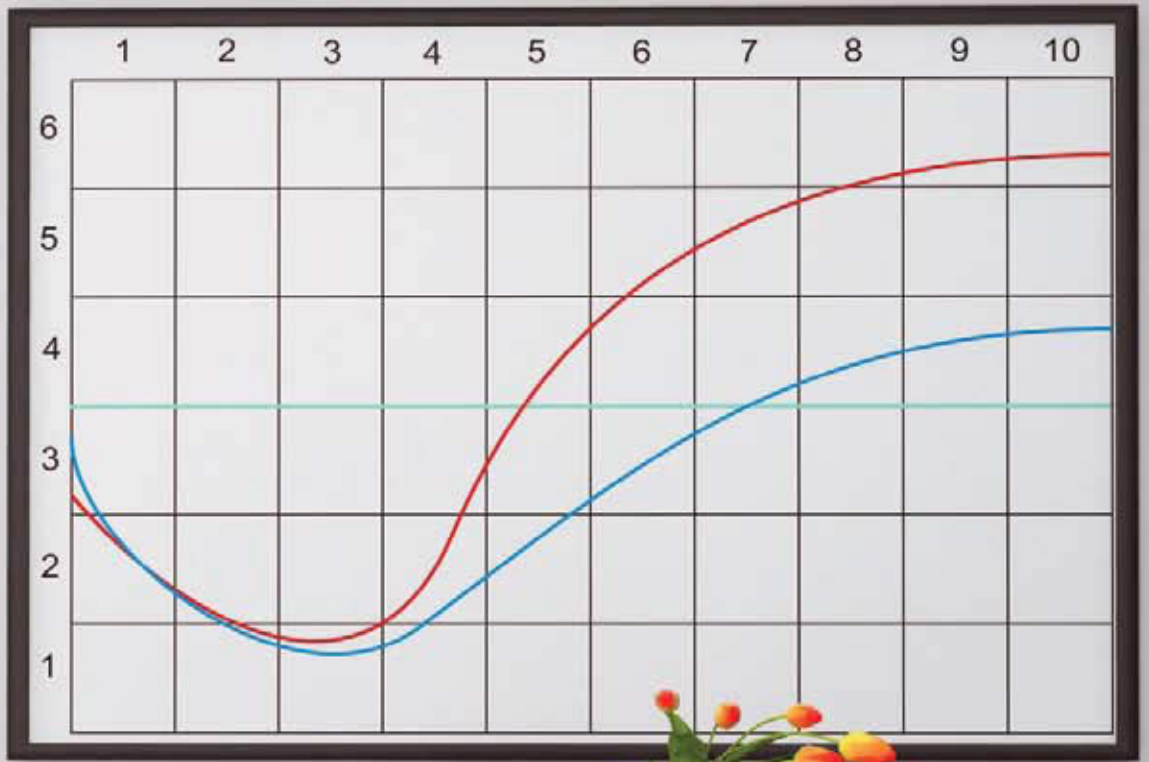


The segment manager may be located at any point along the segment network so long as the linear topology (daisy chain wiring) is maintained.

DLM Components

Room Controllers	
LMRC-101 Digital On/Off Room Controller with 1 relay LMRC-102 Digital On/Off Room Controller with 2 relays LMRC-211 Digital On/Off/0-10 Volt Dimming Room Controller with 1 relay and 1 0-10 volt dimming output LMRC-212 Digital On/Off/0-10 Volt Dimming Room Controller with 2 relays and 2 0-10 volt dimming outputs LMRC-213 Digital On/Off/0-10 Volt Dimming Room Controller with 3 relays and 3 0-10 volt dimming outputs LMRC-311 Digital On/Off/0-10 Volt Dimming Room Controller with Network bridge, 1 relay and 1 0-10 volt dimming output LMRC-312 Digital On/Off/0-10 Volt Dimming Room Controller with Network bridge, 2 relay and 2 0-10 volt dimming output LMRC-313 Digital On/Off/0-10 Volt Dimming Room Controller with Network bridge, 3 relay and 3 0-10 volt dimming output LMPL-101 Digital Plug Load Room Controller LMPL-201 Digital Plug Load Room Controller	
Occupancy Sensors	Personal Controls
LMPX-100 Digital PIR Corner Mount Occupancy Sensor LMPC-100 Digital PIR Ceiling Mount Occupancy Sensor LMUC-100 Digital Ultrasonic Ceiling Mount Occupancy Sensor LMDX-100 Digital Dual Technology Corner Mount Occupancy Sensor LMDC-100 Digital Dual Technology Ceiling Mount Occupancy Sensor	LMSW-101 Digital 1-Button Wall Switch LMSW-102 Digital 2-Button Wall Switch LMSW-103 Digital 3-Button Wall Switch LMSW-104 Digital 4-Button Wall Switch LMSW-108 Digital 8-Button Wall Switch LMDM-101 Digital 1-Button Dimming Wall Switch LMSW-105 Digital 5-Button Scene Switch DLM Switch Button Kits and Switch Button Engraving LMRH-102 Digital 2-Button IR Remote Control LMRH-101 Digital Dimming IR Remote Control LMRH-105 Digital Scene IR Remote Control
Daylighting Sensors	Configuration Tools
LMLS-400 Digital Single Zone On/Off and Dimming Closed Loop Photosensor LMLS-500 Digital Multi-zone On/Off and Dimming Open Loop Photosensor	LMCT-100 Digital Wireless Configuration Tool DLM Computer Interface Tools and Software
Network Components	Lighting Control Panels
LMBC-300 Network Bridge LMSM Series Segment Manager	LILM Series Panels
Interfaces and Accessories	
LMRJ Series Pre-Terminated Cables (available in 6", 3', 10', 15', 25', 50', and 100' lengths, in plenum and non-plenum rated versions) and Segment Network Wire LMIR-100 Digital IR Ceiling Mount Receiver LMRL-100 Isolated Relay Interface LMIO-101 Digital Input/Output Interface LMIO-301 Photocell Input Module	







Room Controllers

Room Controllers are the intelligent foundation of a distributed Digital Lighting Management system. They drive the loads, in place of basic power packs.

DLM room controllers are available for lighting circuits and plug loads. Enhanced room controllers even include power monitoring capabilities.

Designed for Versatility and Reliability

- Onboard control button and status LED for each load
- Accept inputs from occupancy sensors, switches, daylighting sensors and third party systems
- Hinged dust cover and strain reliefs to protect low voltage connections

On/off or Dimming Control

- High capacity relays for switching
- 0-10 volt output for dimming

Multiple Zones or Control Channels with One or More Controllers

- Single or dual relay basic controllers
- Enhanced controllers for 1, 2 or 3 zones or channels
- Single relay plug load controller



LMRC-100 Series Digital On/Off Room Controllers

Plenum-rated controllers with line voltage relay(s) and switching power supply

Plug n' Go automatic configuration for maximum energy efficiency

Components of Digital Lighting Management integrated control systems



Plug to other components using Cat 5e cables with RJ45 connectors eliminating wiring errors

Support energy saving manual-on and bi-level lighting control strategies

PROJECT
LOCATION/TYPE

Product Overview

Description

LMRC-100 Series Digital Room Controllers include one or two relay(s) for on/off control of a total of 20 amps, and a high-efficiency switching power supply. They are the foundation of a WattStopper Digital Lighting Management (DLM) system, and allow integration of occupancy sensors, daylighting sensors and switches for energy-efficient lighting control.

Operation

LMRC-100 Series Room Controllers operate on one 120 or 277 volt, 20 amp, feed and provide Class 2 power to sensors and switches via the DLM local network. Once powered up, Plug n' Go automatically configures system components for the most energy-efficient operation. The room controllers then switch lighting or motor loads on and off in response to input from the communicating devices. The DLM system may be reconfigured using Push n' Learn without the need for tools or a PC.

Plug n' Go Automatic Configuration

DLM room controllers manage Plug n' Go automatic system configuration, which establishes functionality based on the installed components. When room controllers are connected only to occupancy sensors, the system defaults to automatic on/off operation. If a wall switch is added to a system with one load, the load defaults to manual-on/automatic-off operation. If there is a wall switch and multiple loads, load one turns on automatically, while additional loads default to manual-on control; all loads turn off automatically.

Applications

LMRC-100 Series Room Controllers are ideal for single or multiple zone on/off lighting control applications. The LMRC-101 helps specifiers comply with basic ASHRAE 90.1 requirements, while the LMRC-102 is designed for bi-level switching in IECC, EAct, California Title 24 or LEED projects. Both controllers are appropriate for applications in private offices, open offices, conference rooms, lunch rooms and break rooms in any commercial building.

Features

- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
- Push n' Learn™ functionality for personalization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Cat 5e DLM local network
- On/Off button for each load
- LED indicates status of connected load
- 3 RJ45 ports with integral strain relief and hinged dust cover
- Zero-crossing circuitry for each relay for reliability and increased product life
- Attach to standard electrical box through ½" knockout; UL2043 plenum rated
- RoHS compliant

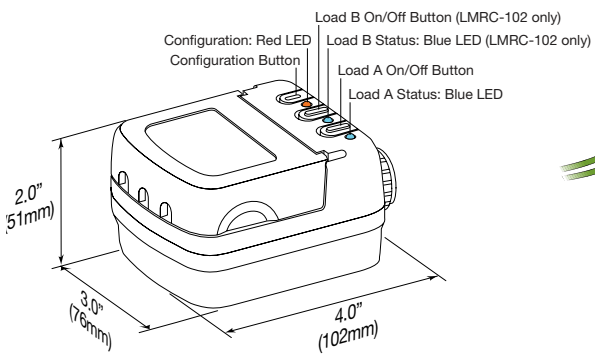


Specifications

- Input/output voltage: 120/277VAC, 50/60Hz
- Maximum 20A combined load per Room Controller; each relay rated for:
 - Ballast or incandescent: 20A
 - Motor load: 1Hp
- Class 2 output to DLM local network: 24VDC, 150mA across 3 RJ45 ports
- DLM local network parameters with LMRC-100 Series and/or LMPL-101 Room Controllers only:
 - Maximum current: 600mA
- Category 5e cable, up to 1,000'
- Maximum of 4 room controllers, controlling up to 8 loads
- Up to 24 communicating devices
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five-year warranty

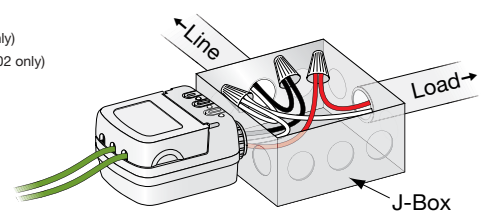
Controls & Mounting

Controls and Dimensions

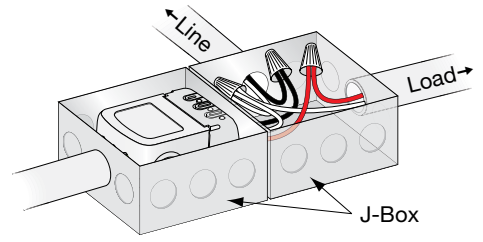


LMRC-100 Series Room Controllers include a 1/2" (12.7mm) threaded nipple and locking ring.

Mounting and Wiring



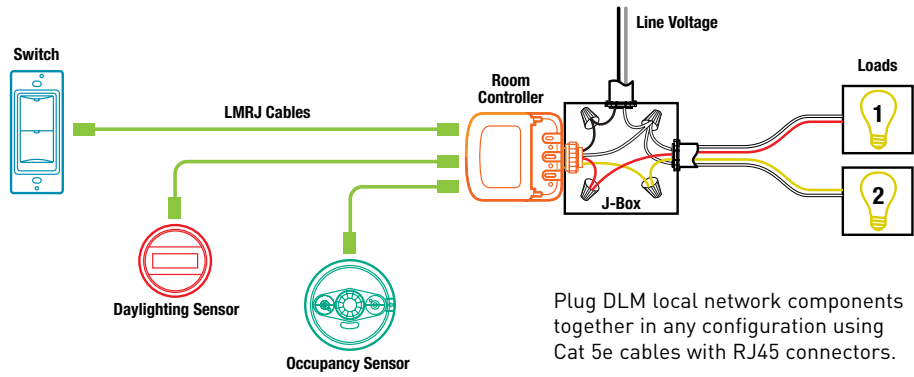
Mounting outside a j-box (plenum space). Two LMRC Room Controllers may be mounted to the j-box.



Mounting inside a j-box. Low voltage wiring is run to the LMRC Room Controller in conduit.

Connecting

Sample Connection Diagram for Bi-Level Control Using LMRC-102



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Description	Total Load Rating				Class 2 Output
		Voltage	Ballast(A)	Incan(A)	Motor	
<input type="checkbox"/> LMRC-101	Single Relay Room Controller	120/277VAC	20	20	1 Hp	24VDC
<input type="checkbox"/> LMRC-102	Dual Relay Room Controller	50/60Hz				150mA

LMRC-210 Series Digital On/Off/0-10 Volt Dimming Room Controllers

Plenum-rated controllers with line voltage relay(s) and 0-10 volt dimming output(s)

Components of Digital Lighting Management integrated control systems

Plug to other components using Cat 5e cables with RJ45 connectors eliminating wiring errors



Plug n' Go automatic configuration for maximum energy efficiency

Store 16 preset lighting levels for each load

Support energy saving manual-on, bi-level, tri-level and dimming control strategies

PROJECT

LOCATION/TYPE

Product Overview

Description
LMRC-210 Series Digital Room Controllers include one, two or three relay(s) to switch a total of 20 amps, a high-efficiency switching power supply and one 0-10 volt output per relay for control of dimmable loads including electronic ballasts (Advance Mark 7, or equivalent). They are the foundation of a WattStopper Digital Lighting Management (DLM) system, and allow integration of occupancy sensors, daylighting controls and switches for energy-efficient lighting control.

Operation
LMRC-210 Series Room Controllers operate on one 120 or 277 volt, 20 amp, feed and provide Class 2 power to sensors and switches via the DLM local network. Once powered up, Plug n' Go automatically configures system components for the most energy-efficient operation. The room controllers then dim or switch lighting or motor loads in response to input from the communicating devices. When a dimming input is received, the relay switches on when the dimmed level rises above zero, and off when it reaches zero, to coordinate control of power and the 0-10 volt signal to the load. They also monitor the current draw of the total connected load. Each room controller stores up to 16 preset levels for each dimmed output.

- Features**
- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
 - Push n' Learn™ functionality for personalization without the need for tools or a PC
 - Digital Lighting Management components plug together on a free-topology Cat 5e DLM local network
 - On/Off/Dim button for each load
 - LED indicates status of each connected load

Plug n' Go Automatic Configuration
DLM room controllers manage Plug n' Go automatic system configuration, which establishes functionality based on the installed components. When room controllers are connected only to occupancy sensors, the system defaults to automatic on/off operation. If a wall switch is added to a system with one load, the load defaults to manual-on/automatic-off operation. If there is a wall switch and multiple loads, load one turns on automatically, while additional loads default to manual-on control; all loads turn off automatically. At system startup, default dimming parameters are established including: levels for presets 1-4; fade times; and fade and ramp rates. Dimming and system parameters may be customized using Push n' Learn.

Applications
LMRC-210 Series Room Controllers are ideal for single or multiple zone on/off or dimming lighting control applications. They are appropriate for applications in private offices, open offices, conference rooms and classrooms in any commercial building. LMRC-210 Series Room Controllers also help facility managers who want to track building power usage by monitoring current for lighting or other loads. A network bridge (LMBC-300 or LMRC-3xx) is required to expose DLM local network power data readings to a Segment Manager or BAS.

- Integral current monitoring of total connected load
- Optional lamp burn in, from 1-100 hours
- 4 RJ45 ports with integral strain relief
- Zero-crossing circuitry for each relay for reliability and increased product life
- UL 2043 plenum rated
- RoHS compliant
- Qualifies for ARRA-funded public works projects

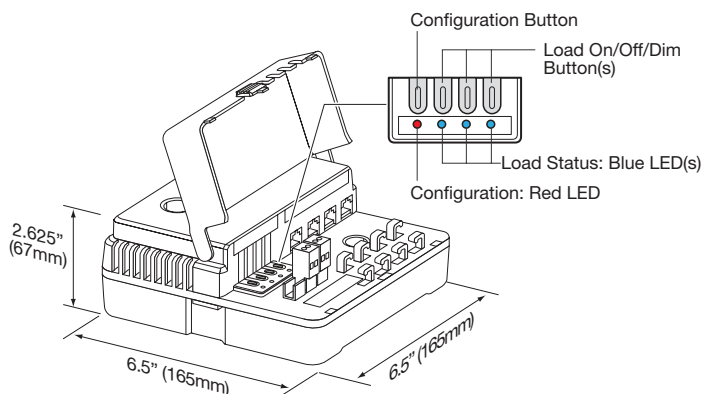


Specifications

- Input/output voltage: 120/277VAC, 50/60Hz
- Maximum 20A combined load per Room Controller; each relay rated for:
 - Ballast or incandescent: 20A
 - Motor load: 1Hp
- Class 2 dimming control signal: 0-10VDC, sinks up to 100mA per channel for control of compatible ballasts (50 if each sources 2mA)
- Class 2 output to DLM local network: 24VDC, up to 250mA across 4 RJ45 ports
- DLM local network parameters:
 - Maximum current: 800mA
 - Category 5e cable, up to 1,000'
 - Up to 64 loads
 - Up to 48 communicating devices
 - Maximum 4 LMRC-100 Series Room Controllers
- Operating conditions: for indoor use only; 32-158°F (0-70°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

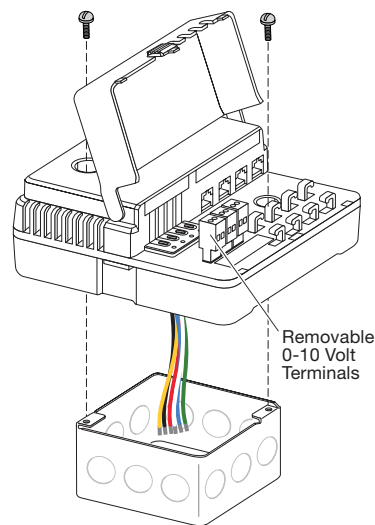
Controls & Mounting

Controls and Dimensions



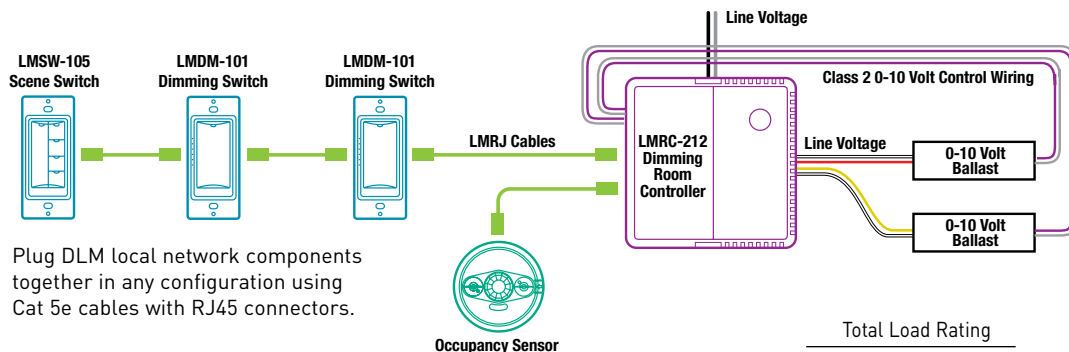
Load Parameter (for each dimmed output)	Default Setting	Available Options
High trim	100%	1-100%
Low trim	0%	0-100%
Preset level: Scenes 1-16	1: 100%, 2: 75%, 3: 50%, 4: 25%, 5-16: 100%	all: 0-100%
Preset fade time	2 seconds	0 seconds -18 hours
Lamp burn in time	0	0-100 hours

Mounting and Wiring



Mount to 4" x 4" x 2 1/8" deep electrical box. Depending on outputs used, a 4-square extension box may be needed. Connect to single 20A circuit.

Connecting Sample Connection Diagram with Dimming Switches and Scene Control



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Total Load Rating

Ordering Information

Catalog. No.	Description	Voltage	Ballast [A]	Incan [A]	Motor	Class 2 Outputs
<input type="checkbox"/> LMRC-211	1 Relay Room Controller, 0-10V dimming	120/277VAC, 50/60Hz	20	20	1 Hp	24VDC, 250mA and 0-10VDC
<input type="checkbox"/> LMRC-211-U	1 Relay Room Controller, 0-10V dimming, ARRA compliant					
<input type="checkbox"/> LMRC-212	2 Relay Room Controller, 0-10V dimming					
<input type="checkbox"/> LMRC-212-U	2 Relay Room Controller, 0-10V dimming, ARRA compliant					
<input type="checkbox"/> LMRC-213	3 Relay Room Controller, 0-10V dimming					
<input type="checkbox"/> LMRC-213-U	3 Relay Room Controller, 0-10V dimming, ARRA compliant					
<input type="checkbox"/> LMRC-CA	Conduit Adapter for Low Voltage Connections					

LMRC-310 Series Digital On/Off/0-10 Volt Dimming Room Controllers with Network Bridge

Plenum-rated controllers with line voltage relay(s) and 0-10 volt dimming output(s)

Components of Digital Lighting Management integrated control systems

Plug to DLM local network and connect to BACnet-compatible DLM segment network



Plug n' Go automatic configuration for maximum energy efficiency

Integral current monitoring of total connected load; exposes data on segment network

Support energy saving manual-on, bi-level, tri-level and dimming control strategies

PROJECT

LOCATION/TYPE

Product Overview

Description
LMRC-310 Series Digital Room Controllers include one, two or three relay(s) to switch a total of 20 amps, a high-efficiency switching power supply and one 0-10 volt output per relay for control of dimmable loads including electronic ballasts (Advance Mark 7, or equivalent). They are the foundation of a Digital Lighting Management (DLM) system, allowing integration of occupancy sensors, daylighting controls and switches on a DLM local network, and providing a segment network connection for remote system management and current monitoring.

Operation
LMRC-310 Series Room Controllers operate on one 120 or 277 volt, 20 amp, feed and provide Class 2 power to sensors and switches via the DLM local room network. Once powered up, Plug n' Go automatically configures system components for the most energy-efficient operation. The room controllers then dim or switch loads in response to input from the communicating devices. When a dimming input is received, the relay switches on when the dimmed level rises above zero, and off when it reaches zero, to coordinate control of power and the 0-10 volt signal to the load. They also monitor the current draw of the total connected load. Each room controller stores up to 16 preset levels for each dimmed output.

Features

- Push n' Learn™ functionality for personalization without the need for tools or a PC
- Support third party integration with BAS through BACnet MS/TP
- On/Off/Dim button for each load
- LED indicates status of each connected load
- Store 16 preset lighting levels for each load

Plug n' Go Automatic Configuration

DLM room controllers manage Plug n' Go automatic system configuration, which establishes functionality based on the installed components. When room controllers are connected only to occupancy sensors, the system defaults to automatic on/off operation. If a wall switch is added to a system with one load, the load defaults to manual-on/automatic-off operation. If there is a wall switch and multiple loads, load one turns on automatically, while additional loads default to manual-on control; all loads turn off automatically. At system startup, default dimming parameters are established including: levels for presets 1-4; fade times; and fade and ramp rates. Dimming and system parameters may be customized using Push n' Learn. Device settings made locally are visible and adjustable by a DLM Segment Manager. Additionally, many DLM settings are available to a BAS via BACnet.

Applications

LMRC-310 Series Room Controllers are ideal for single or multiple zone on/off or dimming lighting control applications requiring centralized control or monitoring. A Room Controller with Network Bridge exposes all devices, settings and calibrations in one DLM local network through the segment network. It also exposes all current monitoring data, and allows the local network to respond to schedules created and broadcast from a DLM Segment Manager.

- Selectable lamp burn in, from 0-100 hours
- 4 RJ45 ports with integral strain relief
- Zero-crossing circuitry for each relay for reliability and increased product life
- UL 2043 plenum rated
- RoHS compliant
- Qualifies for ARRA-funded public works projects

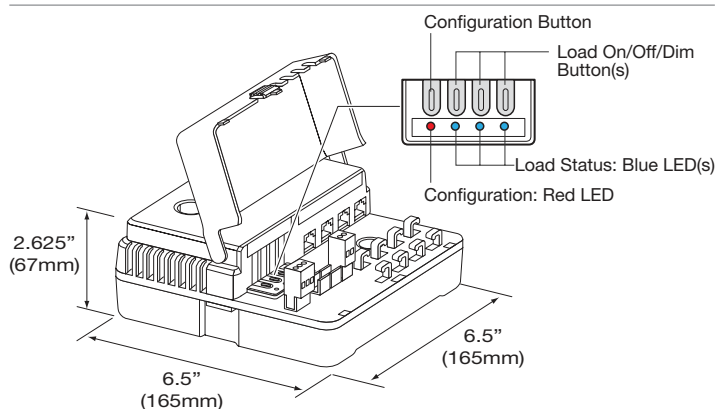


Specifications

- Input/output voltage: 120/277VAC, 50/60Hz
- Maximum 20A combined load per Room Controller; each relay rated for:
 - Ballast or incandescent: 20A
 - Motor load: 1Hp
- Class 2 dimming control signal: 0-10VDC, sinks up to 100mA per channel for control of compatible ballasts (50 if each sources 2mA)
- Class 2 output to DLM local network: 24VDC, up to 250mA across 4 RJ45 ports
- DLM local network parameters:
 - Maximum current: 800mA
 - Category 5e cable, up to 1,000' total
- Up to 48 communicating devices
- Up to 64 loads
- Maximum 4 LMRC-100 Series Room Controllers
- Segment network parameters:
 - WattStopper LM-MSTP wire, or equivalent rated for BACnet MS/TP (RS485)
 - Linear topology; 4000' maximum per segment
 - Up to 127 local networks or panels per segment
- Operating conditions: for indoor use only; 32-158°F (0-70°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

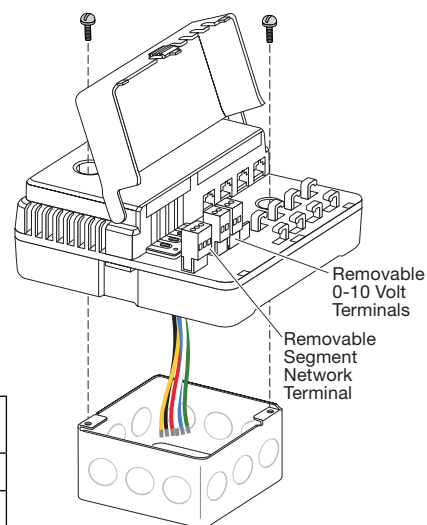
Controls & Mounting

Controls and Dimensions



Load Parameter (for each dimmed output)	Default Setting	Available Options
High trim	100%	1-100%
Low trim	0%	0-100%
Preset level: Scenes 1-16	1: 100%, 2: 75%, 3: 50%, 4: 25%, 5-16: 100%	all: 0-100%
Preset fade time	2 seconds	0 seconds - 18 hours
Lamp burn in time	0	0-100 hours

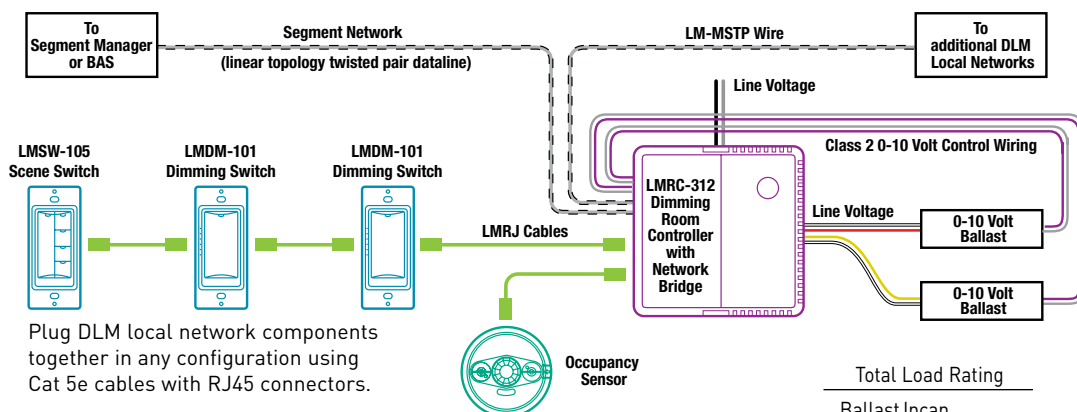
Mounting and Wiring



Mount to 4" x 4" x 2 1/8" deep electrical box. Depending on outputs used, a 4-square extension box may be needed. Connect to single 20A circuit.

Connecting

Sample Connection Diagram with Dimming Controls and Segment Network Dataline



Ordering Information

Catalog. No.	Description	Voltage	Ballast Incan (A)	Incan (A)	Motor Class 2 Outputs
<input type="checkbox"/> LMRC-311	1 Relay Room Controller with Network Bridge	120/277VAC, 50/60Hz	20	20	1 Hp 24VDC, 250mA and 0-10VDC
<input type="checkbox"/> LMRC-311-U	1 Relay Room Controller with Network Bridge, ARRA compliant				
<input type="checkbox"/> LMRC-312	2 Relay Room Controller with Network Bridge				
<input type="checkbox"/> LMRC-312-U	2 Relay Room Controller with Network Bridge, ARRA compliant				
<input type="checkbox"/> LMRC-313	3 Relay Room Controller with Network Bridge				
<input type="checkbox"/> LMRC-313-U	3 Relay Room Controller with Network Bridge, ARRA compliant				
<input type="checkbox"/> LMRC-CA	Conduit Adapter for Low Voltage Connections				

LMPL-101 Digital Plug Load Room Controller

Plenum-rated controller with line voltage relay and switching power supply

Component of Digital Lighting Management integrated control systems

Plugs to other components using Cat 5e cables with RJ45 connectors eliminating wiring errors



Plug n' Go automatic configuration and Push n' Learn for personalization

Accepts occupancy sensor signal for energy saving control of plug loads

Product Overview

Description

LMPL-101 Plug Load Room Controllers include a 20 amp relay for on/off control of connected outlets, and a high-efficiency switching power supply. They are part of a WattStopper Digital Lighting Management (DLM) system, and enable energy-efficient control of plug loads.

Operation

LMPL-101 Plug Load Room Controllers operate on 120 volts and provide Class 2 power to sensors and switches via the DLM local network. Once powered up, Plug n' Go automatically configures system components for the most energy-efficient operation. The plug load controllers then switch controlled outlets on and off in response to input from any communicating occupancy sensors. The DLM system may be reconfigured using Push n' Learn without the need for tools or a PC.

Features

- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
- Push n' Learn™ functionality for personalization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Cat 5e DLM local network
- Load On/Off button
- LED indicates status of connected load

PROJECT

LOCATION/TYPE

Plug n' Go & Push n' Learn Configuration

Plug n' Go automatic configuration establishes system functionality based on the installed components. Plug Load Room Controllers are initially controlled by all of the occupancy sensors on the DLM local network, and default to automatic on/off operation whether or not there is a switch on the local network. DLM system operation may be reconfigured using Push n' Learn. As an example, a selected switch button may be bound to a plug load controller for manual-off control of outlets. Similarly, the plug load controller could be bound only to selected occupancy sensors.

Applications

LMPL-101 Plug Load Room Controllers ensure that energy is not wasted when portable loads such as task lighting and computer monitors are plugged into building outlets. Plug Load Room Controllers should be installed to switch outlets for lighting and non-essential equipment in private offices, open offices, lunch rooms and break rooms and other areas in commercial buildings. They are appropriate for LEED projects and help building owners realize a higher return on investment on energy code-required occupancy sensors.

- 3 RJ45 ports with integral strain relief and hinged dust cover
- Zero-crossing circuitry for reliability and increased product life
- Attach to standard electrical box through ½" knockout; UL2043 plenum rated
- Ships with "Sensor Controlled" labels for connected outlets
- RoHS compliant
- Qualifies for ARRA-funded public works projects

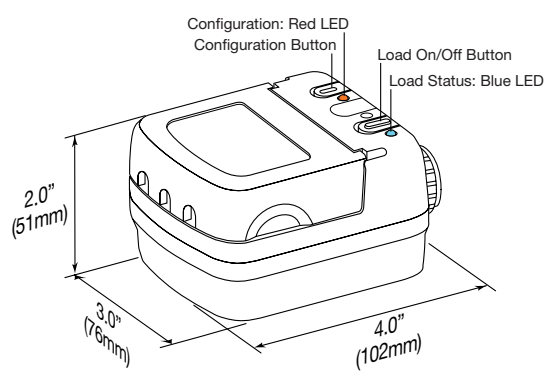


Specifications

- Input/output voltage: 120VAC, 50/60Hz
- Load ratings:
 - Ballast: 20A
 - Incandescent: 20A
 - Motor load: 1Hp
- Class 2 output to DLM local network: 24VDC, 150mA across 3 RJ45 ports
- DLM local network parameters with LMPL-101 and/or LMRC-100 Series Room Controllers only:
 - Maximum current: 600mA
- Category 5e cable, up to 1,000'
- Maximum of 4 room controllers, controlling up to 8 loads
- Up to 24 communicating devices
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

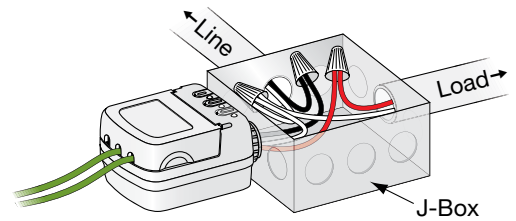
Controls & Mounting

Controls and Dimensions

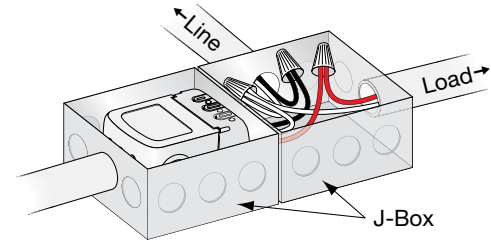


LMPL-101 Plug Load Room Controllers include a 1/2" (12.7mm) threaded nipple and locking ring.

Mounting and Wiring



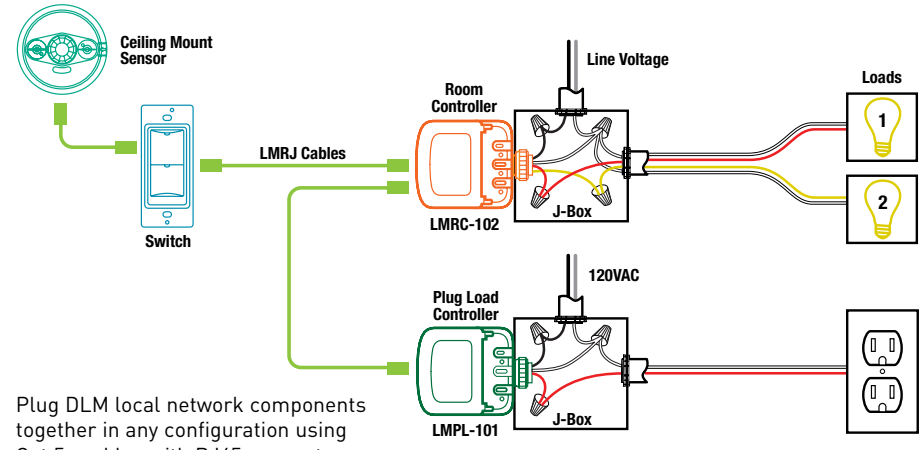
Mounting outside a j-box (plenum space). Two LMPL and/or LMRC Room Controllers may be mounted to the j-box.



Mounting inside a j-box.

Connecting

Sample Connection Diagram for Bi-Level Lighting and Plug Load Control



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Description	Voltage	Load Rating			
			Ballast(A)	Incan(A)	Motor	Class 2 Output
<input type="checkbox"/> LMPL-101	Plug Load Room Controller	120VAC, 50/60Hz	20	20	1 Hp	24 VDC
<input type="checkbox"/> LMPL-101-U						150 mA

LMPL-201 Digital Plug Load Room Controller

Plenum-rated controller with line voltage relay and switching power supply

Component of Digital Lighting Management integrated control systems

Plugs to other components using Cat 5e cable and RJ45 connectors eliminating wiring errors



Plug n' Go automatic configuration and Push n' Learn for personalization

Integral current monitoring of total connected load

Accepts occupancy sensor signal for energy saving control of plug loads

Product Overview

Description

LMPL-201 Plug Load Room Controllers include a 20 amp relay for on/off control of connected outlets, and a high-efficiency switching power supply. They are part of a WattStopper Digital Lighting Management (DLM) system, and enable energy-efficient control of plug loads.

Operation

LMPL-201 Plug Load Room Controllers operate on 120 volts and provide Class 2 power to sensors and switches via the DLM local network. Once powered up, Plug n' Go automatically configures system components for the most energy-efficient operation. The plug load controllers then switch controlled outlets on and off in response to input from any communicating occupancy sensors. The DLM system may be reconfigured using Push n' Learn without the need for tools or a PC.

Features

- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
- Push n' Learn™ functionality for personalization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Cat 5e DLM local network
- Load On/Off button
- LED indicates status of connected load
- Integral current monitoring of connected load
- 4 RJ45 ports with integral strain relief and hinged dust cover
- Zero-crossing circuitry for reliability and increased product life
- UL2043 plenum rated
- Ships with "Sensor Controlled" labels for connected outlets
- RoHS compliant

PROJECT

LOCATION/TYPE

Plug n' Go & Push n' Learn Configuration

Plug n' Go automatic configuration establishes system functionality based on the installed components. Plug Load Room Controllers are initially controlled by all of the occupancy sensors on the DLM local network, and default to automatic on/off operation whether or not there is a switch on the local network. DLM system operation may be reconfigured using Push n' Learn. As an example, a selected switch button may be bound to a plug load controller for manual-off control of outlets. Similarly, the plug load controller could be bound only to selected occupancy sensors.

Applications

LMPL-201 Plug Load Room Controllers should be installed to switch outlets used for task lighting and non-essential equipment in private offices, open offices, lunch rooms and break rooms and other areas in commercial buildings. They are appropriate for LEED projects and help building owners realize a higher return on investment on energy code-required occupancy sensors. They also help facility managers who want to track building power usage. A network bridge (LMBC-300 or LMRC-3xx) is required to expose DLM local network power data readings to a Segment Manager or BAS.

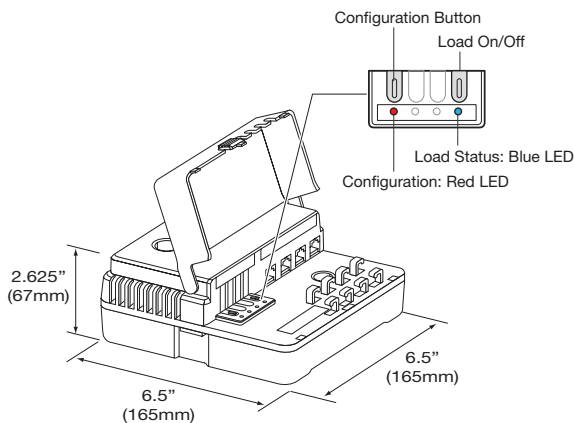


Specifications

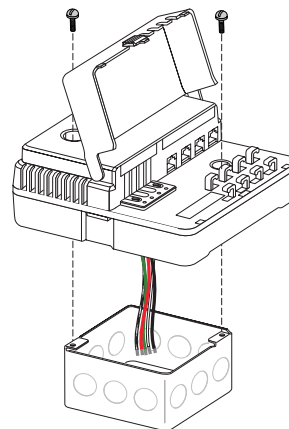
- Input/output voltage: 120VAC, 50/60Hz
- Load ratings:
 - Ballast or incandescent: 20A
 - Motor load: 1Hp
- Class 2 output to DLM local network: 24VDC, 250mA across 4 RJ45 ports
- DLM local network parameters:
 - Maximum current: 800mA
 - Category 5e cable, up to 1,000' total
- Up to 48 communicating devices
- Up to 64 loads
- Maximum 4 LMRC-100 Series Room Controllers
- Operating conditions: for indoor use only; 32-158°F (0-70°C); 5-95% RH, non-condensing
- FCC part 15 compliant
- Five year warranty

Controls & Mounting

Controls and Dimensions



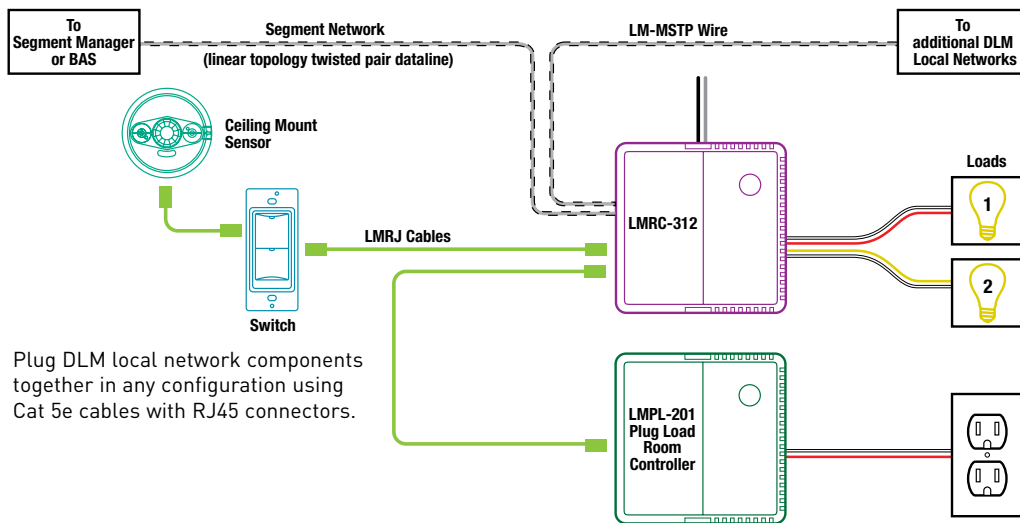
Mounting and Wiring



Mount to 4" x 4" x 2 1/8" deep electrical box.

Connecting

Sample Connection Diagram for Bi-Level Lighting and Plug Load Control



Ordering Information

Catalog No.	Description	Voltage	Load Rating			
			Ballast(A)	Incan(A)	Motor	Class 2 Output
LMPL-201	Plug Load Room Controller	120VAC; 50/60Hz	20	20	1 Hp	24 VDC 250 mA





Occupancy Sensors

New digital occupancy sensors are the smallest and lowest profile available, and include many industry firsts.

DLM sensors are available to suit any application. Simply choose the appropriate sensing technology and coverage pattern.

Fully Digital User Interface for Speed and Precision

- LCD display shows exact sensor and system settings
- Pushbuttons allow fast and accurate programming

Infrared (IR) Transceiver for Wireless Control

- Accepts input from handheld remotes
- Allows ladder-free configuration

Sleek Design for Architectural Appeal

- Low profile ceiling sensors
- Compact corner mount sensors

Multiple Sensing Technologies

- Passive infrared (PIR)
- Ultrasonic
- Dual technology



LMPX-100 Digital PIR Corner Mount Occupancy Sensor

Passive infrared sensor with a choice of four coverage patterns

Component of Digital Lighting Management integrated control system

Quick access to Push n' Learn for system personalization



Digital sensor with LCD display and programming pushbuttons behind snap-down cover

IR transceiver for wireless configuration and remote control

Compact 2.4" x 3" sensor mounts easily on a wall or ceiling

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMPX-100 Digital PIR Corner Mount Occupancy Sensor uses passive infrared (PIR) technology and one of four lenses to detect occupancy in different types of spaces for energy-efficient control of lighting and plug loads. It is a digital sensor, and is part of a WattStopper Digital Lighting Management (DLM) system.

Operation

The LMPX-100 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. It works with the room controller(s) to turn loads on and off based on occupancy. Default operation is established by Plug n' Go, which automatically configures system components to maximize energy savings. Initially, all occupancy sensors control all loads on the same local network. Each LMPX-100 may be assigned to a specific load; load assignments and load parameters may be changed using Push n' Learn. The LMPX-100 may be reconfigured either using the pushbuttons and an LCD screen conveniently located behind a snap-down cover on the front of the sensor, or with a wireless configuration tool.

Features

- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
- Push n' Learn™ functionality for customization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Category 5e DLM local network
- Infrared (IR) transceiver for wireless configuration and control
- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- RoHS compliant
- Qualifies for ARRA-funded public works projects

Digital Settings and IR Communications

The LMPX-100 includes a unique, easy-to-access, LCD screen that displays sensor parameters and simplifies changing those parameters. Time delay and sensitivity can be precisely adjusted and walk through mode can be activated. Changes are made at the sensor with easy-to-use pushbuttons, or via a wireless configuration tool that communicates with the sensor using a bi-directional infrared (IR) signal. The LMPX-100 IR transceiver allows wireless system operation in addition to configuration. The LCD display also facilitates system personalization, showing load information when in Push n' Learn mode.

Applications

LMPX-100 sensors, with different lenses for different spaces, are ideal for large areas including large offices, computer rooms, kindergarten classrooms, aiseways, warehouses and open offices where coverage cut-off is desired. The sensors can detect walking motion throughout an area of approximately 2,000 square feet. The high density lens provides coverage of desktop activity for an area up to 1,000 square feet. The long range and aiseway lenses detect motion approaching the sensor as far out as 85 to 90 feet and 55 to 60 feet, respectively.

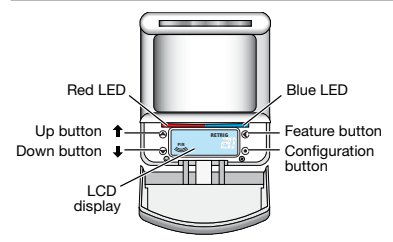


Specifications

- Input voltage: 24VDC from DLM network
- Current consumption: 7mA
- DLM local network connection: 1 RJ45 port via RJ45 plug and coupler (included)
- LCD display and pushbuttons for setting sensor and system parameters
- Infrared (IR) transceiver
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

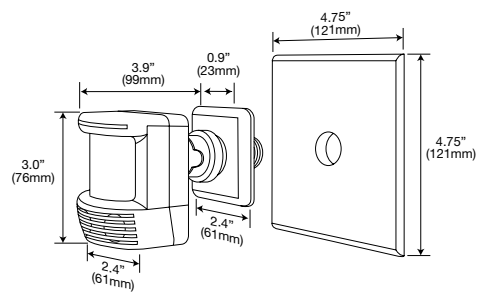
Controls & Dimensions

Product Controls and Sensor Settings



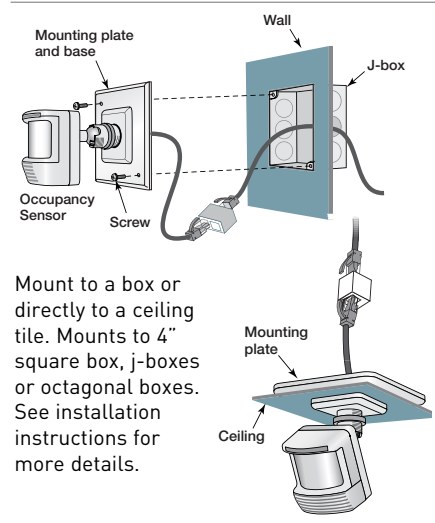
Sensor Parameter	Available Options	Default Setting
Time Delay	1-30 min. (1 min. increments) / Override	20 minutes
Walk Thru	On/Off	Off
PIR Sensitivity	10-100% (10% increments)/Off	90%
Test Mode	Activate	Off

Product Dimensions



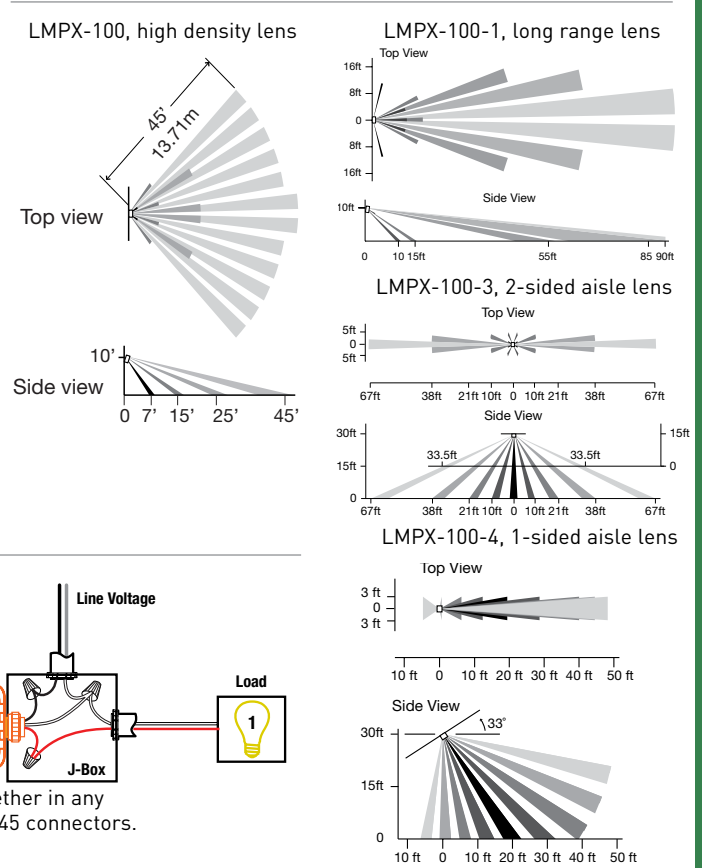
Mounting & Coverage

Mounting Options



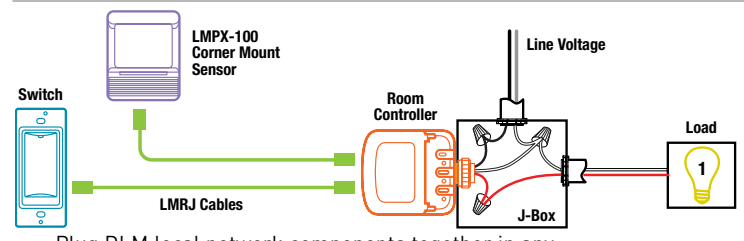
Mount to a box or directly to a ceiling tile. Mounts to 4" square box, j-boxes or octagonal boxes. See installation instructions for more details.

Coverage Patterns



Wiring

Sample Connection Diagram



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> LMPX-100	White	Digital PIR Corner Mount Occupancy Sensor, high density lens
<input type="checkbox"/> LMPX-100-U	White	Digital PIR Corner Mount Occupancy Sensor, high density lens, ARRA-compliant
<input type="checkbox"/> LMPX-100-1	White	Digital PIR Corner Mount Occupancy Sensor, long range lens
<input type="checkbox"/> LMPX-100-1-U	White	Digital PIR Corner Mount Occupancy Sensor, long range lens, ARRA-compliant
<input type="checkbox"/> LMPX-100-3	White	Digital PIR Corner Mount Occupancy Sensor, 2-sided aisle lens
<input type="checkbox"/> LMPX-100-3-U	White	Digital PIR Corner Mount Occupancy Sensor, 2-sided aisle lens, ARRA-compliant
<input type="checkbox"/> LMPX-100-4	White	Digital PIR Corner Mount Occupancy Sensor, 1-sided aisle lens
<input type="checkbox"/> LMPX-100-4-U	White	Digital PIR Corner Mount Occupancy Sensor, 1-sided aisle lens, ARRA-compliant

LMPC-100 Digital PIR Ceiling Mount Occupancy Sensor

Passive infrared sensor with a choice of two 360° coverage patterns

Component of Digital Lighting Management integrated control system

Quick access to Push n' Learn for system personalization



Digital sensor with LCD display and programming pushbuttons behind snap-off cover

IR transceiver for wireless configuration and remote control

Low profile design for architectural appeal

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMPC-100 low profile Digital PIR Corner Mount Occupancy Sensor uses passive infrared (PIR) technology and one of two lenses to detect occupancy in different types of spaces for energy-efficient control of lighting and plug loads. It is a digital sensor, and is part of a WattStopper Digital Lighting Management (DLM) system.

Operation

The LMPC-100 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. It works with the room controller(s) to turn loads on and off based on occupancy. Default operation is established by Plug n' Go, which automatically configures system components to maximize energy savings. Initially, all occupancy sensors control all loads on the same local network. Each LMPC-100 may be assigned to a specific load; load assignments and load parameters may be changed using Push n' Learn. The LMPC-100 may be reconfigured either using the pushbuttons and an LCD screen conveniently located behind the snap-off front sensor cover, or with a wireless configuration tool.

Features

- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
- Push n' Learn™ functionality for customization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Category 5e DLM local network
- Infrared (IR) transceiver for wireless configuration and control
- 360 degree PIR coverage
- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- RoHS compliant
- Qualifies for ARRA-funded public works projects

Digital Settings and IR Communications

The LMPC-100 includes a unique, easy-to-access, LCD screen that displays sensor parameters and simplifies changing those parameters. Time delay and sensitivity can be precisely adjusted and walk through mode can be activated. Changes are made at the sensor with easy-to-use pushbuttons, or via a wireless configuration tool that communicates with the sensor using a bi-directional infrared (IR) signal. The LMPC-100 IR transceiver allows wireless system operation in addition to configuration. The LCD display also facilitates system personalization, showing load information when in Push n' Learn mode.

Applications

The LMPC-100 sensors, with different lenses for different spaces, are ideal for high and low ceiling areas including open office spaces, computer rooms, conference rooms, classrooms and warehouses. Sensor coverage for walking motion is approximately 1,000 square feet using the extended range lens and 450 square feet using the high density lens. The high density lens is ideal for detecting desktop activity, and small motion coverage is up to 300 square feet.

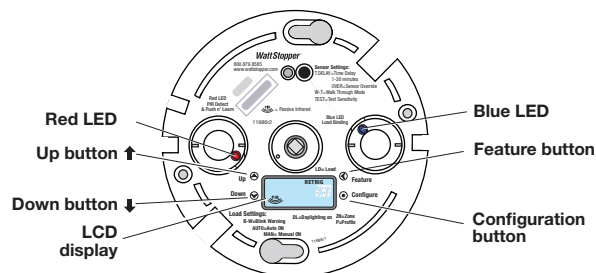


Specifications

- Input voltage: 24VDC from DLM network
- Current consumption: 7mA
- DLM local network connection: 2 RJ45 ports
- LCD display and pushbuttons for setting sensor and system parameters
- Infrared (IR) transceiver
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

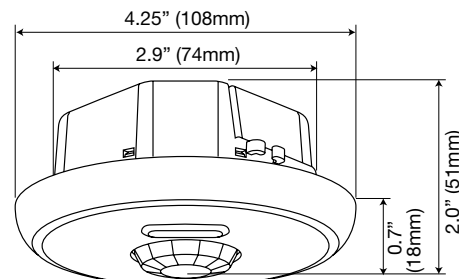
Controls & Dimensions

Product Controls and Sensor Settings



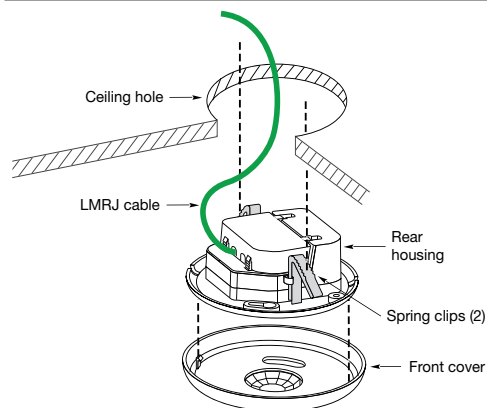
Sensor Parameter	Available Options	Default Setting
Time Delay	1-30 min. (1 min. increments) / Override	20 minutes
Walk Thru	On/Off	Off
PIR Sensitivity	10-100% (10% increments)/Off	90%
Test Mode	Activate	Off

Product Dimensions



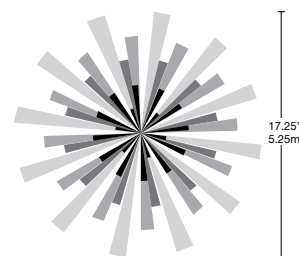
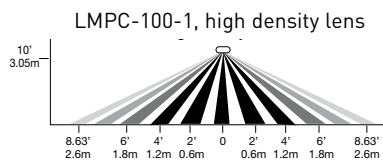
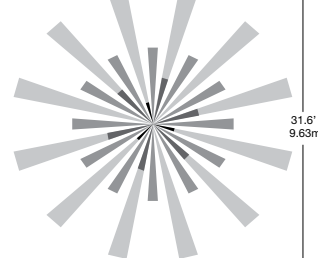
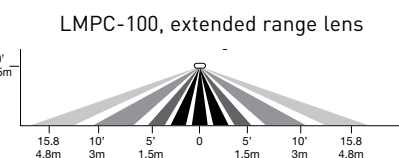
Mounting & Coverage

Mounting Options



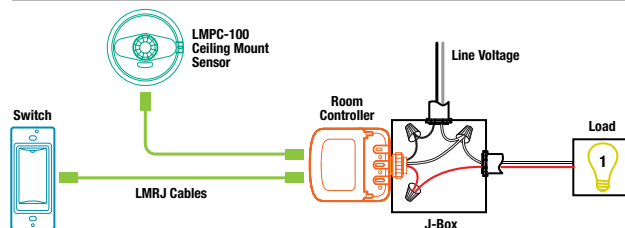
Mount directly to ceiling tile using spring clips (included) or to a 4" octagonal box. See installation instructions for more details.

Coverage Patterns



Wiring

Sample Connection Diagram



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> LMPC-100	White	Digital PIR Ceiling Mount Occupancy Sensor, extended range lens
<input type="checkbox"/> LMPC-100-U	White	Digital PIR Ceiling Mount Occupancy Sensor, extended range lens, ARRA-compliant
<input type="checkbox"/> LMPC-100-1	White	Digital PIR Ceiling Mount Occupancy Sensor, high density lens
<input type="checkbox"/> LMPC-100-1-U	White	Digital PIR Ceiling Mount Occupancy Sensor, high density lens, ARRA-compliant

LMUC-100 Digital Ultrasonic Ceiling Mount Occupancy Sensor

Ultrasonic sensor with diffusers for comprehensive coverage

Digital sensor with LCD display and programming pushbuttons behind snap-off cover

Component of Digital Lighting Management integrated control system

IR transceiver for wireless configuration and remote control



Low profile design for architectural appeal

Quick access to Push n' Learn for system personalization

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMUC-100 low profile Digital Ultrasonic Ceiling Mount Occupancy Sensor uses ultrasonic diffusion technology to achieve 360° occupancy sensing for energy-efficient control of lighting and plug loads. It is a digital sensor, and is part of a WattStopper Digital Lighting Management (DLM) system.

Operation

The LMUC-100 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. It works with the room controller(s) to turn loads on and off based on occupancy. Default operation is established by Plug n' Go, which automatically configures system components to maximize energy savings. Initially, all occupancy sensors control all loads on the same local network. Each LMUC-100 may be assigned to a specific load; load assignments and load parameters may be changed using Push n' Learn. The LMUC-100 may be reconfigured either using the pushbuttons and an LCD screen conveniently located behind the snap-off front sensor cover, or with a wireless configuration tool.

Digital Settings and IR Communications

The LMUC-100 includes a unique, easy-to-access, LCD screen that displays sensor parameters and simplifies changing those parameters. Time delay and sensitivity can be precisely adjusted and walk through mode can be activated. Changes are made at the sensor with easy-to-use pushbuttons, or via a wireless configuration tool that communicates with the sensor using a bi-directional infrared (IR) signal. The LMUC-100 IR transceiver allows wireless system operation in addition to configuration. The LCD display also facilitates system personalization, showing load information when in Push n' Learn mode.

Applications

The LMUC-100 can sense motion in areas with partial obstructions, and is ideal for spaces with ceilings up to ten feet high. The LMUC-100 sensor is recommended for restrooms and open office areas. Multiple sensors may be used to control large partitioned office spaces when configured in zone patterns.

Features

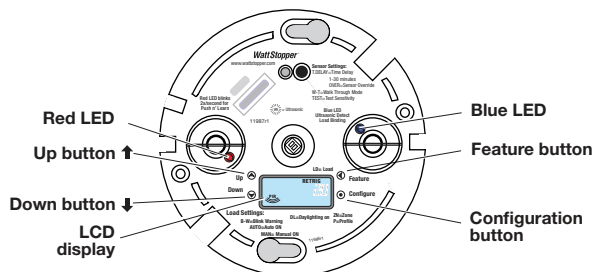
- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
- Push n' Learn™ functionality for customization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Category 5e DLM local network
- Infrared (IR) transceiver for wireless configuration and control
- Ultrasonic diffusion technology spreads coverage to a wider area (patented); 40KHz signal
- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- RoHS compliant
- Qualifies for ARRA-funded public works projects



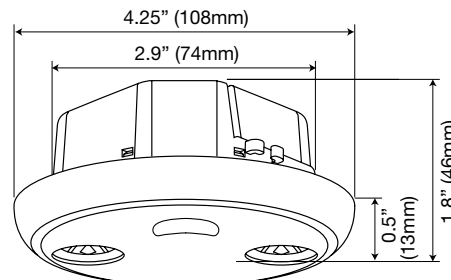
Specifications

- Input voltage: 24VDC from DLM network
- Current consumption: 20mA
- DLM local network connection: 2 RJ45 ports
- LCD display and pushbuttons for setting sensor and system parameters
- Infrared (IR) transceiver
- Ultrasonic frequency: 40 kHz
- Coverage: Major motion, 1,000 ft² (93 m²)
Minor motion, 450 ft² (42 m²)
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Controls & Dimensions

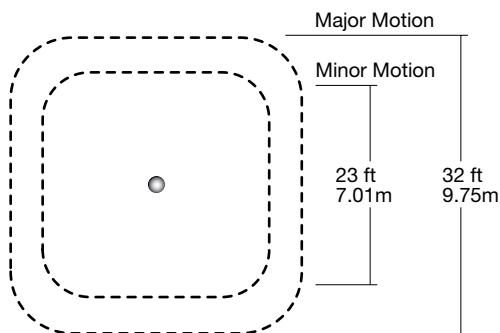


Product Dimensions



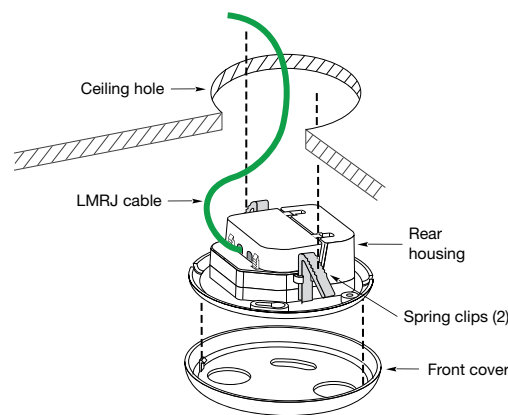
Sensor Parameter	Available Options	Default Setting
Time Delay	1-30 min. (1 min. increments) /Override	20 minutes
Walk Thru	On/Off	Off
Ultrasonic Sensitivity	10-100% (10% increments)/Off	70%
Test Mode	Activate	Off

Coverage & Mounting



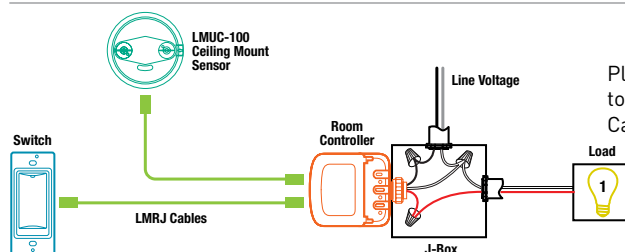
For optimal sensing of large spaces, place sensors so that coverage overlaps.

Mounting Options



Mount directly to ceiling tile using spring clips (included) or to a 4" octagonal box. See installation instructions for more details.

Wiring Sample Connection Diagram



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> LMUC-100-2	White	Digital Ultrasonic Ceiling Mount Occupancy Sensor, 1,000 ft ² coverage
<input type="checkbox"/> LMUC-100-2-U	White	Digital Ultrasonic Ceiling Mount Occupancy Sensor, 1,000 ft ² coverage, ARRA-compliant

LMDX-100 Digital Dual Technology Corner Mount Occupancy Sensor

Combines passive infrared and ultrasonic technologies for most comprehensive coverage

Component of Digital Lighting Management integrated control system

Quick access to Push n' Learn for system personalization



Digital sensor with LCD display and programming pushbuttons behind snap-down cover

IR transceiver for wireless configuration and remote control

Compact 2.4" x 3" sensor mounts easily on a wall or ceiling

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMDX-100 Digital Dual Technology Corner Mount Occupancy Sensor uses both passive infrared (PIR) and ultrasonic technologies to achieve precise occupancy sensing for energy-efficient control of lighting and plug loads. It is a digital sensor, and is part of a WattStopper Digital Lighting Management (DLM) system.

Operation

The LMDX-100 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. It works with the room controller(s) to turn loads on and off based on occupancy. Default operation is established by Plug n' Go, which automatically configures system components to maximize energy savings. Initially, all occupancy sensors control all loads on the same local network. Each LMDX-100 may be assigned to a specific load; load assignments and load parameters may be changed using Push n' Learn. The LMDX-100 may be reconfigured either using the pushbuttons and an LCD screen conveniently located behind a snap-down cover on the front of the sensor, or with a wireless configuration tool.

Digital Settings and IR Communications

The LMDX-100 includes a unique, easy-to-access, LCD screen that displays sensor parameters and simplifies changing those parameters. Time delay and sensitivity can be precisely adjusted. Additionally, walk through mode can be activated and detection and retrigger technologies may be changed. Changes are made at the sensor with easy-to-use pushbuttons, or via a wireless configuration tool that communicates with the sensor using a bi-directional infrared (IR) signal. The LMDX-100 IR transceiver allows wireless system operation in addition to configuration. The LCD display also facilitates system personalization, showing load information when in Push n' Learn mode.

Applications

The LMDX-100 senses both large and small motions and is recommended for spaces including conference rooms, private offices, classrooms and computer rooms where using just one detection technology could result in false triggers. Mounted at ten feet, the LMDX-100 can detect walking motion throughout an area of approximately 2,000 square feet, and desktop motion for up to 1,000 square feet.

Features

- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
- Push n' Learn™ functionality for customization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Category 5e DLM local network
- Infrared (IR) transceiver for wireless configuration and control
- Ultrasonic diffusion technology spreads coverage to a wider area (patented); 40KHz signal
- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- RoHS compliant
- Qualifies for ARRA-funded public works projects

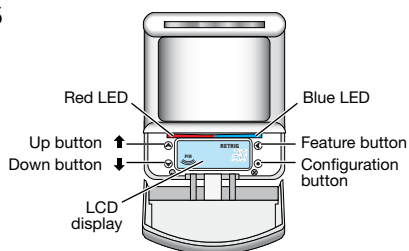


Specifications

- Input voltage: 24VDC from DLM network
- Current consumption: 20mA
- DLM local network connection: 1 RJ45 port via RJ45 plug and coupler (included)
- LCD display and pushbuttons for setting sensor and system parameters
- Infrared (IR) transceiver
- Ultrasonic frequency: 40 kHz
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Controls & Indicators

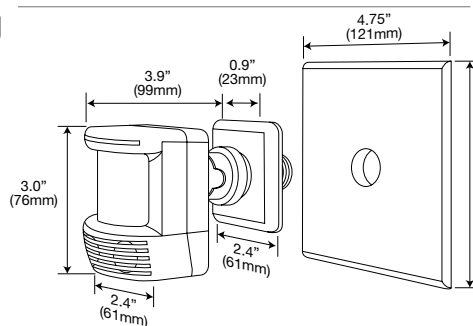
Product Controls and Sensor Settings



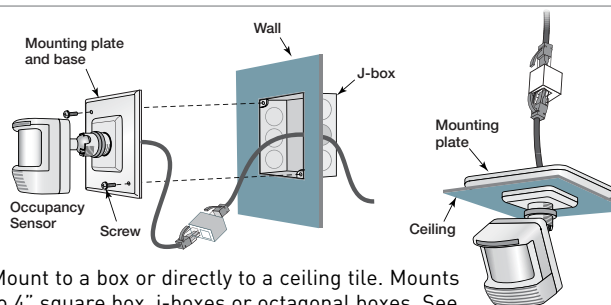
Sensor Parameter	Available Options	Default Setting
Time Delay	1-30 min. (1min. increments) /Override	20 minutes
Walk Thru	On/Off	Off
PIR Sensitivity	10-100% (10% increments)/Off	90%
Ultrasonic Sensitivity	10-100% (10% increments)/Off	70%
Test Mode	Activate	Off
Detection Technology	Ultrasonic/PIR/Both/Neither	Both
Retrigger Technology	Ultrasonic/PIR/Both/Neither	Either

Dimensions & Mounting

Product Dimensions



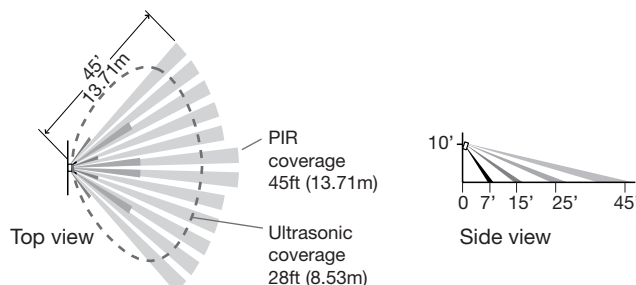
Wall and Ceiling Mounting Options



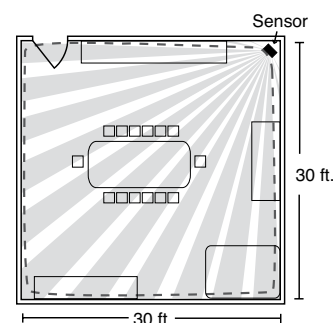
Mount to a box or directly to a ceiling tile. Mounts to 4" square box, j-boxes or octagonal boxes. See installation instructions for more details.

Coverage & Placement

Coverage Patterns

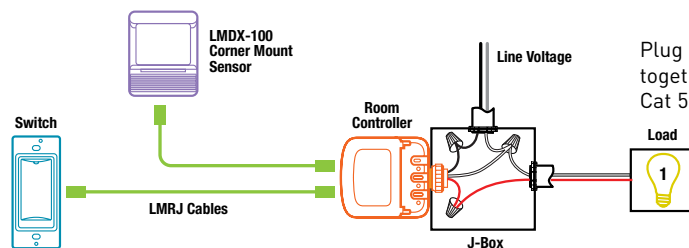


Sensor Placement



Wiring

Sample Connection Diagram



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> LMDX-100	White	Digital Dual Technology Corner Mount Occupancy Sensor
<input type="checkbox"/> LMDX-100-U	White	Digital Dual Technology Corner Mount Occupancy Sensor, ARRA-compliant

LMDC-100 Digital Dual Technology Ceiling Mount Occupancy Sensor

Combines passive infrared and ultrasonic technologies for most comprehensive coverage

Component of Digital Lighting Management integrated control system

Quick access to Push n' Learn for system personalization



Digital sensor with LCD display and programming pushbuttons behind snap-off cover

IR transceiver for wireless configuration and remote control

Low profile design for architectural appeal

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMDC-100 low profile Digital Dual Technology Ceiling Mount Occupancy Sensor uses both passive infrared (PIR) and ultrasonic technologies to achieve precise occupancy sensing for energy-efficient control of lighting and plug loads. It is a digital sensor, and is part of a WattStopper Digital Lighting Management (DLM) system.

Operation

The LMDC-100 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. It works with the room controller(s) to turn loads on and off based on occupancy. Default operation is established by Plug n' Go, which automatically configures system components to maximize energy savings. Initially, all occupancy sensors control all loads on the same local network. Each LMDC-100 may be assigned to a specific load; load assignments and load parameters may be changed using Push n' Learn. The LMDC-100 may be reconfigured either using the pushbuttons and an LCD screen conveniently located behind the snap-off front sensor cover, or with a wireless configuration tool.

Digital Settings and IR Communications

The LMDC-100 includes a unique, easy-to-access, LCD screen that displays sensor parameters and simplifies changing those parameters. Time delay and sensitivity can be precisely adjusted. Additionally, walk through mode can be activated and detection and retrigger technologies may be changed. Changes are made at the sensor with easy-to-use pushbuttons, or via a wireless configuration tool that communicates with the sensor using a bi-directional infrared (IR) signal. The LMDC-100 IR transceiver allows wireless system operation in addition to configuration. The LCD display also facilitates system personalization, showing load information when in Push n' Learn mode.

Applications

The LMDC-100 senses both large and small motions and is recommended for spaces including conference rooms, private offices, open offices and classrooms where using just one detection technology could result in false triggers. Mounted at ten feet, the LMDC-100 can detect motion throughout an area of approximately 1,000 square feet.

Features

- Plug n' Go™ automatic configuration for quick installation and maximum energy savings
- Push n' Learn™ functionality for customization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Category 5e DLM local network
- Infrared (IR) transceiver for wireless configuration and control
- Ultrasonic diffusion technology spreads coverage to a wider area (patented); 40KHz signal
- 360 degree PIR coverage
- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- RoHS compliant
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Qualifies for ARRA-funded public works projects

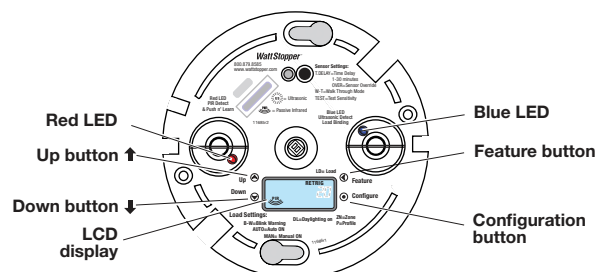


Specifications

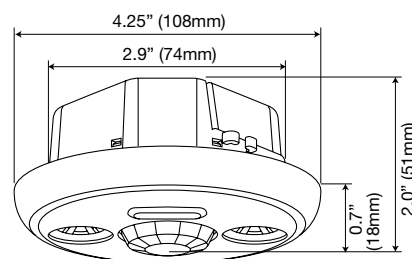
- Input voltage: 24VDC from DLM network
- Current consumption: 20mA
- DLM local network connection: 2 RJ45 ports
- LCD display and pushbuttons for setting sensor and system parameters
- Infrared (IR) transceiver
- Ultrasonic frequency: 40 kHz
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Controls & Dimensions

Product Controls and Sensor Settings



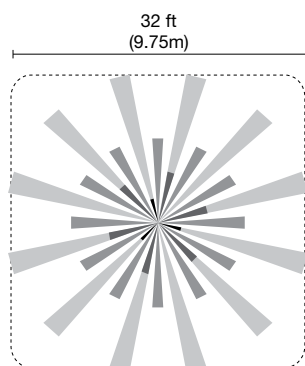
Product Dimensions



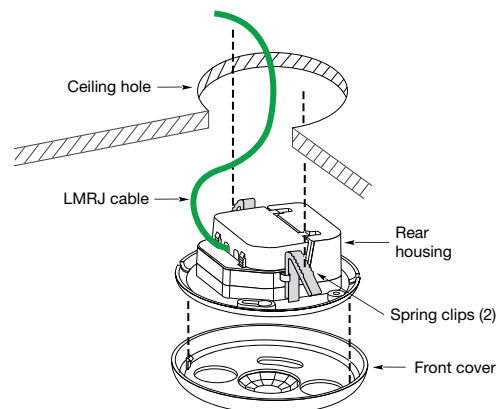
Sensor Parameter	Available Options	Default Setting
Time Delay	1-30 min. (1 min. increments) /Override	20 minutes
Walk Thru	On/Off	Off
PIR Sensitivity	10-100% (10% increments)/Off	90%
Ultrasonic Sensitivity	10-100% (10% increments)/Off	70%
Test Mode	Activate	Off
Detection Technology	Ultrasonic/PIR/Both/Either	Both
Retrigger Technology	Ultrasonic/PIR/Both/Either	Either

Coverage & Mounting

Coverage Patterns



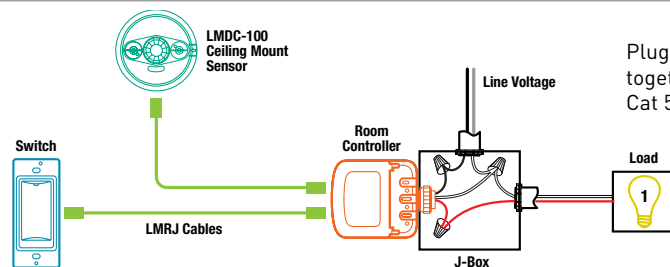
Mounting Options



Mount directly to ceiling tile using spring clips (included) or to a 4" octagonal box. See installation instructions for more details.

Wiring

Sample Connection Diagram



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> LMDC-100	White	Digital Dual Technology Ceiling Mount Occupancy Sensor
<input type="checkbox"/> LMDC-100-U	White	Digital Dual Technology Ceiling Mount Occupancy Sensor, ARRA-compliant





Personal Controls

Elegantly styled low profile wall switches and handheld remotes give users control of dimmed and switched loads.

Including personal control switches or remotes, in addition to DLM sensors, improves both return on investment and occupant satisfaction.

Multiple Control Options

- On/off
- Dimming
- Scene control

Simple Ergonomic Control

- Positive button feel
- LED status indicators
- Wireless control

Compatible with Building Design Standards

- Wall switches in 5 colors fit decorator style faceplates
- Infrared (IR) handheld remotes include wall holster



LMSW-100 Series Digital Wall Switches

Low voltage pushbutton switches for control of multiple loads

Components of Digital Lighting Management integrated control system

Plug to other components using Cat 5e cables with RJ45 connectors eliminating wiring errors



Customizable buttons with LED status indicators

IR transceiver for wireless configuration and remote control

Plug n' Go automatic configuration and Push n' Learn for personalization

PROJECT
LOCATION/TYPE

Product Overview

Description

LMSW-100 Series Digital Wall Switches are low voltage devices for energy-saving manual on/off control of one or more loads from one or more locations. They are part of a Digital Lighting Management (DLM) system and can control any load(s) connected to DLM room controllers.

Operation

LMSW-100 Series Switches operate on Class 2 power supplied to a DLM local network by one or more room controllers. The switches send a digital signal for on or off whenever a pushbutton is pressed by a user. Plug n' Go automatic configuration assigns each load to a switch button upon system startup. If the number of buttons equals the number of loads, each button operates one load. If there are more loads than buttons, the last button controls multiple loads. Any extra buttons are unassigned. When multiple switches are installed, default operation is for multi-way control; each switch controls all of the loads on the system. Button assignments may be quickly reconfigured using Push n' Learn. Button configuration may be changed from load control to scene control using DLM configuration tools.

Button Features and IR Communications

An LED shows the status of the load(s) or scene assigned to each button on a switch. Switches are available with one, two, three, four or eight buttons. When an unassigned button is pressed, the LED will blink. Each switch may be personalized in the field with custom-engraved buttons. The IR transceiver in each LMSW-100 Series Digital Wall Switch allows two-way communication for both wireless system configuration and operation.

Applications

LMSW-100 Series Digital Wall Switches are recommended for virtually all applications, including offices, conference rooms and classrooms. They are ideal for any area where manual on/off control is desired. They are also perfect for applications requiring multi-way control. LMSW-100 Series Switches increase energy savings and improve the return on investment of any Digital Lighting Management system.

Features

- Hidden configuration button for easy access to Push n' Learn
- Digital Lighting Management components plug together on a free-topology Category 5e DLM local network
- Infrared (IR) transceiver for wireless configuration and control
- Sleek single gang devices fit decorator wall plates; 1-, 2-, 3-, 4-, and 8-button models
- Each button can control individual or multiple loads, or one scene; LED indicates status
- Switches may be used for multi-way control
- Five color options and custom engraving options; standard buttons may be replaced in the field
- RoHS compliant
- Qualifies for ARRA-funded public works projects

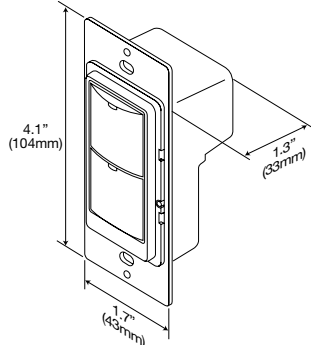
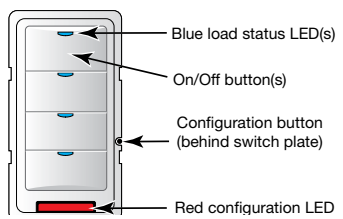


Specifications

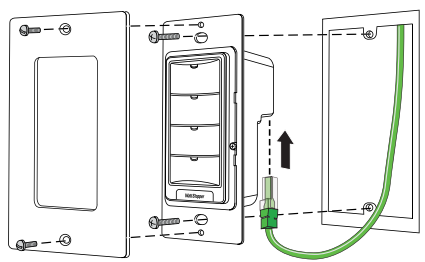
- Input voltage: 24VDC from DLM local network
- Current consumption: 5mA
- DLM local network connection: 2 RJ45 ports
- 1, 2, 3, 4 or 8 control buttons, each with LED status indicator
- Hidden configuration button to access Push n' Learn
- Infrared (IR) transceiver
- Operating conditions: for indoor use only; 32-131°F (0-55°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Controls & Mounting

Product Controls, Dimensions and Models



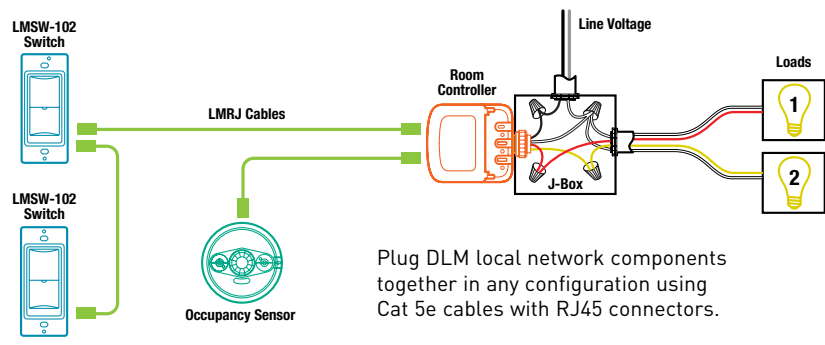
Mounting



LMSW-100 Series Switches fit in standard single gang boxes.

Connecting

Sample Connection Diagram with Multi-way Bi-level Control



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Color	Product Description
<input type="checkbox"/> LMSW-101-W	White	1-Button Digital Wall Switch
<input type="checkbox"/> LMSW-101-LA	Light Almond	
<input type="checkbox"/> LMSW-101-I	Ivory	
<input type="checkbox"/> LMSW-101-G	Grey	
<input type="checkbox"/> LMSW-101-B	Black	
<input type="checkbox"/> LMSW-101-W-U	White	1-Button Digital Wall Switch, ARRA-compliant
<input type="checkbox"/> LMSW-101-I-U	Light Almond	
<input type="checkbox"/> LMSW-102-W	White	2-Button Digital Wall Switch
<input type="checkbox"/> LMSW-102-LA	Light Almond	
<input type="checkbox"/> LMSW-102-I	Ivory	
<input type="checkbox"/> LMSW-102-G	Grey	
<input type="checkbox"/> LMSW-102-B	Black	
<input type="checkbox"/> LMSW-102-W-U	White	2-Button Digital Wall Switch, ARRA compliant
<input type="checkbox"/> LMSW-102-I-U	Light Almond	
<input type="checkbox"/> LMSW-103-W	White	3-Button Digital Wall Switch
<input type="checkbox"/> LMSW-103-LA	Light Almond	
<input type="checkbox"/> LMSW-103-I	Ivory	
<input type="checkbox"/> LMSW-103-G	Grey	
<input type="checkbox"/> LMSW-103-B	Black	
<input type="checkbox"/> LMSW-103-W-U	White	3-Button Digital Wall Switch, ARRA-compliant
<input type="checkbox"/> LMSW-103-I-U	Light Almond	

Catalog No.	Color	Product Description
<input type="checkbox"/> LMSW-104-W	White	4-Button Digital Wall Switch
<input type="checkbox"/> LMSW-104-LA	Light Almond	
<input type="checkbox"/> LMSW-104-I	Ivory	
<input type="checkbox"/> LMSW-104-G	Grey	
<input type="checkbox"/> LMSW-104-B	Black	
<input type="checkbox"/> LMSW-104-W-U	White	4-Button Digital Wall Switch, ARRA-compliant
<input type="checkbox"/> LMSW-104-I-U	Light Almond	
<input type="checkbox"/> LMSW-108-W	White	8-Button Digital Wall Switch
<input type="checkbox"/> LMSW-108-LA	Light Almond	
<input type="checkbox"/> LMSW-108-I	Ivory	
<input type="checkbox"/> LMSW-108-G	Grey	
<input type="checkbox"/> LMSW-108-B	Black	
<input type="checkbox"/> LMSW-108-W-U	White	8-Button Digital Wall Switch, ARRA-compliant
<input type="checkbox"/> LMSW-108-I-U	Light Almond	

Note: Switches do not include face plates. Order decorator style plate separately.

LMDM-101 Digital Dimming Wall Switch

Low voltage switch for control of dimmable loads

Component of Digital Lighting Management integrated control system

Plugs to other components using Cat 5e cables with RJ45 connectors eliminating wiring errors



LED bar graph indicates relative light level of controlled load

Active Dim feature enables temporary adjustment of any selected load

Plug n' Go automatic configuration and Push n' Learn for personalization

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMDM-101 Digital Dimming Wall Switch is a low voltage device for dimming control of one or more lighting loads. It is part of a Digital Lighting Management (DLM) system and can dim load(s) connected to DLM dimming room controllers and switch load(s) connected to DLM on/off room controllers.

Operation

The LMDM-101 operates on Class 2 power supplied to a DLM local network by one or more room controllers. Plug n' Go automatic configuration assigns all loads connected to dimming room controllers to the dimming switch upon system startup. When multiple switches are installed, default operation is for multi-way control; each switch controls all of the loads on the system. Dimming switches may be reconfigured using Push n' Learn to control only selected loads. The LMDM-101 may be used to raise or lower light levels, recall a preset level and turn lights on or off. In Active Dim mode, users can temporarily adjust the level of any dimmable load or scene on the local network by selecting a load or scene button and then pressing and holding the paddle on the LMDM-101.

LED Indicators and IR Communications

A single blue LED shows the on/off status of the load(s) assigned to the dimming switch. An LED array in the bezel of the switch tracks progress of a fade and indicates the output level to the load. Each dimming switch may be personalized in the field with custom-engraved buttons. The IR transceiver in the LMDM-101 allows two-way communication for both wireless configuration, using Push n' Learn and a wireless configuration tool, and system operation, using handheld remotes.

Applications

The LMDM-101 is ideal for use in applications where dimming control is desired, such as conference and board rooms, classrooms, training centers and private offices. Used together with the LMSW-105 DLM Scene Switch, the LMDM-101 works as part of a flexible scene-based preset dimming system. Digital Lighting Management's Active Dim feature gives designers the option of reducing wall clutter by facilitating scene setting without the need for individual dimming switches for each load.

Features

- Hidden configuration button for easy access to Push n' Learn
- Used with DLM dimming room controller
- Digital Lighting Management components plug together on a free-topology Category 5e DLM local network
- Provides full function dimming control in multi-way applications, such as 3-way, 4-way, and beyond
- Infrared (IR) transceiver for wireless configuration and control
- LED status indicator
- Sleek single gang device fits decorator wall plates
- Five color options and custom engraving options; standard buttons may be replaced in the field
- RoHS compliant
- Qualifies for ARRA-funded public works projects

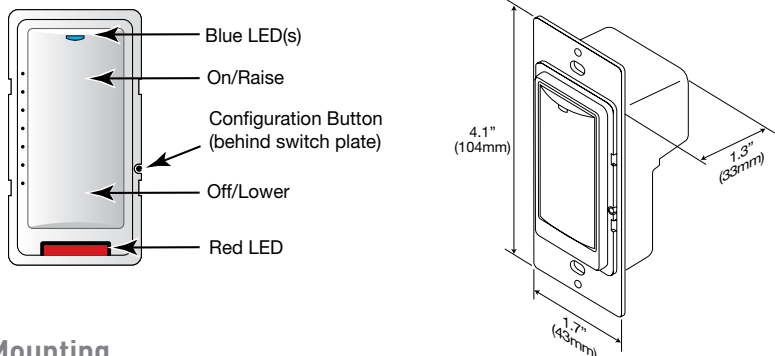


Specifications

- Input voltage: 24VDC from DLM local network
- Current consumption: 5mA
- DLM local network connection: 2 RJ45 ports
- Control button with LED status indicator
- 7-LED dimming level indicator
- Hidden configuration button for access to Push n'Learn mode
- Infrared (IR) transceiver
- Operating conditions: for indoor use only; 32-131°F (0-55°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

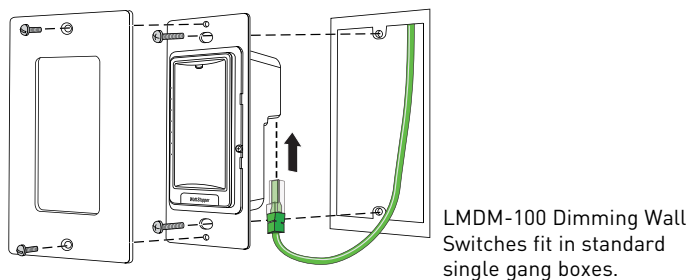
Controls & Dimensions

Product Controls and Dimensions

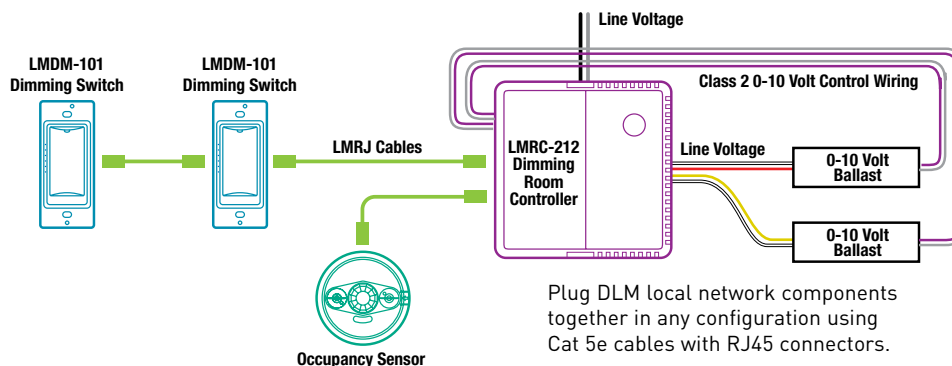


Mounting & Connecting

Mounting



Sample Connection Diagram with 0-10 Volt Dimming



Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> LMDM-101-W	White	Digital 1-Button Dimming Wall Switch
<input type="checkbox"/> LMDM-101-W-U	White	Digital 1-Button Dimming Wall Switch, ARRA-compliant
<input type="checkbox"/> LMDM-101-LA	Light Almond	Digital 1-Button Dimming Wall Switch
<input type="checkbox"/> LMDM-101-I	Ivory	Digital 1-Button Dimming Wall Switch
<input type="checkbox"/> LMDM-101-I-U	Ivory	Digital 1-Button Dimming Wall Switch, ARRA-compliant
<input type="checkbox"/> LMDM-101-G	Grey	Digital 1-Button Dimming Wall Switch

Switches do not include face plates. Order decorator style plate separately.

LMSW-105 Digital 5-Button Scene Switch

Low voltage switch for control of four preset scenes and raise/lower control of scenes or loads

Component of Digital Lighting Management integrated control system

Plugs to other components using Cat 5e cables with RJ45 connectors eliminating wiring errors



Plug n' Go automatic configuration and Push n' Learn for personalization

Customizable buttons with LED status indicators

Active Dim feature enables temporary adjustment of any selected load

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMSW-105 Digital Scene Switch is a low voltage device that sets and recalls preset lighting scenes and raises and lowers lighting levels. It is part of a Digital Lighting Management (DLM) system and controls loads connected to DLM room controllers by accessing four of the 16 scenes available in a DLM local network.

Operation

The LMSW-105 operates on Class 2 power supplied to a DLM local network by one or more room controllers. Plug n' Go automatic configuration assigns presets 1, 2, 3 and 4 to the scene buttons on the switch upon system startup. When multiple switches are installed, default operation is for multi-way control; each switch controls the same scenes. Scene buttons may be reconfigured to control different scenes or control loads instead of scenes. Users activate a scene by tapping one of the scene buttons. They may raise or lower light levels, and turn lights on or off, with the paddle. In Active Dim mode, users can temporarily adjust the level of any dimmable load or scene on the local network by selecting a load or scene button and then pressing and holding the paddle on the LMSW-105.

Features

- Hidden configuration button for easy access to Push n' Learn mode
- Used with DLM dimming room controller
- Master raise/lower paddle and all-on/all-off control
- Infrared (IR) transceiver for wireless configuration and control

Personalizing Scene Switches

Plug 'n Go assigns all loads to each LMSW-105 upon system startup. Load assignments may be changed using Push n' Learn. Preset scene levels are stored by the room controllers, and default levels are established by Plug n' Go. Scene 1 is 100%, scene 2 is 75%, scene 3 is 50% and scene 4 is 25%. Preset levels can be easily changed by adjusting lighting to the desired level, typically using LMDM-101 dimming switches assigned to control each load, or channel, and pressing and holding a scene button on the LMSW-105 to memorize the new levels. Each scene switch may be personalized in the field with custom-engraved buttons. The integral IR transceiver allows both wireless configuration and system operation.

Applications

The LMSW-105's sleek low profile appearance is ideally suited for use in conference and board rooms, classrooms, training centers, and other applications where preset scene-based dimming control is desired. The LMSW-105 Scene Switch works with LMDM-101 Digital Dimming Wall Switches to create a flexible and elegant small dimming system. Digital Lighting Management's Active Dim feature gives designers the option of reducing wall clutter by facilitating scene setting without the need for individual dimming switches for each load.

- Sleek single gang device fits decorator wall plates
- May be used for multi-way control applications
- LED status indicators
- Five color options and custom engraving options; standard buttons may be replaced in the field
- RoHS compliant
- Qualifies for ARRA-funded public works projects

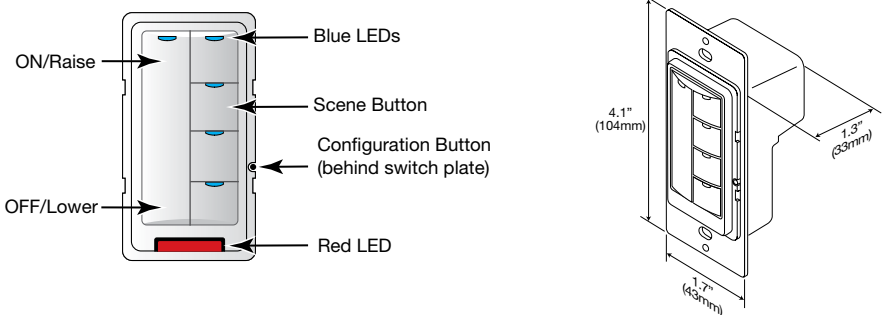


Specifications

- Input voltage: 24VDC from DLM local network
- Current consumption: 5mA
- DLM local network connection: 2 RJ45 ports
- Control button with LED status indicator
- Hidden configuration button for access to Push n'Learn mode
- Infrared (IR) transeiver
- Operating conditions: for indoor use only; 32-131°F (0-55°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

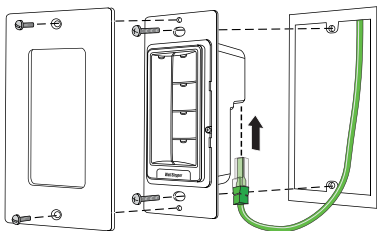
Controls & Dimensions

Switch Controls and Dimensions



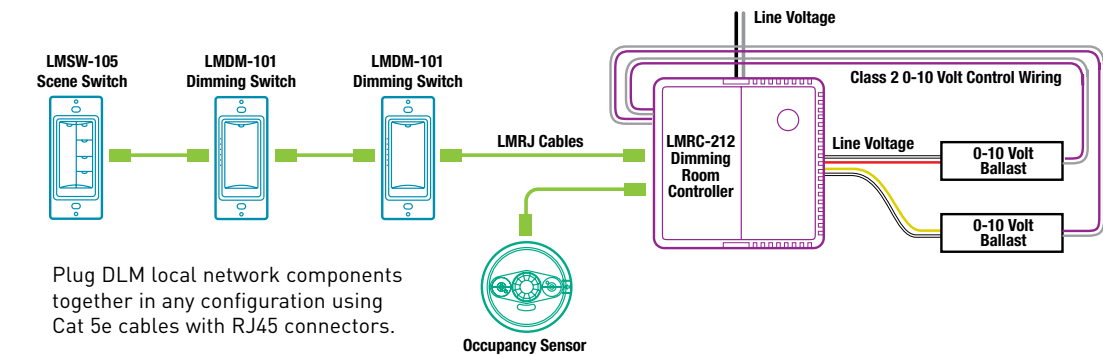
Mounting & Connecting

Mounting



LMSW-105 Scene Switches fit in standard single gang boxes.

Sample Connection Diagram with 0-10 Volt Dimming



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> LMSW-105-W	White	Digital 5-Button Scene Switch
<input type="checkbox"/> LMSW-105-W-U	White	Digital 5-Button Scene Switch, ARRA-compliant
<input type="checkbox"/> LMSW-105-LA	Light Almond	Digital 5-Button Scene Switch
<input type="checkbox"/> LMSW-105-I	Ivory	Digital 5-Button Scene Switch
<input type="checkbox"/> LMSW-105-I-U	Ivory	Digital 5-Button Scene Switch, ARRA-compliant
<input type="checkbox"/> LMSW-105-G	Grey	Digital 5-Button Scene Switch
<input type="checkbox"/> LMSW-105-B	Black	Digital 5-Button Scene Switch

Switches do not include face plates. Order decorator style plate separately.

DLM Switch Button Kits and Switch Button Engraving

Field replacable buttons for LMSW-100 Series and LMDM-101 Wall Switches

Available for 1-, 2-, 3-, 4-, 8-button wall switches, 1-button dimming switch and 5-button scene switch

Choice of white, light almond, ivory, grey and black; includes matching trim ring for complete color change



Customized engraving option

Button kits snap onto existing switches without tools for fast, easy color update or personalization

Ideal for switch labeling, building remodeling, or repurposing of controls

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMSW-KIT-100 Series and LMDM-KIT-101 are replacement button trim color kits that are compatible with all Digital Lighting Management (DLM) LMSW-100 Series switches and LMDM-101 Dimming Wall Switches. They are available with or without custom engraving.

Installation

The button kits can be easily installed without removing the switch from the wall. With the wall plate off, the installer simply presses gently on each side of the existing buttons and pulls the trim ring off, followed by the buttons, which are part of a single unit. The new button unit replaces the old one, and the new trim ring snaps on to hold the buttons in place.

Engraved Button Labels

If labeled buttons are required, complete an order form for custom engraving. Each button can be custom-engraved with exacting detail, using indelible ink applied by a high speed laser etching machine. Full-width button labels for 1-, 2-, 3-, and 4-button switches may include up to fifteen characters. Half-width button labels for 5- and 8-button switches may include up to seven characters.

Applications

DLM button kits are ideal for changing the appearance of a switch as part of a remodel or new decoration scheme, or because of damage. Engraved button kits provide an easy, professional-style solution to personalizing switches for any application. Button labels typically comprise the name of the controlled lights or the purpose of the lighting scene (e.g. sconces, downlights and wallwashers, or meeting, AV and whiteboard).

Features

- Kits available for all Digital Lighting Management wall switches, dimming switches and scene switches
- Five color options
- Optional engraving with custom text
- Easy to install in the field without removing the switch from the wall
- RoHS compliant



DLM Switch Models

Kits are Available for Wall Switches, Dimming Switch and Scene Switch



LMSW-101



LMSW-102



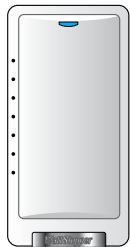
LMSW-103



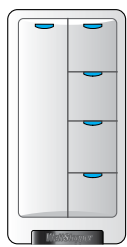
LMSW-104



LMSW-108



LMDM-101



LMSW-105

Ordering Information

Catalog No.	Color	Product Description
<input type="checkbox"/> LMSW-KIT-101-W	White	1-Button Kit for Wall Switch, no engraving
<input type="checkbox"/> LMSW-KIT-101-LA	Light Almond	
<input type="checkbox"/> LMSW-KIT-101-I	Ivory	
<input type="checkbox"/> LMSW-KIT-101-G	Grey	
<input type="checkbox"/> LMSW-KIT-101-B	Black	
<input type="checkbox"/> LMDM-KIT-101-W	White	1-Button Kit for Dimming Wall Switch, no engraving
<input type="checkbox"/> LMDM-KIT-101-LA	Light Almond	
<input type="checkbox"/> LMDM-KIT-101-I	Ivory	
<input type="checkbox"/> LMDM-KIT-101-G	Grey	
<input type="checkbox"/> LMDM-KIT-101-B	Black	
<input type="checkbox"/> LMSW-KIT-102-W	White	2-Button Kit for Wall Switch, no engraving
<input type="checkbox"/> LMSW-KIT-102-LA	Light Almond	
<input type="checkbox"/> LMSW-KIT-102-I	Ivory	
<input type="checkbox"/> LMSW-KIT-102-G	Grey	
<input type="checkbox"/> LMSW-KIT-102-B	Black	
<input type="checkbox"/> LMSW-KIT-103-W	White	3-Button Kit for Wall Switch, no engraving
<input type="checkbox"/> LMSW-KIT-103-LA	Light Almond	
<input type="checkbox"/> LMSW-KIT-103-I	Ivory	
<input type="checkbox"/> LMSW-KIT-103-G	Grey	
<input type="checkbox"/> LMSW-KIT-103-B	Black	

Catalog No.	Color	Product Description
<input type="checkbox"/> LMSW-KIT-104-W	White	4-Button Kit for Wall Switch, no engraving
<input type="checkbox"/> LMSW-KIT-104-LA	Light Almond	
<input type="checkbox"/> LMSW-KIT-104-I	Ivory	
<input type="checkbox"/> LMSW-KIT-104-G	Grey	
<input type="checkbox"/> LMSW-KIT-104-B	Black	5-Button Kit for Scene Switch, no engraving
<input type="checkbox"/> LMSW-KIT-105-W	White	
<input type="checkbox"/> LMSW-KIT-105-LA	Light Almond	
<input type="checkbox"/> LMSW-KIT-105-I	Ivory	
<input type="checkbox"/> LMSW-KIT-105-G	Grey	
<input type="checkbox"/> LMSW-KIT-105-B	Black	8-Button Kit for Wall Switch, no engraving
<input type="checkbox"/> LMSW-KIT-108-W	White	
<input type="checkbox"/> LMSW-KIT-108-LA	Light Almond	
<input type="checkbox"/> LMSW-KIT-108-I	Ivory	
<input type="checkbox"/> LMSW-KIT-108-G	Grey	
<input type="checkbox"/> LMSW-KIT-108-B	Black	

Engraving Option

Engraving Details

Catalog No.	Description
<input type="checkbox"/> LM-Engraving	Engraving for button kit(s) selected from Catalog Numbers above

To order custom-engraved button kits, complete the online ordering form and provide complete labeling information.

LMRH-102 Digital 2-Button IR Remote Control

Provides wireless remote on/off control of two lighting loads

Component of Digital Lighting Management integrated control systems

Sleek, easy-to-operate design



Push n' Learn for personalization

Wall mount bracket and mounting hardware included

Infrared (IR) wireless signal for control within a 32 foot range

Product Overview

Description

The LMRH-102 Digital 2-Button IR Remote Control is a handheld on/off personal control device for convenient control of any loads connected to Digital Lighting Management (DLM) room controllers. It uses an infrared transceiver to communicate with a DLM system via any DLM IR-enabled devices.

Operation

The LMRH-102 operates on battery power and transmits a digital signal for on or off whenever a pushbutton is pressed by a user. By default, the top button controls the first load in the system and the bottom button controls the second load. Button assignments may be quickly reconfigured using Push n' Learn. The LMRH-102 will work with any DLM local network, operating loads one and two, if in default mode, or the loads it has been configured to control.

PROJECT

LOCATION/TYPE

Personalized Control

To assign different lighting loads to the buttons, users can access Push n' Learn via the hidden configuration button on the remote. For instance, in a classroom a teacher might wish to assign all lighting loads to the second button so it serves as a master off button. Or, he or she may wish to assign whiteboard lighting to the second button while general classroom lighting is assigned to the first button.

Applications

The 2-button remote control can be used anywhere that convenient fingertip lighting control is desired. Conference rooms, training centers, lecture halls and private offices are all ideal applications for this device.

Features

- Provides infrared (IR) control of two lighting loads or zones in a DLM system
- Hidden configuration button for easy access to Push n' Learn
- Communicates with DLM local network through any DLM IR-enabled device
- Battery operated
- Includes wall mount holster and all necessary mounting hardware
- Each button can control individual or multiple loads
- LEDs confirm button presses
- RoHS compliant

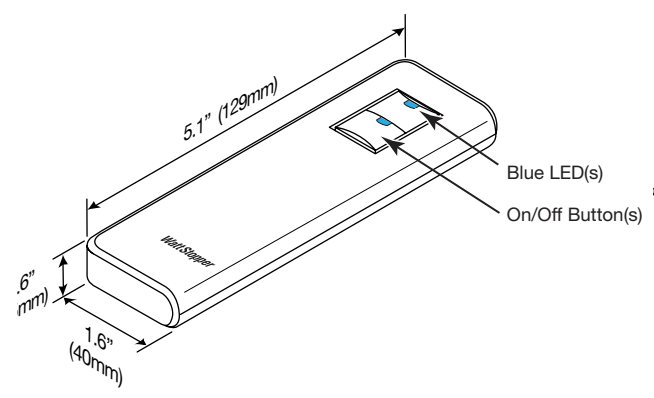


Specifications

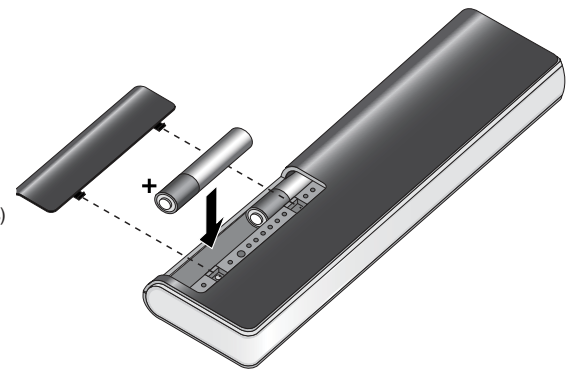
- Operates on 3 AAA 1.5 volt batteries (included)
- DLM local network connection: IR transceiver
 - Range of IR transmission: up to 32 ft. (10m)
 - Angle of IR reception: 30°
- 2 control buttons, each with LED indicator
- Hidden configuration button to access Push n' Learn
- Weight: approx. 3.2 oz. (91g), without mounting bracket
- Operating conditions: for indoor use only; 32-95°F (0-35°C); 5-95% RH, non-condensing
- FCC part 15 compliant
- Five year warranty

Controls & Dimensions

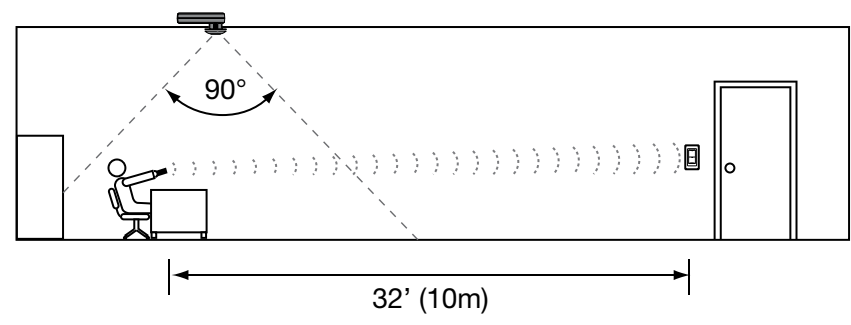
Product Controls and Dimensions



Inserting Batteries into the Remote



IR Range



The LMRH-102 operates DLM lighting loads by transmitting IR signals to any DLM IR-enabled device within line of sight in a range of approximately 32 feet (10 meters).

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMRH-102	Digital 2-Button IR Remote Control

LMRH-101 Digital Dimming IR Remote Control

Provides wireless remote on/off and raise/lower control

Component of Digital Lighting Management integrated control systems

Communicates with any IR-enabled DLM device



Push n' Learn for personalization

Wall mount bracket and mounting hardware included

Infrared (IR) wireless signal for control within a 32 foot range

PROJECT

LOCATION/TYPE

Product Overview

Description

The LMRH-101 Digital Dimming IR Remote Control is a handheld personal control device for convenient on/off and raise/lower control of any load(s) connected to Digital Lighting Management (DLM) dimming room controllers. It uses an infrared transceiver to communicate with a DLM system via any DLM IR-enabled devices.

Operation

The LMRH-101 operates on battery power. By default, it controls all loads on the DLM local network. The load assignment may be quickly reconfigured using Push n' Learn. To turn the load on, the user simply presses the top of the control button. Pressing the bottom of the button turns lights off. To raise or lower dimmable loads, the user presses and holds the top or bottom of the button until lighting reaches the desired level. The LMRH-101 will work with any DLM local network, operating all loads if in default mode, or the load(s) it has been configured to control.

Personalized Control

To assign a different lighting load, or loads, to the LMRH-101, users can access Push n' Learn via the hidden configuration button on the remote or using the wireless configuration tool.

Applications

The LMRH-101 remote control can be used anywhere that convenient handheld dimming control is desired. Conference rooms, training centers, lecture halls and private offices are all ideal applications for this device.

Features

- Provides remote IR dimming control of lighting in a DLM system in conjunction with at least one dimming room controller
- Hidden configuration button for easy access to Push n' Learn
- Communicates with DLM local network through any DLM IR-enabled device
- Battery operated
- Includes wall mount holster and all necessary mounting hardware
- Can control one or more loads
- LED confirms button presses
- RoHS compliant

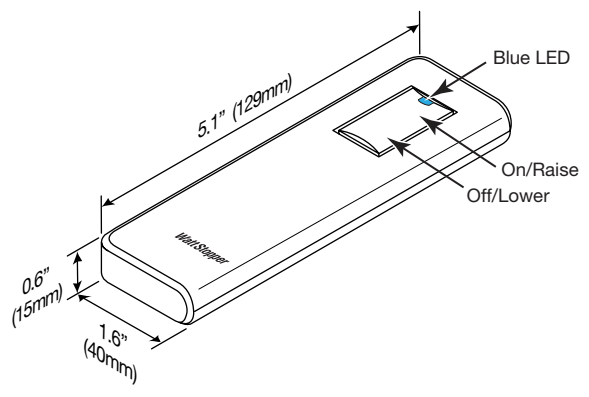


Specifications

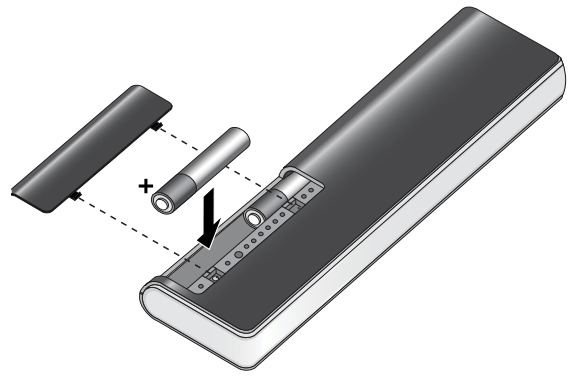
- Operates on 3 AAA 1.5 volt batteries (included)
- DLM local network connection: IR transceiver
 - Range of IR transmission: up to 32 ft. (10m)
 - Angle of IR reception: 30°
- 1 control button with LED indicator
- Hidden configuration button to access Push n' Learn
- Weight: approx. 3.2 oz. (91g), without mounting bracket
- Operating conditions: for indoor use only; 32-95°F (0-35°C); 5-95% RH, non-condensing
- FCC part 15 compliant
- Five year warranty

Controls & Dimensions

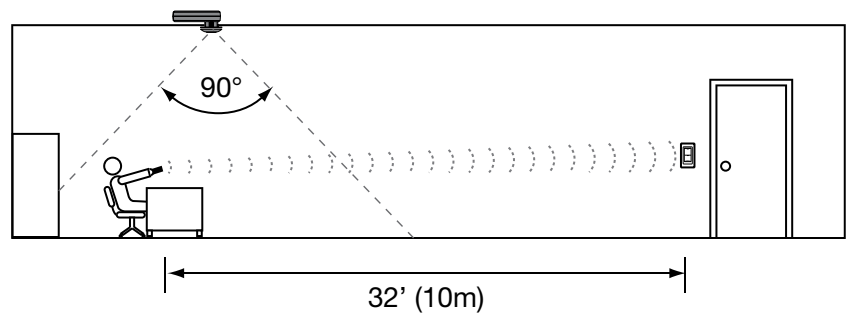
Product Controls and Dimensions



Inserting Batteries into the Remote Controls



IR Range



The LMRH-101 operates DLM lighting loads by transmitting IR signals to any DLM IR-enabled device within line of sight in a range of approximately 32 feet (10 meters).

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMRH-101	Digital 1-Button IR Dimming Remote Control

LMRH-105 Digital Scene IR Remote Control

Provides wireless remote control of four preset scenes plus on and off

Component of Digital Lighting Management integrated control systems

Communicates with any IR-enabled DLM device



Push n' Learn for personalization

Wall mount bracket and mounting hardware included

Infrared (IR) wireless signal for control within a 32 foot range

PROJECT

LOCATION/TYPE

Product Overview

Description

The LMRH-105 Digital Scene IR Handheld Remote Control is a personal control device for convenient on/off and scene control. It is part of a Digital Lighting Management (DLM) system and controls loads connected to DLM room controllers by accessing four of the 16 scenes available in a DLM local network. It uses an infrared transceiver to communicate with a DLM system via any DLM IR-enabled devices.

Operation of LMRH-101

The LMRH-105 operates on battery power. By default, it controls all loads on the DLM local network, and the scene buttons operate presets 1, 2, 3 and 4. The remote may be reconfigured to control different loads and different scenes. Users activate a scene by pressing one of the small scene buttons. Pressing the top of the large control paddle turns all of the lights on to their previous level. Pressing the bottom of the paddle turns lights off. Pressing and holding the top or bottom of the paddle raises or lowers the active scene. The LMRH-105 will work with any DLM local network, operating the scenes and loads it has been configured to control.

Personalizing Scene Control

To assign a different lighting load, or loads, to the LMRH-105, users can access Push n' Learn via the hidden configuration button on the remote or using the wireless configuration tool. Scene assignments are changed using DIP switches located in the battery compartment. Preset scene levels are stored by the room controllers, and default levels are established by Plug n' Go. Scene 1 is 100%, scene 2 is 75%, scene 3 is 50% and scene 4 is 25%. Preset levels can be easily changed by adjusting lighting to the desired level, typically using LMDM-101 dimming switches assigned to control each channel, and pressing and holding a scene button on the LMRH-105 to memorize the new levels.

Applications

The LMRH-105 can be used anywhere that convenient dimming and scene control is desired. Conference rooms, training centers, lecture halls, and private offices are all ideal applications for this device.

Features

- Provides remote IR scene control of lighting in a DLM system in conjunction with at least one dimming Room Controller
- Hidden configuration button for easy access to Push n' Learn
- Communicates with DLM local network through any DLM IR-enabled device
- Battery operated
- Includes wall mount holster and all necessary mounting hardware
- Controls four scenes plus on/off and raise/lower
- LEDs confirm button presses
- RoHS compliant

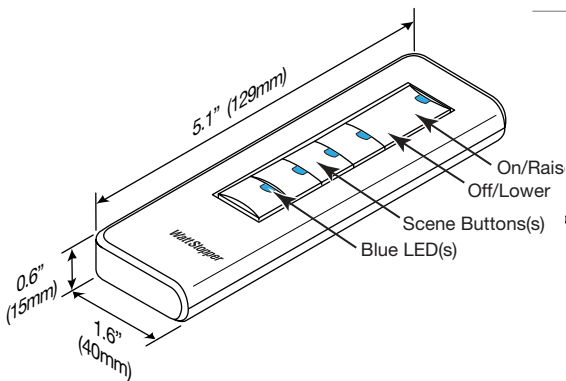


Specifications

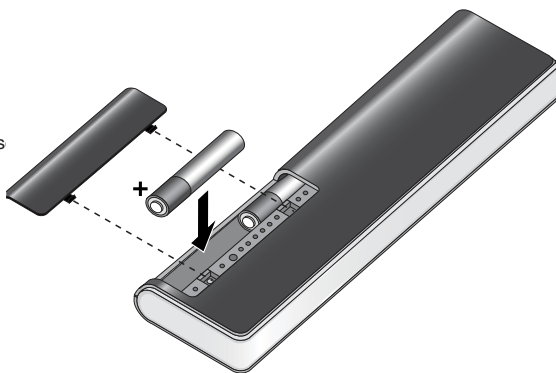
- Operates on 3 AAA 1.5 volt batteries (included)
- DLM local network connection: IR transceiver
 - Range of IR transmission: up to 32 ft. (10m)
 - Angle of IR reception: 30°
- 5 control buttons, each with LED indicator
- Hidden configuration button to access Push n' Learn
- Weight: approx. 3.2 oz. (91g), without mounting bracket
- Operating conditions: for indoor use only; 32-95°F (0-35°C); 5-95% RH, non-condensing
- FCC part 15 compliant
- Five year warranty

Controls & Dimensions

Product Controls and Dimensions

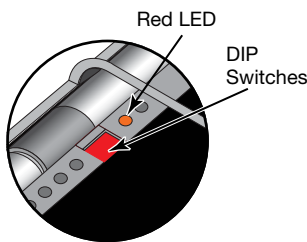


Inserting Batteries into the Remote Controls



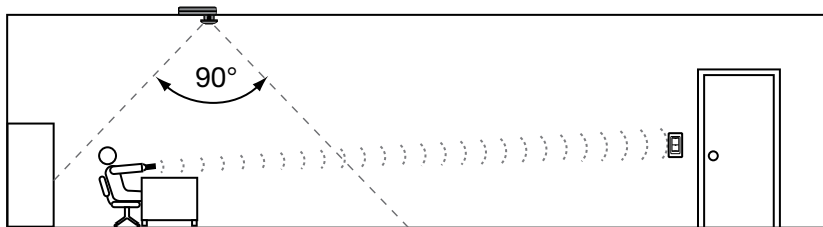
DIP Switch Settings for Selecting Controlled Scenes

Scenes	1-4 (default)	5-8	9-12	13-16
Setting	off off	off on	on off	on on
Switch #	1 2	1 2	1 2	1 2



By default, the LMRH-105 controls DLM scenes 1-4. Users can select a different group of four scenes by resetting DIP switches located in the battery compartment.

IR Range



The LMRH-105 operates DLM lighting loads by transmitting IR signals to any DLM IR-enabled device within line of sight in a range of approximately 32 feet (10 meters).

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMRH-105	Digital 5-Button IR Scene Remote Control





Daylighting Sensors

WattStopper has pioneered the latest control technologies, and makes it easy for specifiers and installers to successfully incorporate daylighting control in their projects.

Compact, low-profile DLM photosensors feature calibration and commissioning that is simple, or even automatic.

Complete Range of Control Options

- On/off, bi-level, tri-level and continuous dimming
- Single or multi-zone control
- Open or closed loop control

Developed for Simplified Start Up

- Self-calibrating and commissioning single-zone sensor
- Multi-zone sensor automatically recommends setpoints
- Sensors can be calibrated in any daylight condition

Fully Featured for Reliable Operation

- Optimized field of view
- Accurate photocell response
- Adjustable setpoints and parameters
- Compatible with personal controls



LMLS-105 On/Off Photosensor

Single zone, on/off switching
daylighting sensor

Component of Digital Lighting
Management integrated control
systems

Easy-to-read LCD display and
LED status indicator



Automatic calibration

Multiple user-adjustable
control parameters

Digital multi-band photosensor

PROJECT

LOCATION/TYPE

Product Overview

Description

The LMLS-105 On/Off Photosensor is a single zone switching device designed for closed loop daylighting applications. It includes an advanced digital multi-band photosensor positioned behind a 100° cone that cuts off unwanted light, preventing false triggers; an on-board microcontroller; and an LCD display. The LMLS-105 has an extended range of 1-1,400 footcandles and is an optional part of a WattStopper Digital Lighting Management (DLM) system.

Operation

The LMLS-105 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. On and off setpoints can be selected either automatically or manually. When ambient light levels exceed the off setpoint, the controller turns lighting off. It will turn connected lighting back on when the on setpoint is triggered. Because of its automatic calibration feature, many applications require little or no adjustment of the settings. The LMLS-105 can be integrated with any DLM wall switch or occupancy sensor. In Plug n' Go mode, the LMLS-105 defaults to controlling the first load in the DLM system.

Features

- Easy-to-read LCD display prompts installer through setup
- User-adjustable on setpoint, off setpoint and off setpoint time delay
- Test mode overrides programmed time delay, enabling installer to verify accuracy of settings
- Programmable in most daylight conditions
- Control load status verification allows testing and confirmation that wiring is correct
- Form factor designed to eliminate misalignment
- LED status indicator identifies when device is in test mode, or if device has switched lights on or off
- Mounting options for top-lit or side-lit applications
- Qualifies for ARRA-funded public works projects

Automatic Startup and Calibration Options

The LMLS-105 features automatic setpoint calculations. As part of the process, the controlled load is first turned on for a brief interval to warm up the lamps, and then switched off. This process is repeated several times. At the completion of the calibration, values for the on and off setpoints will have been established. If the user programs the overall percent of controlled electric lighting (e.g. 100%, 66%, 50% or 33%) during setup, the LMLS-105 will automatically select the best control algorithm for the application. Manually adjustable parameters include deadband and time delay settings. If desired, the deadband can be adjusted to a value of 25, 50, 75, or 100 percent above the setpoint. The time delay can be adjusted to 3, 10, 20 or 30 minutes.

Applications

The LMLS-105 Photosensor can control any type of lighting: incandescent, fluorescent, compact fluorescent (CFL), HID, and LEDs. It is recommended for peripheral offices, cafeterias, warehouses and any other indoor area with daylight contribution.

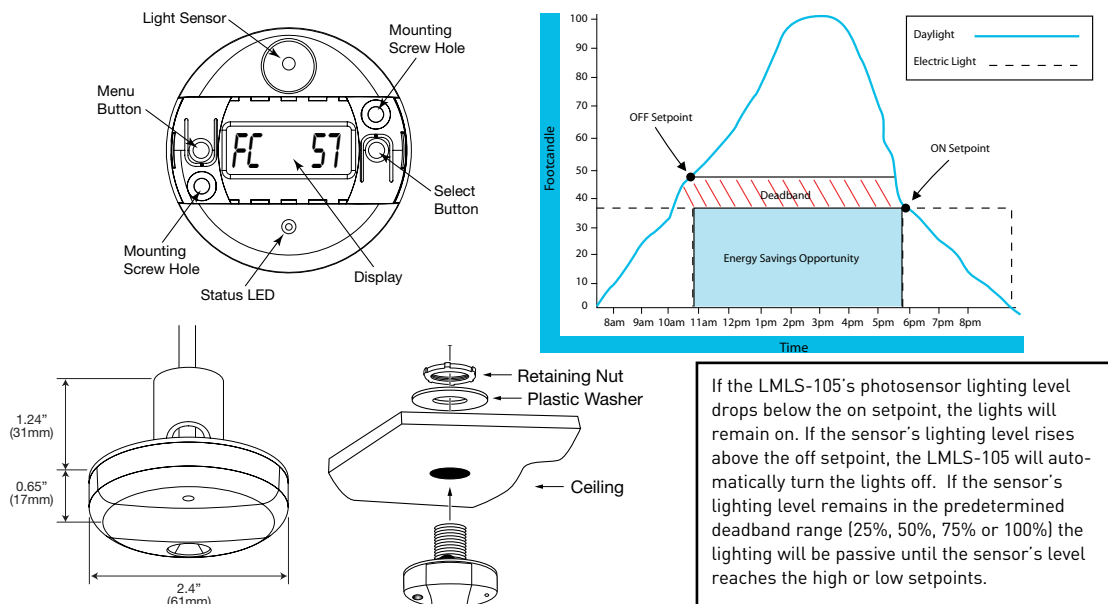


Specifications

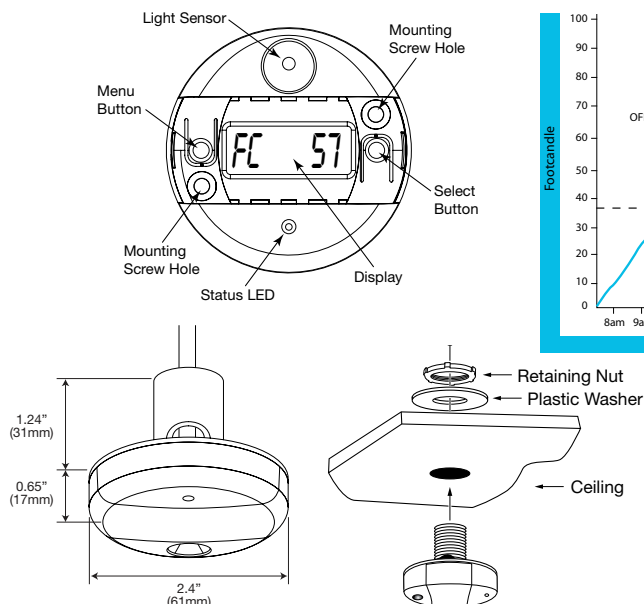
- Input voltage: 24VDC from DLM network
- Current consumption: 7 mA
- DLM local network connection: 1 RJ45 port via RJ45 plug and coupler (included)
- Automatic setpoint calculation
- Digital multi-band photosensor range: 1-1,400 fc (10-15,070 lux)
- On setpoint range: 1-850 fc (10-9,150 lux)
- Status indicator: multi-function green LED
- Operating conditions: for indoor use only; 32-120°F (0-49°C); less than 90% RH
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Controls & Mounting

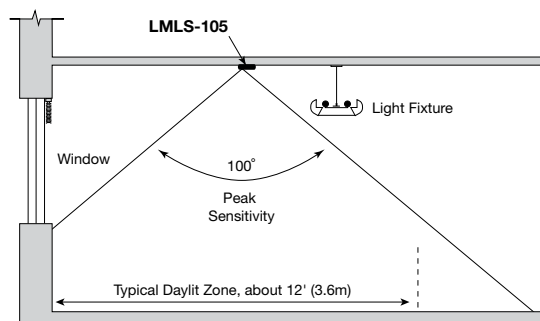
Product Controls and Deadband Adjustment Options



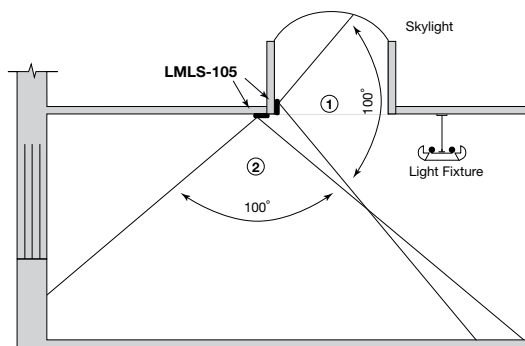
If the LMLS-105's photosensor lighting level drops below the on setpoint, the lights will remain on. If the sensor's lighting level rises above the off setpoint, the LMLS-105 will automatically turn the lights off. If the sensor's lighting level remains in the predetermined deadband range (25%, 50%, 75% or 100%) the lighting will be passive until the sensor's level reaches the high or low setpoints.



Placement for Side-lit Applications

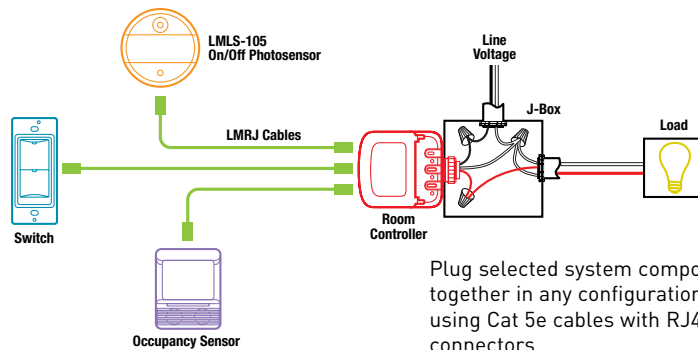


Placement for Top-lit Applications



Connecting

Sample Connection Diagram



Plug selected system components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Description	Photosensor Range	Deadband Adjustment Options
<input type="checkbox"/> LMLS-105	On/Off Photosensor	1-1,400 footcandles	25%, 50%, 75% & 100% above the on setpoint
<input type="checkbox"/> LMLS-105-U	On/Off Photosensor, ARRA-compliant	1-1,400 footcandles	25%, 50%, 75% & 100% above the on setpoint

LMLS-305 0-10 Volt Dimming Photosensor

Single zone, closed loop
automatic dimming
daylighting sensor

Component of Digital Lighting
Management integrated control
systems

Controls standard 0-10 VDC
electronic dimming ballasts



All setup performed remotely
with LightSaver handheld or
DLM wireless configuration tool

Optional occupant adjustment via
handheld remote

Product Overview

Description

The LMLS-305 0-10 Volt Dimming Photosensor is a single zone ceiling-mounted device that works with standard 0-10 VDC electronic dimming ballasts to dim lighting as the ambient light level increases. It is an optional part of a WattStopper Digital Lighting Management (DLM) system and is designed for closed loop daylighting applications.

Operation

The LMLS-305 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. It is a closed loop photosensor that measures the total light level from daylight and electric light in the controlled area in order to adjust electric lighting levels. As the daylight contribution increases, the controlled lights dim down. The LMLS-305 features a sliding setpoint control algorithm to compensate for the different spatial distribution ratios of electric light and daylight. It calculates the required light level based on two setpoints. The night setpoint is the target level when no daylight is present. The day setpoint is the target level when significant daylight is present. In Plug n' Go mode, the LMLS-305 defaults to controlling the first load in the DLM system.

Features

- Provides precise control of lighting to maintain desired light level
- Extremely linear photocell response with greater than 1% accuracy
- Designed to measure light as the human eye perceives it and eliminate overreporting of illumination levels provided by daylight
- Separate handheld remote controls for setup and occupant adjustment to prevent tampering
- Boosts energy savings by reducing maximum lamp output, often resulting in savings of 20%, or more, compared with lights at full output
- Achieves lumen maintenance by holding target light level as lamp output decreases over time
- Qualifies for ARRA-funded public projects

PROJECT

LOCATION/TYPE

Adjustment via Handheld Remote Control

All LMLS-305 adjustments can be made either with the LightSaver LSR-301-S or the DLM LMCT-100 handheld remotes. The LSR-301-S provides five buttons for initial setup, which is easily completed by first raising or lowering electric lighting to desired levels, then programming this target level into the photosensor. The LMCT-100 uses simple, menu-driven screens for users to adjust daylighting parameters. In addition, an occupant remote control (LSR-301-P) provides an easy tool for use by occupants in adjusting light levels. With this optional tool, users can increase target light levels by up to 25% or reduce them to the lamp/ballast minimum level. Pressing the "Auto" button returns the control to programmed levels.

Applications

The LMLS-305 is designed to blend into its surroundings when installed in any environment. It provides one zone of daylighting control for applications such as private offices or classrooms. The LMLS-305 can be combined with a DLM occupancy sensor and a DLM wall switch.

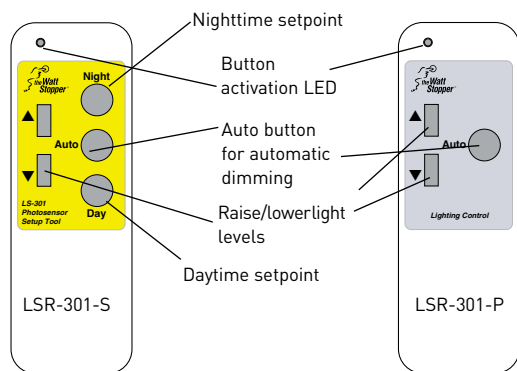


Specifications

- Input voltage: 24VDC from DLM network
- Current consumption: 30 mA
- DLM local network connection: 1 RJ45 port via RJ45 plug and coupler (included)
- Full range dimming: .2 VDC (minimum) to 10 VDC (100% lighting) output voltage
- 0-10VDC signal: grey and violet to ballast
- Controls up to 50 standard dimming ballasts
- Setpoints are adjustable from 20-60 footcandles (210-640 lux)
- Operating conditions: for indoor use only; 32-120°F (0-49°C); less than 90% RH
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

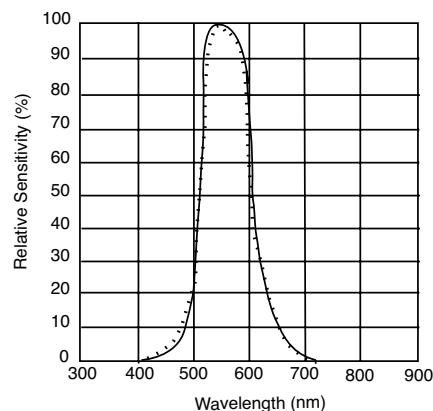
Controls & Response

Remote Controls



Remote handheld (above left) enables easy setup while optional occupant remote (above right) provides adjustability for individual lighting preferences.

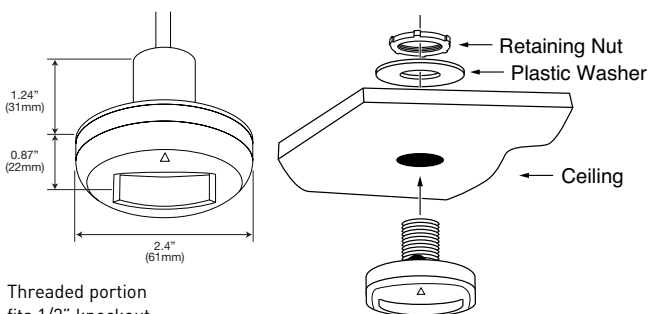
Spectral Response Curve



The spectral response of the LMLS-305 photocell closely matches the sensitivity of the human eye.

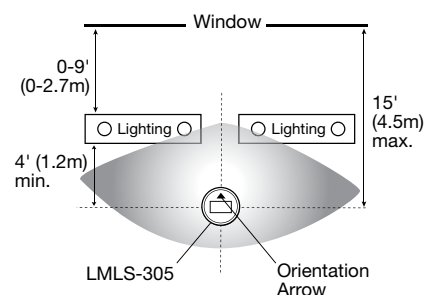
Installation & Placement

Mounting and Installation



Threaded portion fits 1/2" knockout.

Placement

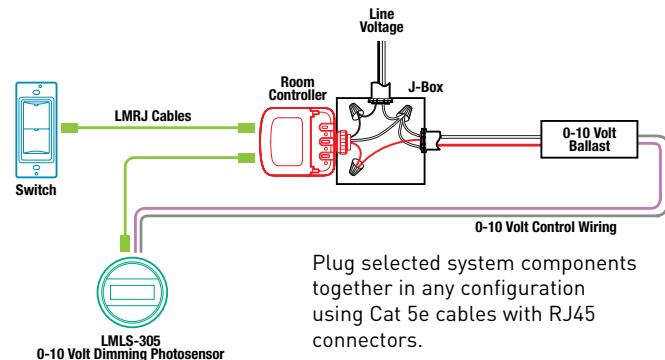


Placement Guidelines

- Mount photocell between 6 and 12 feet (1.8m - 3.7m) from window.
- Do not mount directly above direct/indirect pendant fixtures. Mount at least 4 feet (1.2m) from pendant fixtures.

Connecting

Sample Connection Diagram



Plug selected system components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMLS-305	0-10 Volt Dimming Photosensor
<input type="checkbox"/> LMLS-305-U	0-10 Volt Dimming Photosensor, ARRA-compliant
<input type="checkbox"/> LSR-301-S	Setup Remote Control (2 AAA batteries included)
<input type="checkbox"/> LSR-301-S-U	Setup Remote Control, ARRA-compliant (2 AAA batteries included)
<input type="checkbox"/> LSR-301-P	Occupant Remote Control (2 AAA batteries included)
<input type="checkbox"/> LSR-301-P-U	Occupant Remote Control, ARRA-compliant (2 AAA batteries included)
<input type="checkbox"/> LMCT-100	Wireless Remote Configuration Tool
<input type="checkbox"/> LMCT-100-U	Wireless Remote Configuration Tool, ARRA-compliant

LMLS-400 Single Zone Switching and Dimming Closed Loop Digital Photosensor

Daylight responsive on/off, bi-level, tri-level or dimming control for one lighting zone

Component of Digital Lighting Management integrated control system

100 degree spatial response for optimal detection of ambient light level



Automatic calibration and configuration

Photodiode corrected to match the photopic response of the human eye

Can be calibrated in any daylight condition

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMLS-400 is a closed loop photosensor that measures the ambient light level in order to automatically switch or dim one zone of lighting. It is part of a Digital Lighting Management (DLM) system and sends light level signals to control loads connected to DLM on/off or dimming room controllers. The LMLS-400 has a photodiode with an extended range of 1-6,553 footcandles (fc), and photopic correction to mimic the human eye, for precise measurement of visible light.

Operation

The LMLS-400 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. Plug n' Go automatic configuration assigns the photosensor to control load 1. Loads may be reassigned using an LMCT-100. Following an automatic setup process, the LMLS-400 monitors the ambient light in the controlled space and works with the room controller(s) to maintain the design light level. WattStopper's exclusive control algorithm uses on/off or dimming setpoints and other control parameters to establish the correct light levels throughout the day regardless of changing daylight contribution.

Features

- Digital Lighting Management components plug together on a free-topology Cat 5e DLM local network
- Test mode override of programmed time delay allows easy verification of selected settings
- Load status verification allows confirmation and testing of controlled load
- Infrared (IR) transceiver for wireless configuration and control

Automatic Setup

After installation, the LMLS-400 measures the daylight and electric light levels in order to automatically calibrate itself and establish setpoints. This process may be initiated from the photosensor or a handheld LMCT-100 wireless configuration tool. The LMCT-100 may also be used to adjust setpoints and other parameters if desired. Adjustable switching parameters include on and off setpoints and time delays. The off setpoint can be adjusted to a value of 25, 50 (default), 75, or 100 percent above the on setpoint. Adjustable dimming parameters include day and night setpoints, ramp up and down rates, and a cut-off time delay. Electric lights can be turned off (default) or dimmed to a user-selectable minimum level when daylight contribution is abundant.

Applications

The LMLS-400 Photosensor is recommended for use in private offices, cafeterias, classrooms, atriums, lobbies and perimeter spaces with daylight contribution. It is designed to sense both daylight and electric light, and is typically ceiling mounted for sidelighting applications. The LMLS-400 can be used for on/off switching, bi-level or tri-level step switching or step dimming, or continuous dimming.

- Compatible with DLM wall switches for manual override, if desired
- LED status indicators
- Mounting options for hard ceilings, dropped ceilings and suspended lighting fixtures
- Complies with California Title 24, Section 119 requirements
- RoHS compliant

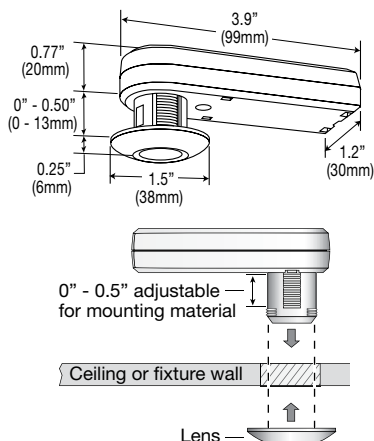


Specifications

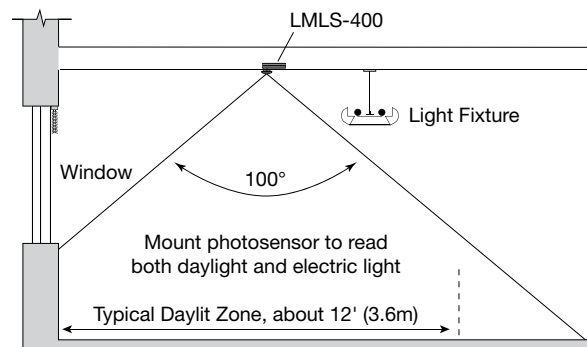
- Input voltage: 24VDC from DLM local network
- Current consumption: 7mA
- DLM local network connection: 1 RJ45 port
- Digital multi-band photodiode with extended range: 1-6,553 fc (10-70,536 lux)
- Spatial response: 100°
- LED status and configuration indicators
- Infrared (IR) transceiver
- Weight: 1.4 oz (40 g)
- Operating conditions: for indoor use only; 32-131°F (0-55°C); less than 90% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Dimensions & Mounting

Product Dimensions

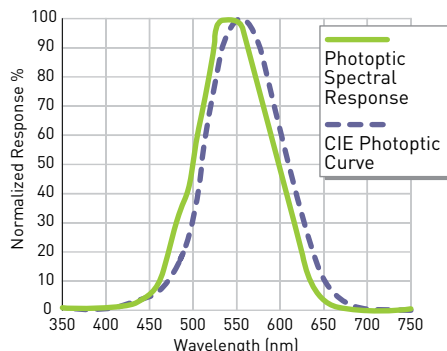


Placement for Sidelight Applications



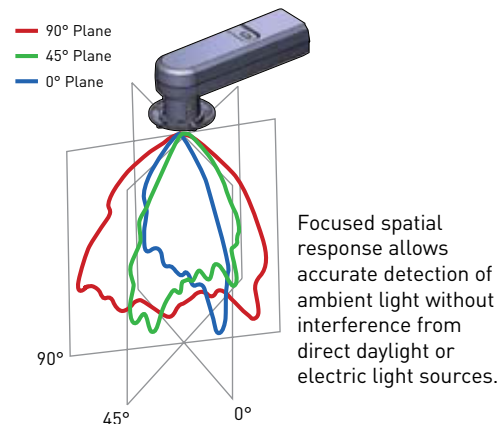
Photodiode Response

Spectral Response



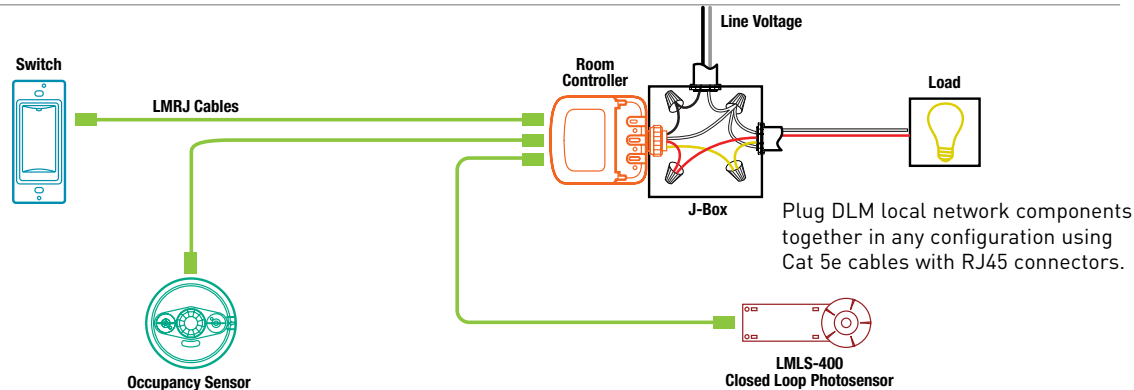
The photodiode detects just visible light, which ensures accurate lighting control.

Spatial Response



Connecting

Sample Connection Diagram for On/Off Switching Application



Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMLS-400	Digital Single Zone On/Off and Dimming Closed Loop Photosensor
<input type="checkbox"/> LMLS-MB1	Photosensor mounting bracket for J-box mounting
<input type="checkbox"/> LMLS-MB2	Photosensor mounting bracket for wall mount applications
<input type="checkbox"/> LMCT-100	Digital Wireless Configuration Tool

LMLS-500 Multi-zone Switching and Dimming Open Loop Digital Photosensor

Daylight responsive on/off, bi-level, tri-level or dimming control for up to three lighting zones

Component of Digital Lighting Management integrated control system

60 degree spatial response for optimal detection of daylight contribution



Automatic setpoint recommendations

Photodiode corrected to match the photopic response of the human eye

Can be calibrated in any daylight condition

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMLS-500 is an open loop, multi-zone photosensor that measures the daylight contribution in order to automatically switch or dim up to three zones of lighting. It is part of a Digital Lighting Management (DLM) system and sends light level signals to control loads connected to DLM on/off or dimming room controllers. The LMLS-500 has a photodiode with an extended range of 1-6,553 footcandles (fc), and photopic correction to mimic the human eye, for precise measurement of visible light.

Operation

The LMLS-500 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. Plug n' Go assigns the photosensor to control the highest numbered lighting load. Loads may be reassigned using an LMCT-100. Following a quick initial setup, the LMLS-500 monitors the daylight contribution through a window or skylight and works with the room controller(s) to maintain design light levels in each lighting zone. WattStopper's exclusive control algorithm uses on/off or dimming setpoints and other control parameters to establish the correct light levels throughout the day regardless of changing daylight contribution.

Features

- Digital Lighting Management components plug together on a free-topology Cat 5e DLM local network
- Test mode override of programmed time delay allows easy verification of selected settings
- Load status verification allows confirmation and testing of controlled load
- Infrared (IR) transceiver for wireless configuration and control

Simplified Setup and Configuration

The LMLS-500 is set up by entering the daylight and the workplane illuminance into an LMCT-100 wireless configuration tool. This handheld device then automates the calibration process, and recommends setpoints for easy completion of the setup process. The LMCT-100 may be used to adjust setpoints and other parameters if desired. Adjustable switching parameters include on and off setpoints and time delays. The off setpoint can be adjusted to a value of 25, 50 (default), 75, or 100 percent above the on setpoint. Adjustable dimming parameters include a setpoint, ramp up and down rates and a cut-off time delay. Electric lights can be turned off (default) or dimmed to a user-selectable minimum level when daylight contribution is abundant.

Applications

The LMLS-500 Photosensor is recommended for open offices, cafeterias, classrooms, warehouses and any other indoor spaces with daylight contribution. It is designed to measure only daylight, not electric light, and can be mounted in a light well under a skylight, or on a ceiling for sidelighting applications. Each of the three control zones can initiate on/off switching, bi-level or tri-level step switching or step dimming, or continuous dimming.

- Compatible with DLM wall switches for manual override, if desired
- LED status indicators
- Mounting options for toplit or sidelit applications
- Complies with California Title 24, Section 119 requirements
- RoHS compliant

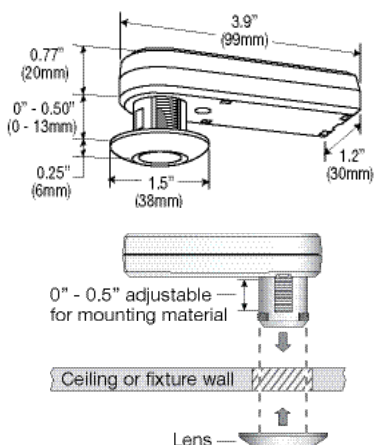


Specifications

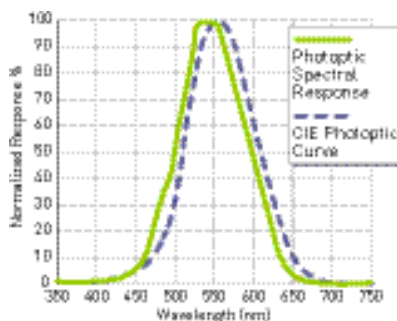
- Input voltage: 24VDC from DLM local network
- Current consumption: 7mA
- DLM local network connection: 1 RJ45 port
- Digital multi-band photodiode with extended range: 1-6,553 fc (10-70,536 lux)
- Spatial response: 60°
- LED status and configuration indicators
- Infrared (IR) transceiver
- Weight: 1.4 oz (40 g)
- Operating conditions: for indoor use only; 32-131°F (0-55°C); less than 90% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Dimensions & Response

Product Dimensions

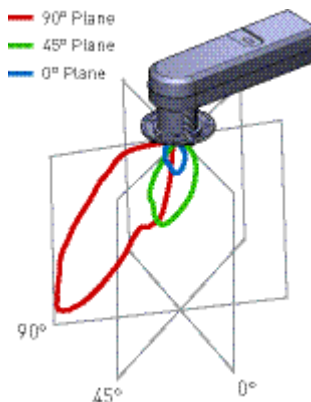


Spectral Response



The photodiode detects just visible light, which ensures accurate lighting control.

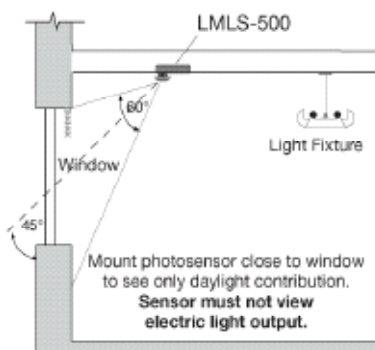
Spatial Response



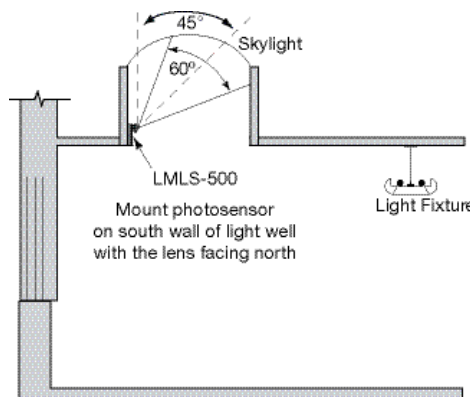
Focused response allows detection of daylight only.

Placement

Sidelight Applications

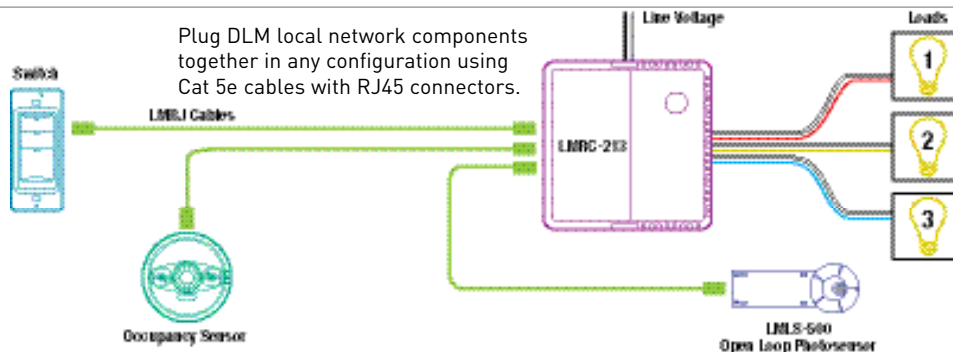


Skylight Applications



Connecting

Sample Connecting Diagram for Three Zone On/Off Switching Application



Plug DLM local network components together in any configuration using Cat 5e cables with RJ45 connectors.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMLS-500	Digital Multi-zone On/Off and Dimming Open Loop Photosensor
<input type="checkbox"/> LMLS-MB1	Photosensor mounting bracket for J-box mounting
<input type="checkbox"/> LMLS-MB2	Photosensor mounting bracket for wall mount applications
<input type="checkbox"/> LMCT-100	Digital Wireless Configuration Tool





Configuration Tools

WattStopper offers the only wireless remote for system configuration and data storage. Installers can use one tool for all their DLM projects.

WattStopper software enables configuration of individual DLM local networks right from a personal computer through connection to a USB key.

Ladder-Free Configuration Options

- Wireless infrared (IR) configuration tool
- PC software and USB interface

Support for Energy Managers

- Simplified customization for aggressive energy savings
- Software allows monitoring of DLM communications within a local network

Time Saving Capabilities

- Copy occupancy sensor settings from one room or installation to another
- Use setup and calibration data to prepare LEED documentation



LMCT-100 Digital Wireless Configuration Tool

Wireless advanced configuration capabilities for Digital Lighting Management systems

2-way IR communication for data upload, download, confirmation and storage

Component of Digital Lighting Management integrated control systems

Easy-to-use navigation pad

Easy-to-read OLED screen

Configures occupancy sensors, switches, room controllers and photosensors



PROJECT

LOCATION/TYPE

Product Overview

Description

The LMCT-100 Wireless Digital Configuration Tool is a handheld tool for advanced remote configuration of any WattStopper Digital Lighting Management (DLM) system. The tool enables system and device modifications via pushbutton, without ladders or tools, as well as easy duplication of settings between DLM local networks.

Operation

Powered by three AAA batteries, the LMCT-100 features an easy-to-read organic LED (OLED) screen and bi-directional communication with IR-enabled DLM devices. Its intuitive navigation pad provides a familiar interface for users who can see the current system parameters of a DLM local network and make changes by navigating through simple menus. Adjustable occupancy sensor parameters include sensitivity, time delay and trigger modes. Load parameter settings (also referred to as Push n' Learn) include blink warning, Auto- or Manual-on mode, and re-assigning specific loads to different sensors. Button configuration options include type (load or scene), mode, fade times and scene lock. Dimming parameters include low/high trim, preset level and lamp burn in time. Daylighting adjustments include operating mode, setpoints, fade times and time delays. The LMCT is also used to adjust the light level of dimmed loads.

Features

- Remotely reconfigures and reports DLM occupancy sensor parameters: PIR and ultrasonic sensitivity; time delay; walk through mode; trigger mode (for dual technology sensors)
- Remotely reconfigures and reports DLM dimming parameters: load type (dim/switch); low/high trim; preset on level; lamp burn-in
- Manually adjusts light level of dimmed loads to facilitate scene setting
- Remotely configures, reconfigures and reports DLM photosensor settings: light levels; operating mode (on/off, bi-level, tri-level, dimming); setpoints; time delays; fade times; test mode
- RoHS compliant

Configuration and Personalization

The LMCT-100 simplifies the replication of occupancy sensor settings from one DLM local network to another and facilitates scene setting. It can store up to nine sensor profiles and assign them to sensors in any DLM local network. For projects where identical settings may be desired across a large number of spaces, this capability provides a streamlined method of configuration. Settings can be copied throughout a building or in different buildings. The LMCT also allows manual adjustment of individual load levels. This powerful feature allows different lighting scenes to be set and stored without the need for dimming switches in each space. Scenes can be recalled by scene switches or multi-button switches configured for scene control.

Applications

Designers and installers can use the LMCT-100 to ensure conformity with design intent. It simplifies changes to occupancy sensor settings, load configurations and dimming parameters by making the adjustment process ladder-free. An LMCT-100 is required for calibrating the LMLS-500 photosensor. The self-calibrating LMLS-400 does not require the use of an LMCT-100 unless operating parameters need to be adjusted.

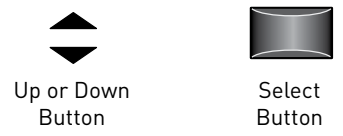
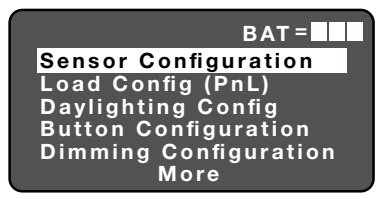
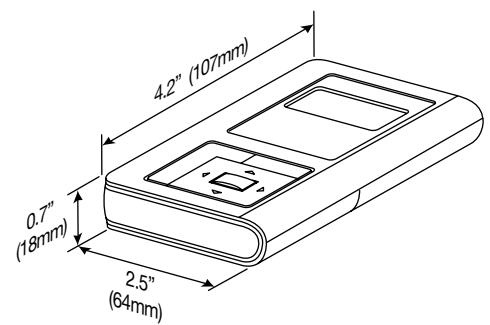
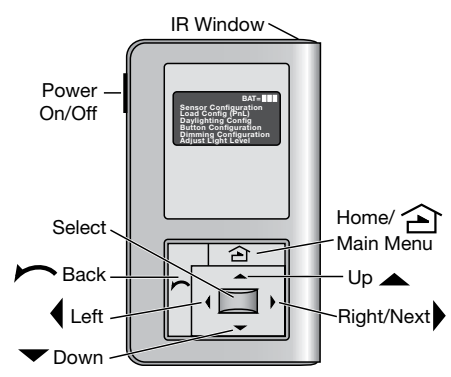


Specifications

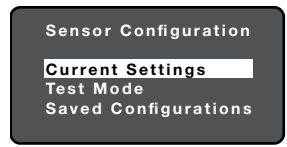
- Three AAA 1.5 volt batteries (included)
- OLED display 1.4"W x .75"H (36mm x 19mm)
- Infrared (IR) transceiver (36kHz frequency)
- IR range: up to 32' (10m)
- Includes carrying case with belt clip
- Operating temperature: 32-104°F (0-40°C)
- FCC part 15 compliant
- Five year warranty

Configuration Menus

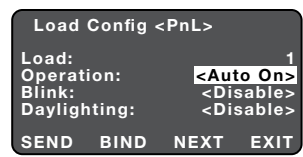
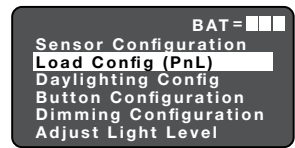
LMCT-100 Handheld Remote with Menu Screens



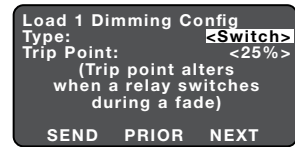
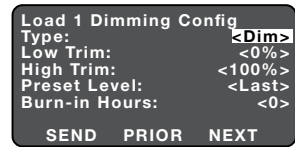
The Home (or Main) menu displays after the power-up process completes. It contains information on the battery status and six menu choices.



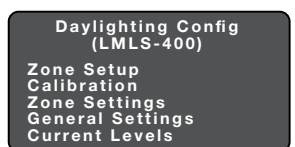
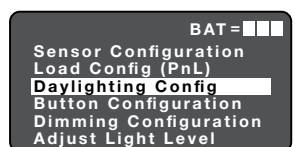
The Sensor Configuration function enables users to change sensor parameters, including time delay and sensitivity, save configurations, enter test mode and apply saved configurations.



The Load Configuration function (also referred to as Push n' Learn) enables users to identify load numbers, view and change load parameters and load bindings to sensors.



The Dimming Configuration function enables users to customize parameters for performance and savings. Setting a high level trim below 100% saves energy and increases lamp life.



The Daylighting Configuration function enables users to initiate automatic calibration of the LMLS-400, calibrate the LMLS-500, and adjust setpoints and other parameters for both photosensors and enter test mode.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMCT-100	Digital Wireless Configuration Tool
<input type="checkbox"/> LMCT-100-U	Digital Wireless Configuration Tool, ARRA compliant

Qualifies for ARRA-funded public works projects.

DLM Computer Interface Tools and Software

PC interface tool and software for configuring DLM systems

Components of Digital Lighting Management integrated control systems



Active real-time monitoring of DLM system

Setup wizards and realistic system graphics

Provides valuable calibration and setup documentation for LEED projects

Product Overview

Description

The LMCI-100 Digital Computer to DLM interface connects to a PC's USB port running the LMCS-100 Digital Lighting Management computer software and to a Digital Lighting Management (DLM) system through the RJ45 connector. The computer tools allow users to read, store and modify DLM system configurations.

Operation

The user connects the LMCI-100 to a DLM local network by plugging an LMRJ cable connected to that network into the device's RJ45 port. To connect to the LMCS-100 software, the user plugs the LMCI-100's USB connector into the USB port of a PC, then starts up the LMCS-100 software. **LMRJ cables should never be plugged into an Ethernet port on a computer or wall.**

PROJECT
LOCATION/TYPE

PC-Based Configuration

LMCS-100 software features intuitive graphics to identify current DLM system settings, allowing users to easily store or modify settings. With the software, users can also reconfigure DLM devices by changing button or sensor parameters. It also includes a DLM local network protocol monitor that enables users to see any messages being transmitted on a DLM system, a capability useful for troubleshooting.

Applications

Designers can take advantage of these computer interface tools to simplify project design, startup and documentation. The LMCS software can be used to set up many advanced features of DLM devices that are beyond the scope of Plug n' Go, Push n' Learn and the LMCT-100 wireless configuration tool. Furthermore, the LMCI-100 and LMCS-100 facilitate preparation of commissioning documentation, which is especially helpful for LEED projects.

Features

LMCI-100:

- RJ45 and USB connectors to interface between DLM network and PC
- For use with LMCS-100 software
- RoHS compliant

LMCS-100:

- Windows based
- Easy-to-use graphical user interface
- For use with LMCI-100 Digital Computer to DLM Interface



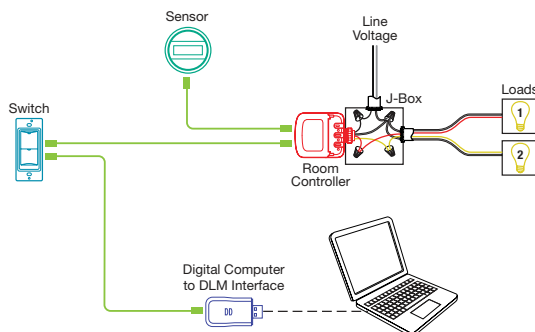
Specifications

- LMCI-100:**
- NOT FOR USE WITH ETHERNET CONNECTIONS
 - PC connection: USB connector with removable cover
 - DLM local network connection: 1 RJ45 port
 - LED for signal sent indication
 - Operating temperature: 32 - 95°F (0 - 35°C)
 - FCC part 15 compliant
 - Five year warranty

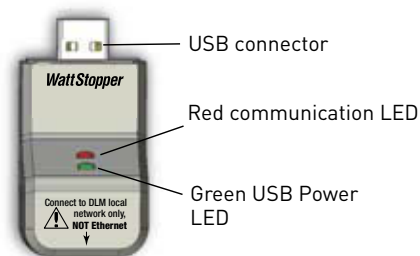
- LMCS-100:**
- Automatically searches for updates
 - Requires PC with USB port running Windows 7, Windows XP, or Vista

Connections to DLM System

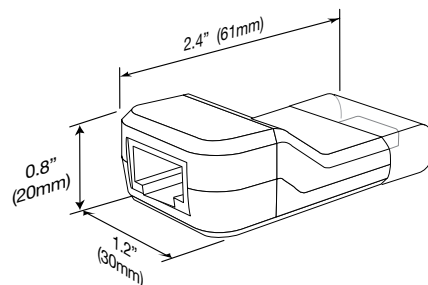
Connecting to a DLM Local Network



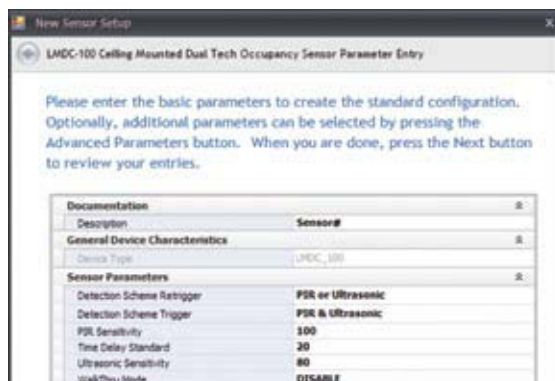
LMCI-100 Indicators



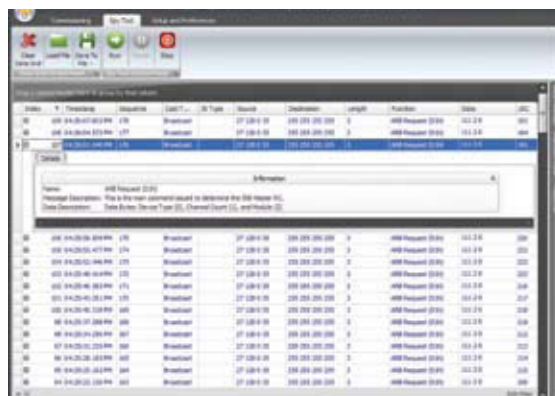
LMCI-100 Dimensions



LMCS Software



An easy-to-use wizard guides users through system setup.



A protocol monitor maintains real-time review of DLM local network activities.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMCI-100	Digital Computer to DLM Interface
<input type="checkbox"/> LMCS-100	DLM Computer Software (automatically ships with LMCI-100)





Network Components

Whether or not integration with a building automation system is required, DLM offers connectivity without complexity for remote system management and control. Just one device in each DLM local network has to be connected to a BACnet-compatible segment network for centralized control.

The DLM segment network builds on the Plug n' Go and Push n' Learn configuration already established during setup of each local network. An LMBC-300 network bridge, or a network bridge provided in an LMRC-3xx Series room controller or LILM panel, is all that is needed to network DLM.

Facility managers can schedule, monitor and adjust components on multiple connected DLM local networks from any PC using a browser-based user interface served up by a segment manager. System integrators can use the segment network to coordinate control of DLM devices using the familiar BACnet protocol.

Automatic Segment Network Configuration

- Builds on Plug n' Go and Push n' Learn configuration
- Exposes DLM parameters as BACnet objects

Remote Control and Management Options

- Time scheduling, including automatic activation of after-hours parameters
- Adjust parameters on multiple DLM local networks
- Power monitoring of lighting and plug loads
- Intelligent building operations such as demand response

DLM Components for Connectivity

- Segment manager
- Network bridge
- Room controllers with network bridge
- Lighting control panels



LMBC-300 Digital Network Bridge

Provides connectivity between a DLM local network and a BACnet-compatible DLM segment network

Component of Digital Lighting Management integrated control systems

Supports third party integration with BAS through BACnet MS/TP



Plug n' Go automatically connects module with all devices on DLM local network

Self-configures on DLM segment network

Class 2 device powered from DLM local network

Product Overview

Description

The LMBC-300 Digital Network Bridge provides a segment network connection for a group of Digital Lighting Management (DLM) local network devices. This enables individual DLM local networks to be aggregated into a larger system, which, in turn, can be remotely managed from a DLM Segment Manager or a building automation system (BAS).

Operation

An LMBC-300 operates on Class 2 power supplied to a DLM local network by one or more DLM room controllers. It is connected to the free-topology local network at any convenient location using a standard LMRJ cable, and has terminals for connection to the segment network using LM-MSTP wire. The LMBC-300 monitors the DLM local network and automatically exposes all room devices, settings and calibrations through the segment network. Incorporating a Network Bridge in each DLM local network also allows the individual local networks to respond in concert to schedules created and broadcast from a DLM Segment Manager.

Features

- Communicates all DLM local network data and device settings with a DLM Segment Manager via the segment network dataline
- Adds segment network functionality to DLM local networks with LMRC-100 Series, LMRC-2xx Series or LMPL-101 Room Controllers
- Easy integration with BAS through use of standard BACnet objects to represent DLM local network device settings and states
- Class 2 operation and plenum rated housing facilitate simple installation
- DIN rail mounting clamp provided with the unit to facilitate box or panel mounting
- UL 2043 plenum rated
- Qualifies for ARRA-funded public works projects

PROJECT

LOCATION/TYPE

Local Network to Segment Network Link

The LMBC-300 Network Bridge provides a two-way communication link between local network devices and a DLM Segment Manager or third party building automation system. The LMBC-300 makes all local device settings visible and adjustable through the Segment Manager user interface. This includes settings previously made locally either by Plug n' Go, Push n' Learn, an LMCT-100 configuration tool or the LMCS-100 DLM software. Additionally, many DLM device settings are made available to any BAS system that uses the BACnet protocol.

Applications

The LMBC-300 is ideal for retrofit applications where DLM local networks with LMRC-100 Series, LMRC-2xx Series or LMPL-101 room controllers need to be controlled or monitored by a centralized system. It may also be used with LMRC-100 Series room controllers for new projects that do not require current monitoring or dimming capability.

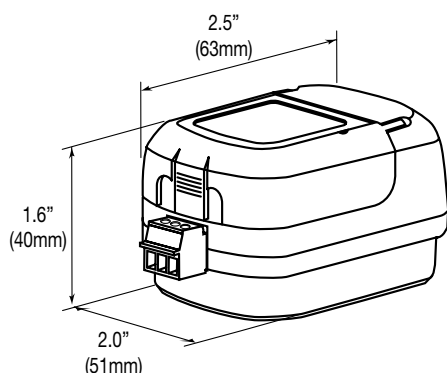


Specifications

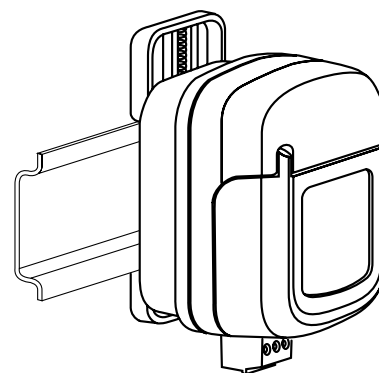
- Operating voltage: 24VDC from DLM local network
- Current consumption: 30mA
- DLM local network connection: 2 RJ45 ports
- Removable terminal block for twisted pair DLM segment network connection
- Segment network parameters:
 - WattStopper LM-MSTP wire, or equivalent rated for BACnet MS/TP (RS485)
 - Linear topology; 4000' maximum per segment
 - Up to 127 local networks or panels per segment
- DIN rail mounting plate provided with the unit for cabinet or panel mounting
- Status LEDs indicate normal operation
- Operating conditions: for indoor use only; 32-158°F (0-70°C); 0-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Dimensions & Mounting

Product Dimensions

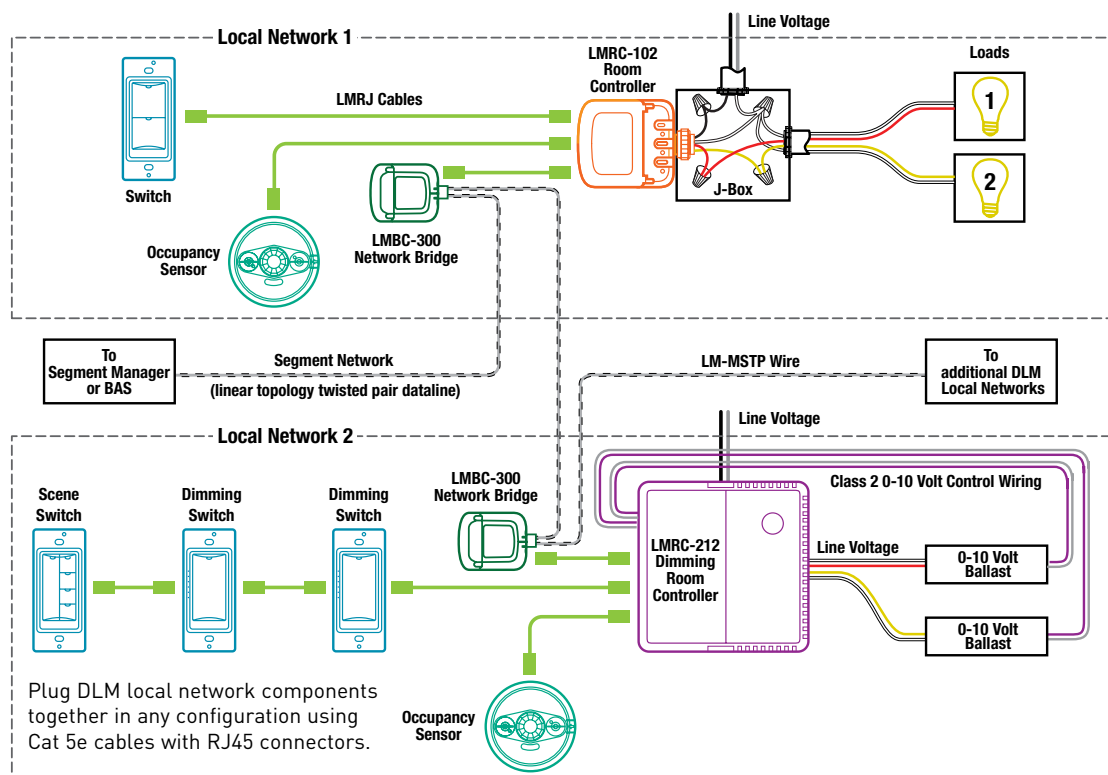


DIN Rail Mounting



Connecting

Typical Connections to DLM Local Networks and Segment Network Dateline



Ordering Information

Catalog. No.	Description
<input type="checkbox"/> LMBC-300	Network Bridge
<input type="checkbox"/> LMBC-300-U	Network Bridge, ARRA compliant

LMSM Series Digital Network Segment Manager

Provides global control of up to three DLM segment networks and access to advanced features



Allows scheduling, power monitoring and remote adjustment of devices on DLM local networks

Friendly browser-based user interface

Supports third party integration with BAS through BACnet IP

Connects to DLM segment network and PC, LAN or Internet via Ethernet



PROJECT
LOCATION/TYPE

Product Overview

Description

The Digital Lighting Management (DLM) Network Segment Manager is a network controller designed for use with DLM local networks and/or LILM lighting control panels. The Segment Manager provides global control, monitoring, adjustment, and scheduling functionality for networked DLM systems across multiple rooms and buildings.

Operation

The Segment Manager communicates with the DLM local networks and panels over a twisted pair BACnet-compatible digital segment network. The LMSM-201 supports one segment network while the LMSM-603 supports three segment networks. Each segment network can include up to 127 DLM local networks, connected via LMBC-300 Network Bridge or LMRC-3xx Series Room Controller with Network Bridge, or LILM panels. The user interface is hosted by the Segment Manager and is served up over a TCP/IP connection. The interface is available on any PC using a compatible web browser. A BACnet BAS may be connected to the LMSM via Ethernet.

Scheduling, Monitoring and Adjustment

Users can easily monitor and adjust DLM device parameters from the convenience of a PC connected to a Segment Manager. This includes occupancy and daylighting sensor settings, load parameters, digital switch button configuration and dimming parameters. Normal and after hours parameters can be set or adjusted and users can create seven-day-repeating or calendar-event-based schedules. Additionally, power consumption may be monitored in real time for areas equipped with LMRC-2xx and/or -3xx Room Controllers and/or LMPL-201 Plug Load Room Controllers. The Segment Manager can also be used to create reports for maintenance and building administration.

Applications

The Segment Manager is an ideal solution when remote access to DLM local networks is desired. It is suitable for schools, office buildings, or other applications that will benefit from the ability to adjust settings and calibrations without the need to physically visit each room. It is also recommended for projects that require automatic reconfiguration of device settings based on a schedule.

Features

- Communicates all DLM local network data and device settings via the segment network dataline
- Web browser user interface can be accessed via direct TCP/IP connection, local LAN or via the Internet
- Allows remote changes to occupancy sensor and daylighting sensor settings in real time
- Allows current monitoring of LMRC-2xx and -3xx Room Controllers and LMPL-201 Plug Load Room Controllers in real time
- Adjusts parameters for normal and after hours based on the schedule
- Powerful scheduler allows flexible start and end dates for each schedule
- Schedules may be repeating seven day, calendar event based or astronomic control
- Easy integration with BAS through use of standard BACnet objects to represent DLM local network device settings and states

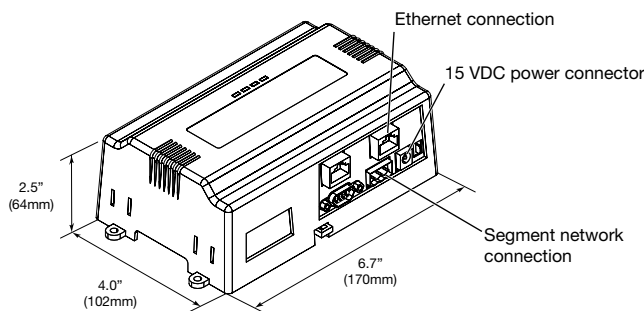


Specifications

- Operating voltage: 15VDC from 120VAC plug-in power supply (included) or auxiliary enclosure
- Plastic housing, mounting via integral DIN rail slot or screw down tabs on housing
- Status LEDs for power and normal operation
- RJ45 Ethernet port for TCP/IP (LAN) connection, green link status LED
- Embedded Power PC platform @ 524Mhz
- QNX real time operating system
- RS485 network, BACnet MS/TP twisted pair, baud rate 9600, 19200, 38400 or 76800 selectable
 - LMSM-201: one segment network
 - LMSM-603: three segment networks
- Segment network parameters:
 - WattStopper LM-MSTP wire, or equivalent rated for BACnet MS/TP (RS485)
 - Linear topology; 4000' maximum per segment
 - Up to 127 local networks or panels per segment
- Operating conditions: for indoor use only; 32-122°F (0-50°C); 5-90% RH, non-condensing
- UL and cUL listed (E207782)
- BTL listed
- FCC part 15 compliant
- One year warranty

Dimensions & Controls

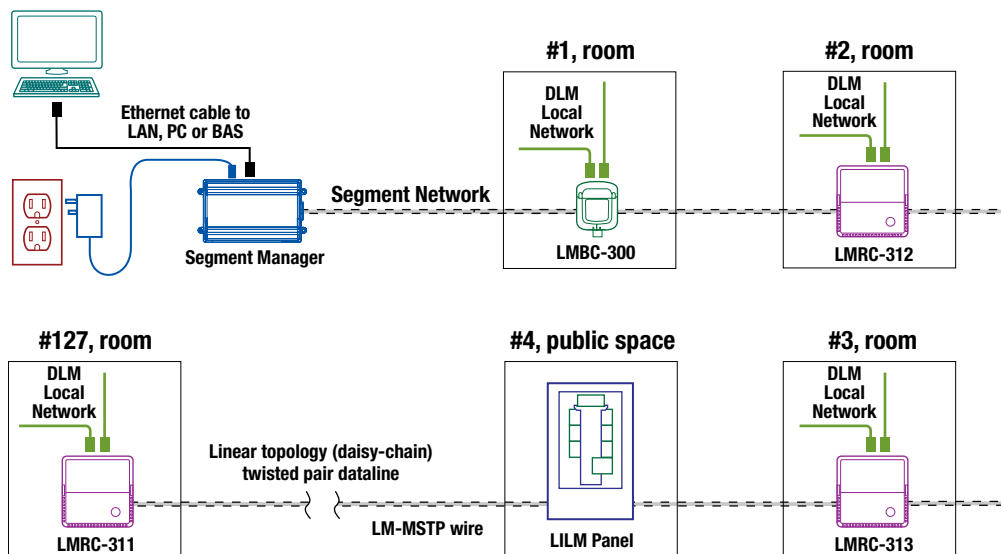
Product Dimensions



User Interface



Connecting Sample Connection Diagram



The segment manager may be located at any point along the segment network so long as the linear topology (daisy chain wiring) is maintained.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMSM-201	Segment Manager, one MS/TP segment network
<input type="checkbox"/> LMSM-603	Segment Manager, three MS/TP segment networks
<input type="checkbox"/> LMSM-ENC1	Enclosure for Segment Manager, 14"L x 8.5"W x 5"D, includes 120VAC duplex outlet





Lighting Control Panels

Based on WattStopper's Lighting Integrator platform, LILM panels are the perfect control solution for applications best suited to scheduling. This includes lobbies, corridors, exterior lighting and signage.

Lighting control panels feature heavy duty mechanically held latching relays and are available in three sizes to fit any project.

Easy Integration with DLM Controls and BAS

- Compatible with DLM sensors and switches
- Onboard DLM user interface for configuration
- Connects to BACnet-compatible segment network

Robust HDR Low Voltage Relay

- Individually replaceable
- Manual override switch
- 14,000 Amp SCCR rating
- Meets NEMA 410-2004 standard for withstanding electronic ballast loads

Multiple Control Options

- Schedule from segment manager or BAS
- Compatible with analog photocell
- Emergency lighting control options



LILM Series Lighting Integrator Panel Interiors (LILM8, LILM24, LILM48)

Compatible with Digital Lighting Management switches and occupancy sensors

HDR relays include switch for manual override even when panel is powered off

Integral user interface for setup and diagnostics



BACnet
Registered trademark of ASHRAE

Scheduling via DLM Segment Manager or BAS interface

Stand alone or networked operation

Eight independent control channels

PROJECT

LOCATION/TYPE

Product Overview

Description

The LILM series panel provides simple network-capable lighting control enabling the automation of lighting functions throughout an entire facility. The HDR relays in the panel can respond directly to inputs from Digital Lighting Management (DLM) switches and occupancy sensors.

Operation

LILM panels each provide eight automation channels that can be assigned any combination of relays. Each channel can respond to unique schedules sent from the optional Segment Manager or directly from a BACnet-enabled building automation system. Individual relays, or groups of relays, can be controlled by DLM digital switches and occupancy sensors. Controls are assigned to relays using Push n' Learn or through simple menus on the integral user interface.

Networking

When multiple DLM local networks and one or more LILM panels are connected to a high speed digital DLM segment network for remote management, the Segment Manager automatically recognizes them and allows configuration with minimal additional setup.

Applications

LILM panels are ideal for applications that can benefit from the unique features and energy savings of the DLM system. They provide effective control of building exterior lighting as well as larger interior areas that are not suited for DLM distributed controls. Recommended applications include office building lobbies, corridors, loading docks, etc., and school gymnasiums, commons areas and hallways.

Features

- Standard single pole heavy duty relays
- Available in interiors sized for 8, 24, or 48 relays maximum
- Compatible with DLM occupancy sensors
- Two free-topology DLM Cat 5e local networks for switches and sensors
- Programmable DLM switches for control of relays or groups
- Provision for analog photocell for exterior lighting control
- Qualifies for use in ARRA-funded projects



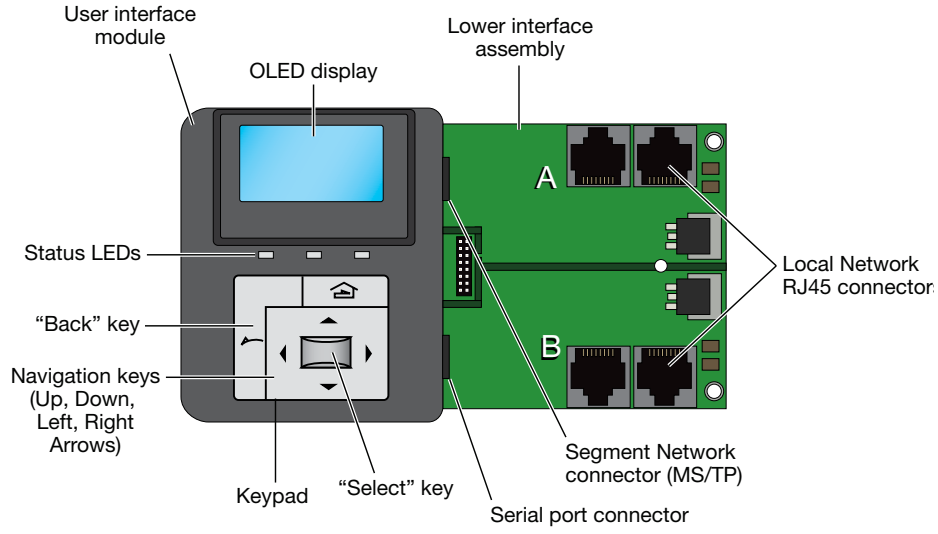
LILM Specifications

- Integral user interface for setup, status and diagnostic capabilities; 5 line by 32 character OLED display with backlight; 7 button keypad
- Class 2 connection to 2 independent DLM local network segments: 24VDC output, up to 250mA across 2 RJ45 ports per segment
- Free-topology DLM local network segments may include digital switches and sensors; Category 5e cable, up to 1,000' total per local network
- Digital network connection for inter panel connectivity and connection to DLM segment network
- Segment network parameters:
 - WattStopper LM-MSTP wire, or equivalent rated for BACnet MS/TP (RS485)
 - Linear topology; 4000' maximum per segment
 - Up to 127 nodes (LILM panel or DLM local network with LMBC-300 Network Bridge or LMRC-3xx Series Room Controller) per segment
- Automation channels: 8 per panel, provide global schedule and control functions; schedule requires LSM segment manager or third party BAS
- UL and cUL listed
- One year warranty

See General LI (Lighting Integrator) Specifications section for interior mechanical and electrical specifications.

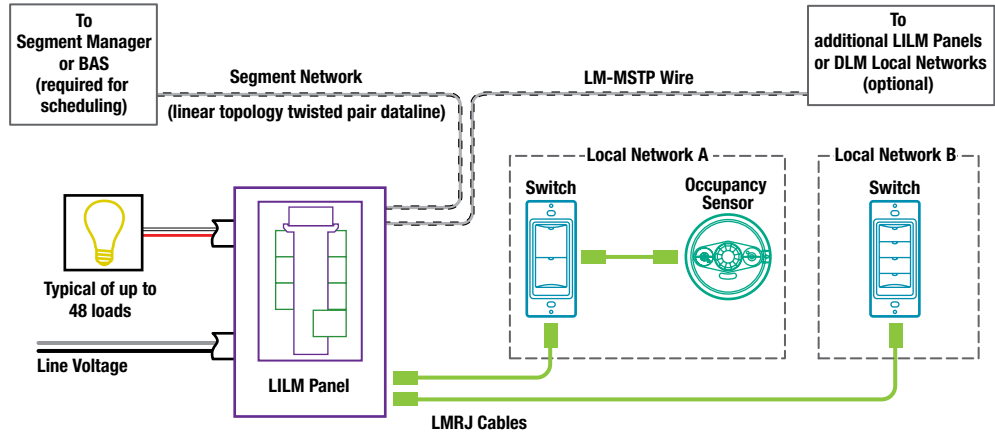
User Interface

LILM User Interface and DLM Local Network Connection Detail



Connecting

Sample Connection Diagram with DLM Switches and Sensor





General LI Information

Description

WattStopper's Lighting Integrator (LI) is a low voltage, relay based lighting control panel. Panel interiors are configured as 8, 24 or 48 relay capacity with the quantity of relays installed as called for on the order. The interior mounts into the appropriate enclosure. The LI panel enclosure and cover are shipped separately from the panel interior to facilitate project rough-in requirements.

Operation

LI relays are driven to a latched on or off position via a 24 volt DC pulse generated by the relay driver cards. A momentary pushbutton is provided for each relay to manually toggle the relay's state with each button press. An isolated contact in the relays provides positive status feedback to the relay driver circuits, which are annunciated by an LED associated with each relay. Removable color-coded terminal blocks allow connection of direct wired low voltage devices for remote control of relays.

- Interior provides complete isolation between line and low voltage when used with a compatible LENC series enclosure
- Individual plug-in, latching style single pole relays with isolated pilot/status contacts
- Integral push button override, status LED, and pilot light output per relay
- Two slots available for optional automation, networking and integration control cards

Operation (cont'd.)

Inputs can be wired to accommodate maintained or momentary three wire or two wire inputs. The switch input circuits are auto sensing and will automatically configure appropriately when WattStopper occupancy sensors are connected.

Smartwiring Direct Wired Switches

A unique WattStopper switching function, this simple button press interface allows any quantity of relays to be assigned quickly to each group switching channel for common on/off control or for pattern (scene) control. Each of the eight channels is provided with an override pushbutton, LED status indicator and terminals for connection of wall switches and occupancy sensors. An eight or 24 size panel can be ordered with one group switch card (8 channels), 48 size panels can have two group switch cards for a total of 16 channels (8 controllable by scheduling, eight by switching only).

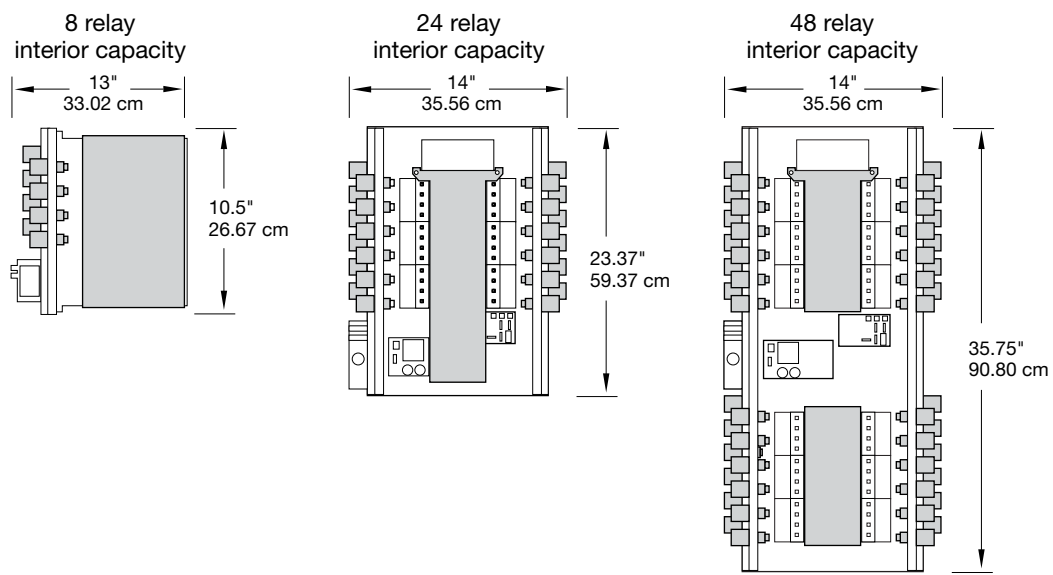
- Supports WattStopper low voltage occupancy sensors without need for separate sensor power packs
- Smartwiring feature allows grouping of relays for common control
- DIN rail mounting provided within the Class 2 section for mounting of optional accessories
- Control multi-pole circuits with optional contactors and compatible LENC enclosure
- Optional configuration available for use on emergency lighting circuits



General LI Specifications

- Interior capacity:
 - 8 SPST relays
 - 24 SPST relays
 - 48 SPST relays
- Input voltage options, 120/277V 60 Hz, 120/347V 60 Hz, 240V 50 Hz
- Low voltage switch inputs, removable terminal blocks with screw-less connection, configurable for three wire momentary, two wire momentary (toggle), and two wire maintained dry contact switches or WattStopper occupancy sensors.
- Accessory power available
 - LI8: 1000 MA @24VAC or 800 MA @ 24VDC
 - LI24 and LI48: 1400 MA @ 24VAC or 800 MA @ 24VDC
- Group switching, eight channels per installed group switching card. One card max per LI8 and LI24. Two cards max LI48.
- SCCR (short circuit current rating) 14,000 amps with HDR Heavy Duty Relay
- HDR relays:
 - Coil voltage, 24 VDC, pulse ON and pulse OFF
 - Mechanically latched contacts
 - 1/2" K.O. mounting, LV plug-connection, individually replaceable
 - Contact ratings:
 - 30 amps ballast @ 277V
 - 20 amps ballast @ 347V
 - 20 amps tungsten @ 120V
 - 30 amps resistive @ 347V
 - 1.5 HP @ 120V
 - Endurance: 300,000 mechanical cycles
- Pilot light output, 24 V rectified or 24VAC, other voltages configurable with external power supply
- Operating conditions: for indoor use only; 32-131°F (0-55°C); 5-95% RH, non-condensing
- One year warranty

Panel Interior Dimensions



Ordering Information

Interior Capacity	Installed Options				
	Voltage Options	Relay Count	Group Switch Card	Emergency Relays	Coil Voltage
<input type="checkbox"/> LILM8	<input type="checkbox"/> 115/277	___ HDR relays	___ GS cards (max	___ EM relay count	<input type="checkbox"/> 115
<input type="checkbox"/> LILM24	<input type="checkbox"/> 115/347	installed (max	1 in 8, 24, 2 in 48)	(Not available in 8-relay size	<input type="checkbox"/> 240
<input type="checkbox"/> LILM48	<input type="checkbox"/> 240	of interior		panels; max. of 24 in 24-relay	<input type="checkbox"/> 277
		capacity)		or 48-relay size interior)	<input type="checkbox"/> 347

Order enclosures for LILM panel interiors separately.

Lighting Integrator Panel Enclosures

16-gauge all steel tubs with galvineal finish

Screw on, powder coated cover permits temporary hanging via key hole screw slots

Surface or flush mounting with back mounting holes, screw cover

Lockable door access to Class 2 panel section, meets NFPA 70

Studs provided for quick installation of panel interior section

UL and CUL listed; one year warranty



PROJECT
LOCATION/TYPE

Product Overview

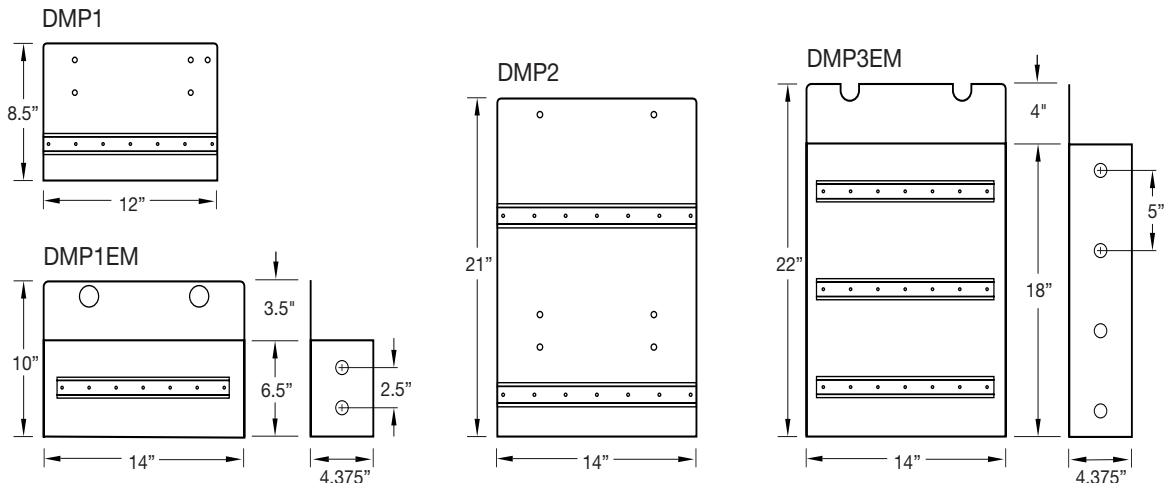
Description

Lighting Integrator panel enclosures are designed specifically to work with all configurations of LI panel interiors containing 8 to 48 relays. The enclosures are provided with integral mounting studs that are configured to accept the panel interior making the installation quick and easy. Covers are secured to the tubs with screws and have keyhole style mounting. This allows the cover to be temporarily hung on the tub during the construction phase of the project. All covers have hinged doors that expose only the low voltage (Class 2) section of the panel and are equipped with key locks and two keys each. All Lighting Integrator enclosures are NEMA 1 rated. Consult factory for other NEMA rated applications.

Configurations

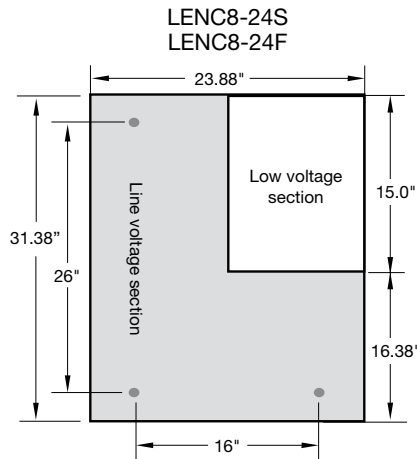
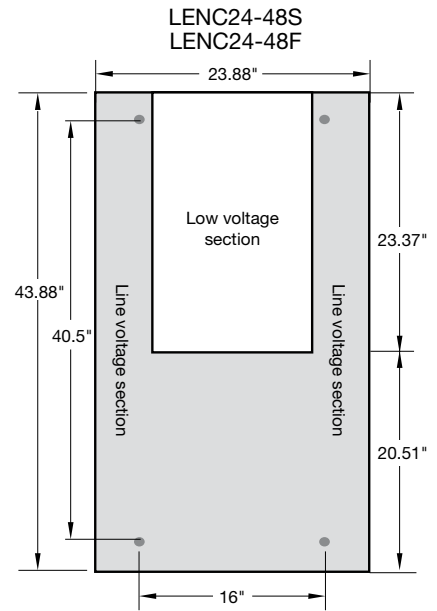
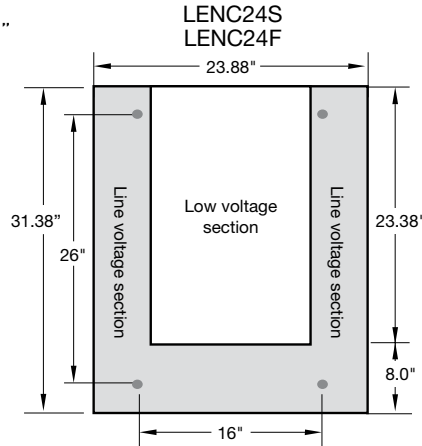
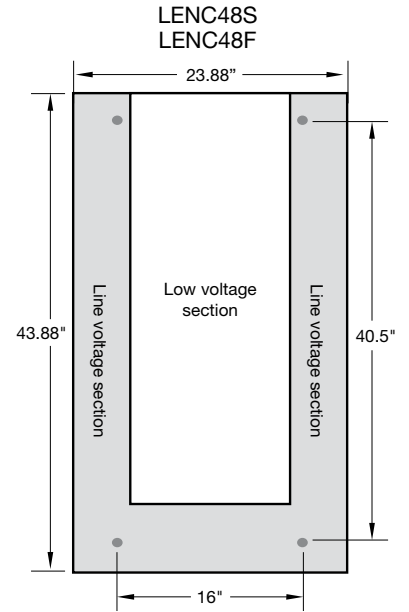
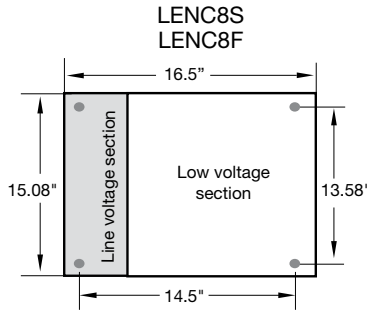
Enclosures rated for 24 or 48 relay capacity have space provided at the bottom for optional mounting plates (DMP) to accept DIN rail mounted accessories such as multi-pole contactors and ELCU-100 Emergency Lighting Control Units. Standard LENC24 and LENC48 enclosures will accommodate up to six four pole contactors (requires DMP mounting plate) or four ELCU-100 units (requires DMP-1EM mounting plate). LENC8-24 and LENC24-48 enclosures have additional space provided and will accommodate up to twelve four pole contactors (requires DMP-2 mounting plate) or 12 ELCU-100 units (requires DMP-3EM mounting plate).

DIN Rail Mounting Options



Tub Dimensions

Note:
Tub depth 4.50"
Cover thickness .075"



Ordering Information

Catalog No.	Description	Overall Dimensions Including Cover (HxWxD)	Overall Weight
<input type="checkbox"/> LENC8S	8 relay capacity, surface mount	15.75" x 16.62" x 4.575"	18 lbs
<input type="checkbox"/> LENC8F	8 relay capacity, flush mount	17.10" x 18.48" x 4.575"	20 lbs
<input type="checkbox"/> LENC8-24S	8 relay capacity with 24 size tub, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC8-24F	8 relay capacity with 24 size tub, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24S	24 relay capacity, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC24F	24 relay capacity, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24-48S	24 relay capacity with 48 size tub, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC24-48F	24 relay capacity with 48 size tub, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> LENC48S	48 relay capacity, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC48F	48 relay capacity, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> DMP	mounting plate, one DIN rail for up to 6 contactors	8" x 12" x 4.625"	1.86 lbs
<input type="checkbox"/> DMP-2	mounting plate, two DIN rail for up to 12 contactors	21" x 14" x 4.625"	5.30 lbs.
<input type="checkbox"/> DMP-1EM	mounting plate, one DIN rail with barrier for up to 4 ELCU-100s	10" x 14" x 4.37"	3.64 lbs.
<input type="checkbox"/> DMP-3EM	mounting plate, three DIN rail with barrier for up to 12 ELCU-100s	22" x 14" x 4.37"	7.60 lbs.

Qualifies for use in ARRA-funded projects.







Interfaces and Accessories

Interfaces provide connectivity to analog photocells, building automation systems and other third party systems for additional control options.

WattStopper cables, available in multiple lengths, provide guaranteed terminations and ensure good DLM local network communications. Unterminated segment network wire meets BACnet MS/TP and RS485 specifications. An infrared (IR) receiver expands the DLM local network.

Choice of Interfaces

- Isolated relay output interface
- Input/output interface for multiple inputs
- Photocell module for analog input

Accessories Enhance DLM Local Networks

- Pre-terminated cables for convenience and reliability
- IR receiver extends the remote control range of a local network

Integration Options for Greater Energy Savings

- HVAC
- Exhaust fans
- Demand response



LMRL-100 Isolated Relay Interface

Output interface for integration of third party systems

Component of Digital Lighting Management integrated control systems

Hinged dust cover over two RJ45 ports



Single-pole double throw isolated relay

Fits into standard single gang wallbox; optional DIN rail mounting

Status LED for isolated relay

PROJECT

LOCATION/TYPE

Product Overview

Description

The LMRL-100 Isolated Relay Interface is an optional component for a Digital Lighting Management (DLM) system. It enables seamless integration of third party devices such as HVAC systems or exhaust fans.

Operation

The LMRL-100 device contains a single-pole, double throw isolated relay with normally open (N/O), normally closed (N/C) and common outputs. While the LMRL-100 resides on a DLM local network, it only receives signals from other devices on the network and does not transmit data via the DLM protocol. Furthermore, the device is not assignable to a specific load or room controller. The LMRL-100 activates in response to a signal from any DLM occupancy sensor on the network.

Convenient, Flexible Form Factor

Featuring a small form factor, the Isolated Relay Interface fits within a single-gang wallbox as well as standard junction boxes. The sleek size enables the device to be conveniently located near VAV boxes or other building system devices for maximum installation flexibility. The LMRL-100 can also be DIN rail mounted if desired.

Applications

The LMRL-100 is ideal for integrating third party controls with DLM lighting controls in a variety of applications. Suitable applications include coordinated control of lighting and HVAC based on occupancy detection in lunch rooms, break rooms or classrooms.

Features

- Integrates WattStopper Digital Lighting Management with any analog low voltage device
- Single LED for relay status
- Over-current protection
- Two RJ45 ports with hinged dust cover
- UL 2043 plenum rated
- RoHS compliant

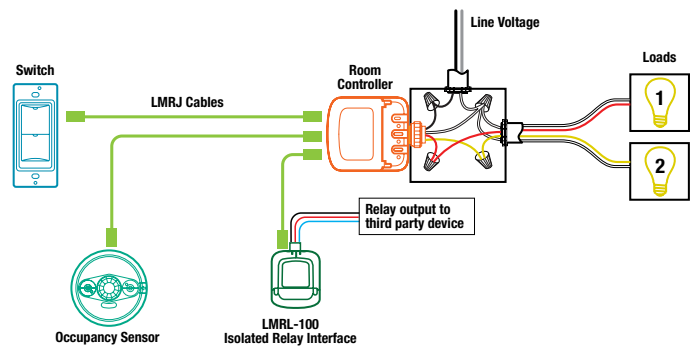


Specifications

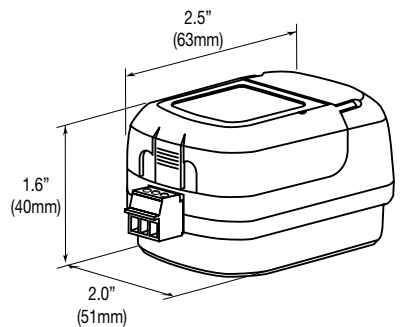
- Operating voltage: 24VDC from DLM network
- Isolated relay ratings:
 - 24VDC/VAC, 1A, SPDT
 - Normally open (N/O), normally closed (N/C) and common outputs
- Current consumption: 7mA
- DLM local network connection: 2 RJ45 ports
- Operating conditions: for indoor use only; 32-104°F (0-40°C)
- Fits inside 4" x 4" j-box, 1-gang back box or 3" octagonal box; optional DIN rail mounting
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Wiring and Mounting

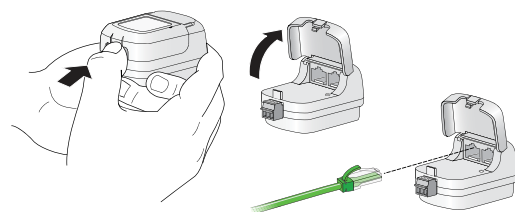
Connections to a DLM Network



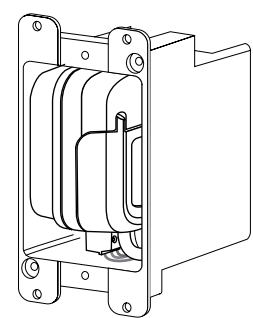
Dimensions



Mounting Options

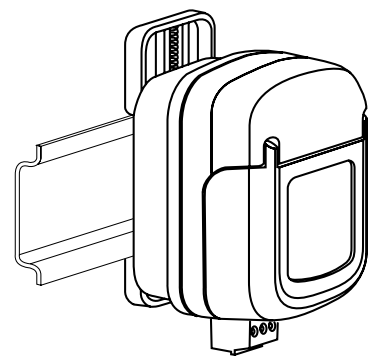
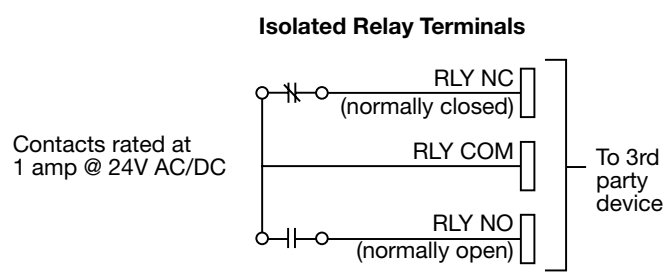


Installing LMRJ cable in Isolated Relay Interface.



Mounting inside single-gang wall box.

Isolated Relay Wiring



Mounting on DIN rail.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMRL-100	Isolated Relay Interface

LMIO-101 Digital Input/Output Interface

Input/output interface for integration of third party devices

Component of Digital Lighting Management integrated control systems

Hinged dust cover protecting two RJ45 ports



Isolated relay output and inputs for up to three control devices

Fits into standard single gang wallbox; optional DIN rail mounting

Status LED for each input and output

Product Overview

Description

The LMIO-101 Digital Input/Output Interface allows seamless integration with third party devices to provide additional functionality in a Digital Lighting Management (DLM) system.

Operation

The LMIO-101 operates on power from the DLM local network. It contains a 24VDC isolated relay (single-pole, double throw with normally open (N/O), normally closed (N/C), and common outputs) for output to other systems. The isolated relay can respond to any DLM occupancy sensor on the DLM local network. The LMIO-101 also includes a 24VDC output and four input terminals for maintained or momentary switch closure inputs, or third party logic inputs. Input signals may come from a wide variety of devices including building automation systems, time clocks and key switches, for purposes including hold-on/hold-off, load shedding and cleaning. The LMIO-101 has DIP switch-selectable profiles to allow different combinations of input signals to control different loads.

Features

- Plug n' Go configuration for quick and easy startup out of the box
- Push n' Learn functionality for personalizing system settings to accommodate application needs
- Self-contained switching power supply and relay system
- Five status LEDs and configuration LED
- Hold-on/hold-off, occupancy sensor, time clock, load shed, cleaning switch and key switch modes available through DIP switch configurations
- Over-current protection
- UL 2043 plenum rated
- RoHS compliant
- Qualifies for ARRA-funded public works projects

PROJECT

LOCATION/TYPE

Default and Personalized Operation

In Plug n' Go automatic configuration mode, the isolated relay responds to every occupancy sensor on the DLM local network. Unlike the LMRL-100, the LMIO-101 can be reconfigured to respond only to selected occupancy sensors. Default operation for third party inputs is based on the configuration of the device's DIP switches. To change the occupancy sensor assignment, the user must access Push n' Learn mode, either directly from the LMIO device or via the LMCS software. With Push n' Learn, users may assign any load or sensor in a DLM local network to any input on the LMIO device.

Applications

The LMIO-101 is ideal for applications where integration of third party devices with lighting control is desired. The isolated relay allows coordinated control of lighting and HVAC based on occupancy detection while the multiple inputs permit control of any load on a DLM local network by other equipment, systems and devices. Applications include private and open offices, conference rooms, classrooms, training centers, lunch rooms and break rooms.

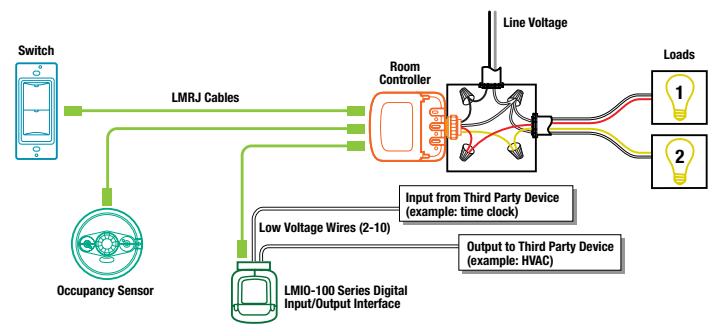


Specifications

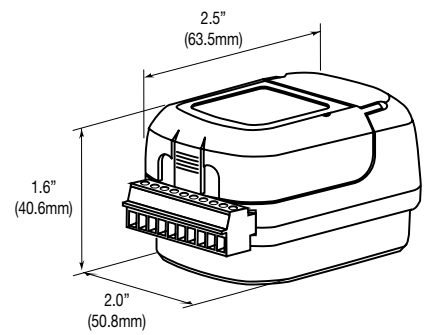
- Input/output voltage: 24VDC from DLM network
- Maximum current consumption: 20mA
- DLM local network connection: 2 RJ45 ports
- Removable terminal block for connections to isolated relay output and third party inputs
- Isolated relay ratings:
 - 24VDC/VAC, 1A, SPDT
 - Normally open (N/O), normally closed (N/C) and common outputs
- Input ratings:
 - Input max. sink/source current: 1- 5 mA
 - Logic input signal voltage High: >18 VDC
 - Logic input signal voltage Low: < 2 VDC
- Operating conditions; for indoor use only; 32-131°F (0-55°C)
- Fits inside 4" x 4" j-box, 1 gang back box or 3" octagonal box; optional DIN rail mounting
- UL and cUL listed
- Five year warranty

Wiring & Connection

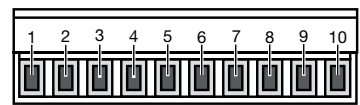
Connection to DLM Network



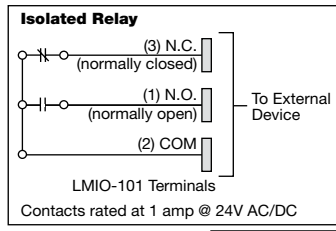
Dimensions



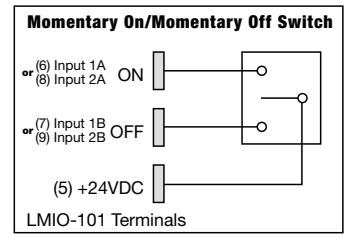
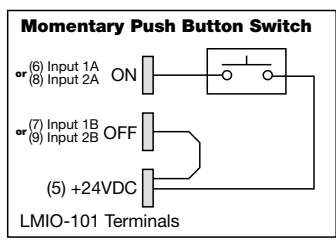
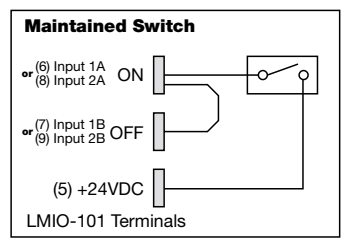
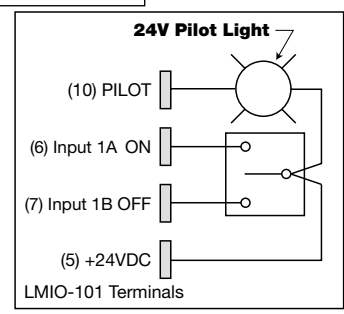
Wiring to 10-Position Terminal Block



Position (L - R)	Description
1	Relay Normally Open (N/O)
2	Relay Common
3	Relay Normally Closed (N/C)
4	COMMON
5	+24 VDC
6	Input 1A
7	Input 1B
8	Input 2A
9	Input 2B
10	Pilot Light



The isolated relay output is on terminals 1, 2 and 3. The relay responds to a signal from any DLM sensor.



Contact closure inputs from up to two low voltage switches are wired to inputs 1A (on) and 1B (off), terminals 6 & 7, and inputs 2A (on) and 2B (off), terminals 8 and 9. The LMIO-101 provides 24VDC to the switches on terminal 5.

Up to 3 logic inputs (e.g. load shed, hold-on/hold-off) from third party devices are wired to terminals 6, 7, 8 and 4 (common). The power for these inputs is provided by the logic device.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMIO-101	Digital Input/Output Interface
<input type="checkbox"/> LMIO-101-U	

LMIO-301 Digital Photocell Input Module

Reads light levels for exterior lighting or skylight applications

Component of Digital Lighting Management integrated control systems

Plugs to DLM local network using Cat 5e cables with RJ45 connectors



Compatible with LILM panels, LMRC room controllers and LSM segment managers

DIN rail clamp allows mounting in LILM Series panel

Optional analog photocells for exterior and interior locations

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMIO-301 photocell input module is an accessory for a networked Digital Lighting Management (DLM) installation that allows an LSM segment manager to read ambient light levels for use in controlling exterior lighting or interior lighting installed in brightly daylit spaces such as atriums. The LMIO-301 works in conjunction with either the LMPO-200 exterior or LMPS-6000 skylight low voltage photocell heads.

Operation

The LMIO-301 operates on Class 2 power supplied to a DLM local network by one or more room controllers or an LILM panel. It transmits light levels over the segment network as read from one of the optional remote analog LMPO or LMPS photocell sensors. The LMIO-301 converts the 0-10 VDC signal from the photocell sensor to a digital signal that is shared across the network. The segment manager is configured to control the lighting based on user-defined setpoints and time delay settings.

Features

- Available accessory photocell heads for exterior and skylight/atrium applications
- Available range from 1 to 6000 footcandles
- Ambient light levels are available to connected building automation system

Network Communication

The LMIO-301 can be installed on any DLM local network. The actual ambient light level as reported by the connected LMPO or LMPS photocell is communicated to the segment network via an LMBC-300 network bridge, LMRC-3xx Series room controller or LILM panel, and made available for use by an LMLS segment manager or BAS system.

Applications

The LMIO-301 photocell input module is an ideal solution for any application where exterior lighting needs to be controlled based on actual ambient exterior light levels such as parking, site and landscape lighting. Applications with large expanses of skylight, clearstory or atrium glazing can also benefit from controlling lighting based on ambient light entering the building through the glazing. When controlling outdoor lighting, the photocell head is mounted on the roof of the building facing north. The LMPO-200 photocell head is waterproof and has a built in hood to shield the lens from direct sunlight. The LMPS-6000 photocell head is designed for direct exposure to extremely high light levels as would be present adjacent to the glass in an atrium, skylight or clearstory.

- Two RJ45 ports with hinged dust cover
- UL 2043 plenum rated
- Supplied with DIN rail adaptor for Class 2 installation in lighting control panel
- RoHS compliant



Specifications

- LMIO-301:**
- Operating voltage: 24VDC from DLM local network
 - Maximum current consumption: 17mA
 - Maximum output power: 5mA
 - Class 2 connection terminals: 24VDC photocell supply, common, 0-5VDC input, 0-10VDC input
 - DLM local network connection: 2 RJ45 ports
 - Adjustable sample rate: 1-60 seconds, 1 second resolution, 30 second default setting
 - Percentage delta for sample: 1-100%, 1% resolution, 1% default setting
 - Operating conditions: for indoor use only; 32-104°F (0-40°C)
 - Fits inside 4" x 4" j-box, 1-gang back box or 3" octagonal box; optional DIN rail mounting

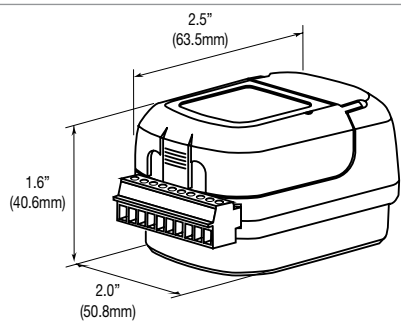
- UL and cUL listing pending
- FCC part 15 compliant
- Five year warranty

Analog Photocells:

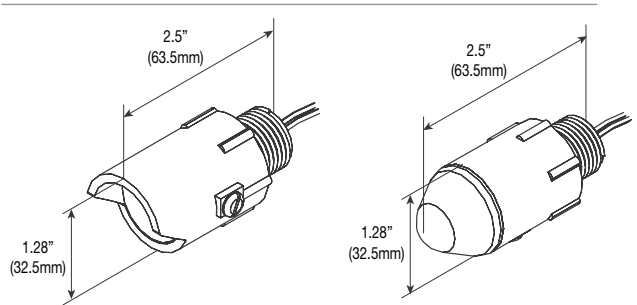
- Input voltage: 24 VDC, from LMIO-301
- Light level resolution:
 - LMPO-200: 0-200fc (0-2153 lux), 1fc/step
 - LMPS-6000: 0-6000fc (0-64583 lux), 24fc/step
- Mounting, 1/2" NPT x .69" threaded stem
- Housing, UV stabilized plastic
- Slew rate, one minute full scale response time
- Operating temperature: -40-140°F (-40-60°C)
- UL and cUL listed
- Five year warranty

Dimensions & Mounting

LMIO-301 Dimensions

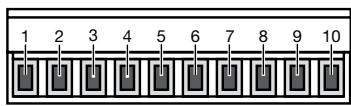


Photocell Dimensions



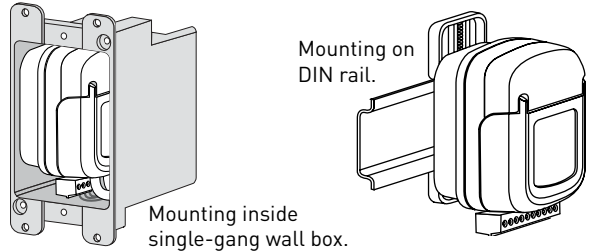
Wiring & Placement

LMIO-301 Low Voltage Terminals

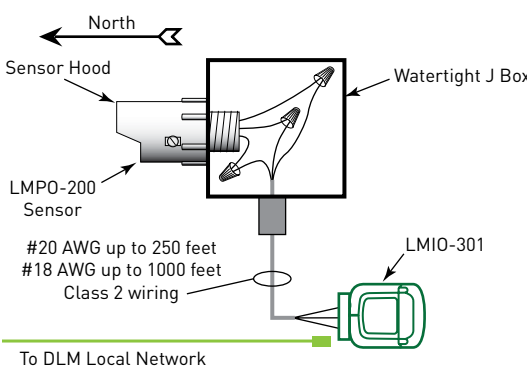


Position (L - R)	Description
4	+24 VDC
5	COMMON
9	0-5 V input
10	0-10 V input (standard)

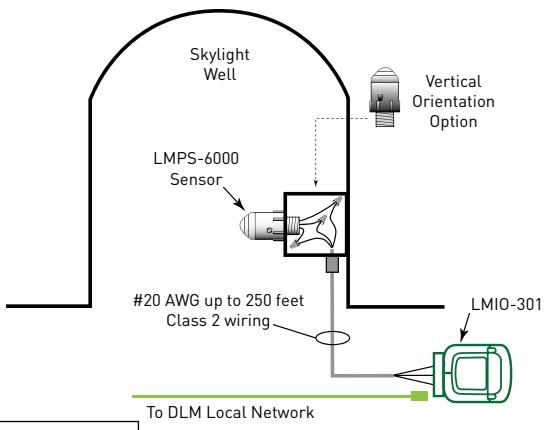
Mounting Options



LMPO-200 Outdoor Application



LMPS-6000 Skylight Application



Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMIO-301	Digital Photocell Input Module
<input type="checkbox"/> LMPO-200	Analog Exterior Photocell Accessory, 0-200 footcandles
<input type="checkbox"/> LMPS-6000	Analog Interior Photocell Accessory, 0-6000 footcandles

LMIR-100 Digital IR Ceiling Mount Receiver

Extends the operating range for DLM IR-enabled handheld remotes controls

Component of Digital Lighting Management integrated control systems



Low profile styling fits in fixture or blends seamlessly with any ceiling

Communication LED

Product Overview

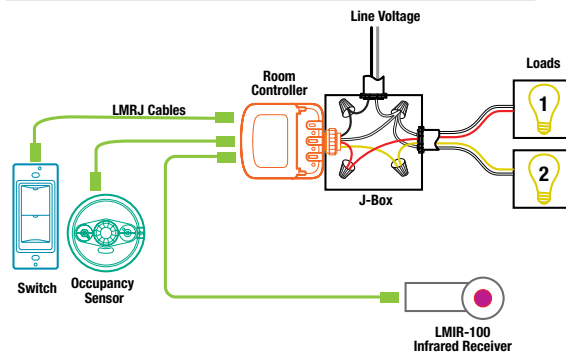
Description

The LMIR-100 Digital IR Ceiling Mount Receiver provides an infrared (IR) interface so that Digital Lighting Management (DLM) IR remote controls can be used where DLM sensors or switches are not easily accessible for wireless communication.

Operation

The LMIR-100 operates on power from the DLM local network. It uses an infrared transceiver to accept commands from DLM IR remote controls and transmits them over the DLM local network. It is recommended for applications where the wall- and ceiling-mounted IR-enabled DLM devices are not within direct line of sight of the occupant using the IR remote control, or are not close enough to the user.

Connecting

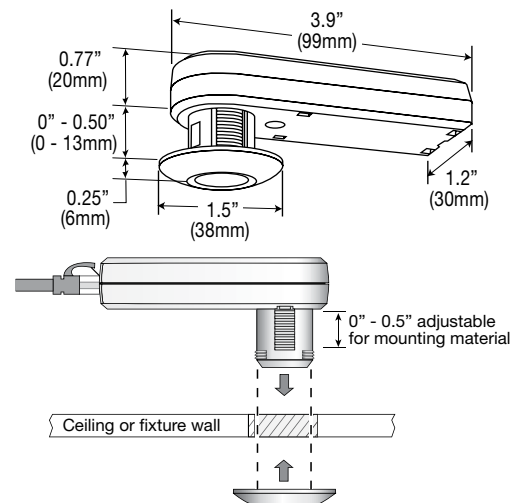


PROJECT
LOCATION/TYPE

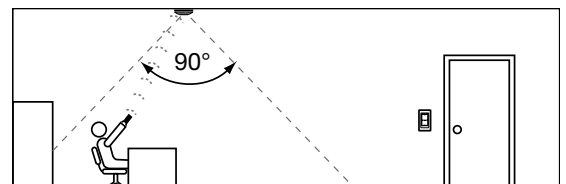
Specifications

- Input voltage: 24VDC from DLM network
- Current consumption: 5mA
- DLM local network connection: 1 RJ45 port
- IR transceiver: 90° window; 32 ft. (10m) range
- Operating conditions: for indoor use only; 32-131°F (0-55°C); 5-95% RH, non-condensing
- UL and cUL listed
- FCC part 15 compliant
- Five year warranty

Dimensions and Mounting



IR Receiving/Transmitting Coverage



Ordering Information

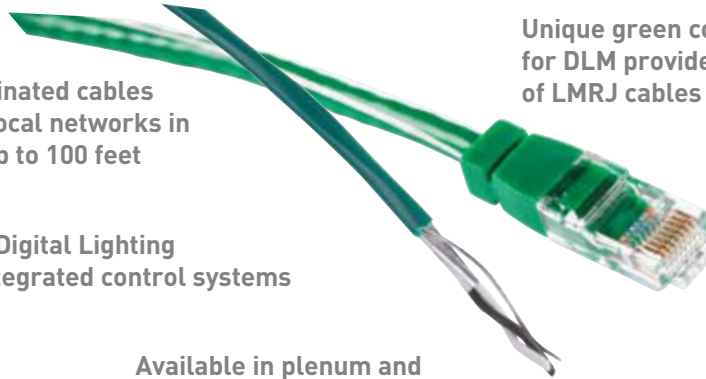
Catalog No.	Description
<input type="checkbox"/> LMIR-100	Digital IR Ceiling Mount Receiver

WattStopper
www.wattstopper.com
800.879.8585

Pub. No. 31701 rev. 08/2009



LMRJ Series Pre-Terminated Cables and Segment Network Wire



Pre-terminated cables for DLM local networks in lengths up to 100 feet

Unique green color and markings for DLM provide easy identification of LMRJ cables in plenum

UL and cUL listed and labeled

Components of Digital Lighting Management integrated control systems

Available in plenum and non-plenum rating

Support Plug n' Go and Push n' Learn functionality

PROJECT
LOCATION/TYPE

Product Overview

Description

LMRJ Series cables, couplers and splitters connect Digital Lighting Management (DLM) components without the need for tools or point-to-point discrete wiring. Cables are pre-terminated with industry standard RJ45 connectors compatible with any RJ45 port on DLM components. LMRJ cables utilize B to B wiring. A to A cables may be used instead, but all cabling on a project must be the same type for successful operation.

LM-MSTP Segment Network wire is MS/TP (RS485) and plenum rated and is available by the foot.

Operation and Applications

LMRJ cables can be plugged into any available RJ45 port on a DLM device and connected to any other DLM device. These cables facilitate the creation of a local network of DLM components that automatically configure and function together. While LMRJ series cables are rated Cat 5e, they are not recommended for general data use in other than DLM network applications.

LM-MSTP wire is used to create a linear topology (daisy-chain) segment network for control by a segment manager or building automation system.

Ordering Information

Catalog No.	Description	Catalog No.	Description
Non-Plenum Rated Local Network Cables		Plenum Rated Local Network Cables	
<input type="checkbox"/> LMRJ-01	Six-inch Jumper, green with white stripe	<input type="checkbox"/> LMRJ-P03	3' Cable, green with black stripe
<input type="checkbox"/> LMRJ-03	3' Cable, green with white stripe	<input type="checkbox"/> LMRJ-P10	10' Cable, green with black stripe
<input type="checkbox"/> LMRJ-10	10' Cable, green with white stripe	<input type="checkbox"/> LMRJ-P15	15' Cable, green with black stripe
<input type="checkbox"/> LMRJ-15	15' Cable, green with white stripe	<input type="checkbox"/> LMRJ-P25	25' Cable, green with black stripe
<input type="checkbox"/> LMRJ-25	25' Cable, green with white stripe	<input type="checkbox"/> LMRJ-P50	50' Cable, green with black stripe
<input type="checkbox"/> LMRJ-50	50' Cable, green with white stripe	<input type="checkbox"/> LMRJ-P100	100' Cable, green with black stripe
<input type="checkbox"/> LMRJ-100	100' Cable, green with white stripe		
Local Network Cable Accessories			
<input type="checkbox"/> LMRJ-C8	Coupler (two ports to connect two cables end to end). Non-plenum rated.		
<input type="checkbox"/> LMRJ-S8	Splitter (three ports for one input and two output connections). Non-plenum rated.		
<input type="checkbox"/> LMRJ-CS8	Coupler/splitter (three ports for one input and two output connections). Plenum rated.		
<input type="checkbox"/> LMRJ-TK	Cable Test Kit		
Unterminated Plenum Rated Segment Network Wire			
<input type="checkbox"/> LM-MSTP	Segment network wire, 2+ shield, white/black, max diameter 0.185", available by the foot		

LMSM-ENC1 Enclosure for LMSM Segment Manager

NEMA1-rated enclosure

Isolated Class 1 and Class 2 wiring

Compatible with LMSM-201 or LMSM-603



DIN rail mounting for easy installation or removal of Segment Manager

Shown with Segment Manager installed

PROJECT
LOCATION/TYPE

Product Overview

Description

The LMSM-ENC1 is a surface-mount NEMA1-rated enclosure with a DIN rail for mounting one LMSM Segment Manager, conduit knockouts for line and low voltage connections and a removable cover. The conduit entrances and enclosure sections for high voltage (Class 1) and low voltage (Class 2) wiring are completely separated.

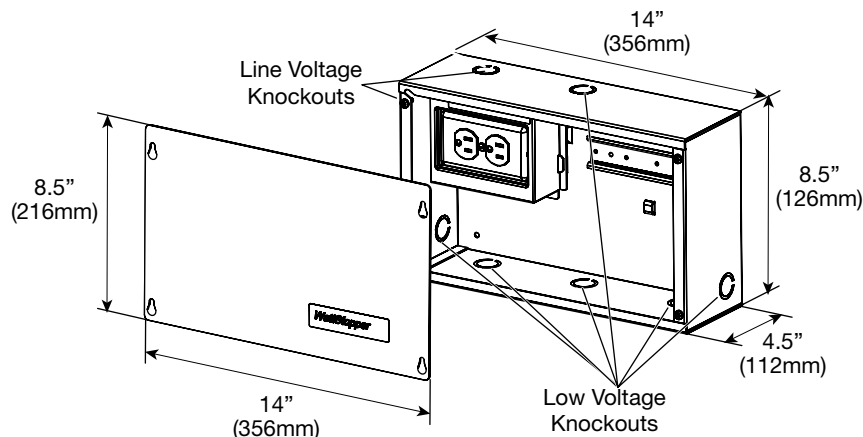
Applications

The LMSM-ENC1 allows a Segment Manager to be installed in an electrical room or other location with similar requirements. The enclosure accommodates one LMSM-201 or LMSM-603 Segment Manager.

Specifications

- Input voltage: 120VAC, 50/60Hz
- Duplex receptacle for connection of LMSM plug-in power supply
- Barrier between high and low voltage
- DIN rail for mounting LMSM, includes locking tab
- Housing: NEMA1 surface-mount enclosure with screw-on cover, suitable for damp locations
- UL and cUL listed
- Five year warranty

Dimensions and Mounting



Ordering Information

Catalog No.	Description
<input type="checkbox"/> LMSM-ENC1	NEMA1 surface mount enclosure for Segment Manager (order Segment Manager separately)







The ultimate in power, flexibility and economy

WattStopper lighting control panels offer the convenience of scheduled control combined with the flexibility to suit any application. Lighting

Integrator (LI) provides a range of control capabilities built on a common technology platform of low voltage, relay-based control. LP panels afford simple, effective control via a pre-assembled, easy-to-install package.



Table of Contents

Lighting Control System Overview	B3-B7
Designing with Lighting Control Panels	B8-B14
Product Details	B15-B136



A flexible technology platform with numerous control configurations

With WattStopper's Lighting Integrator (LI) lighting control panels, users can implement the control capabilities they need for their specific applications. Lighting Integrator simplifies integration with external controls, whether these are other building systems or other lighting control devices. Lighting Integrator is a solution that works today and well into the future.

LI offers a technology platform that accommodates several different control configurations to suit virtually any application.

From basic low voltage switching to sophisticated PC-based control, LI has a configuration to meet every user's needs.



Lighting Integrator Technology Highlights

- **Industry-exclusive heavy duty relay**

Mechanically latching HDR heavy duty relay, rigorously engineered with 14,000 Amp Short Circuit Current Rating. The relay meets new NEMA inrush current requirements for controlling electronic ballast lighting loads, and is rated a minimum 300,000 cycles.

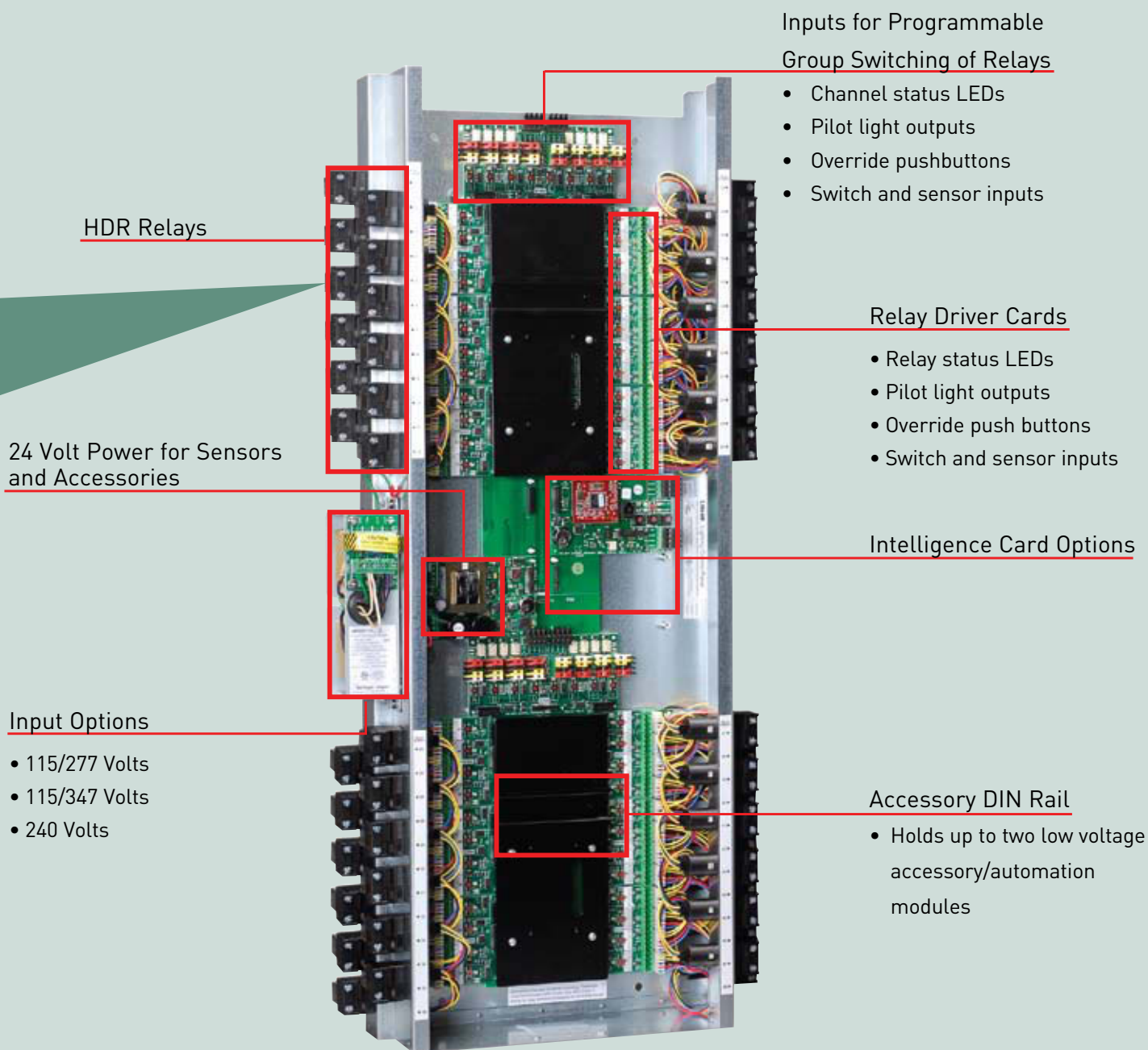
- **Optional integrated control of emergency lighting**

Provides coordinated control of emergency lighting along with normal lighting. Available in most LI control configurations, this

option affords fail-safe emergency lighting operation for most common applications, and allows integrated control via schedule, switch, photocell, or other control device.

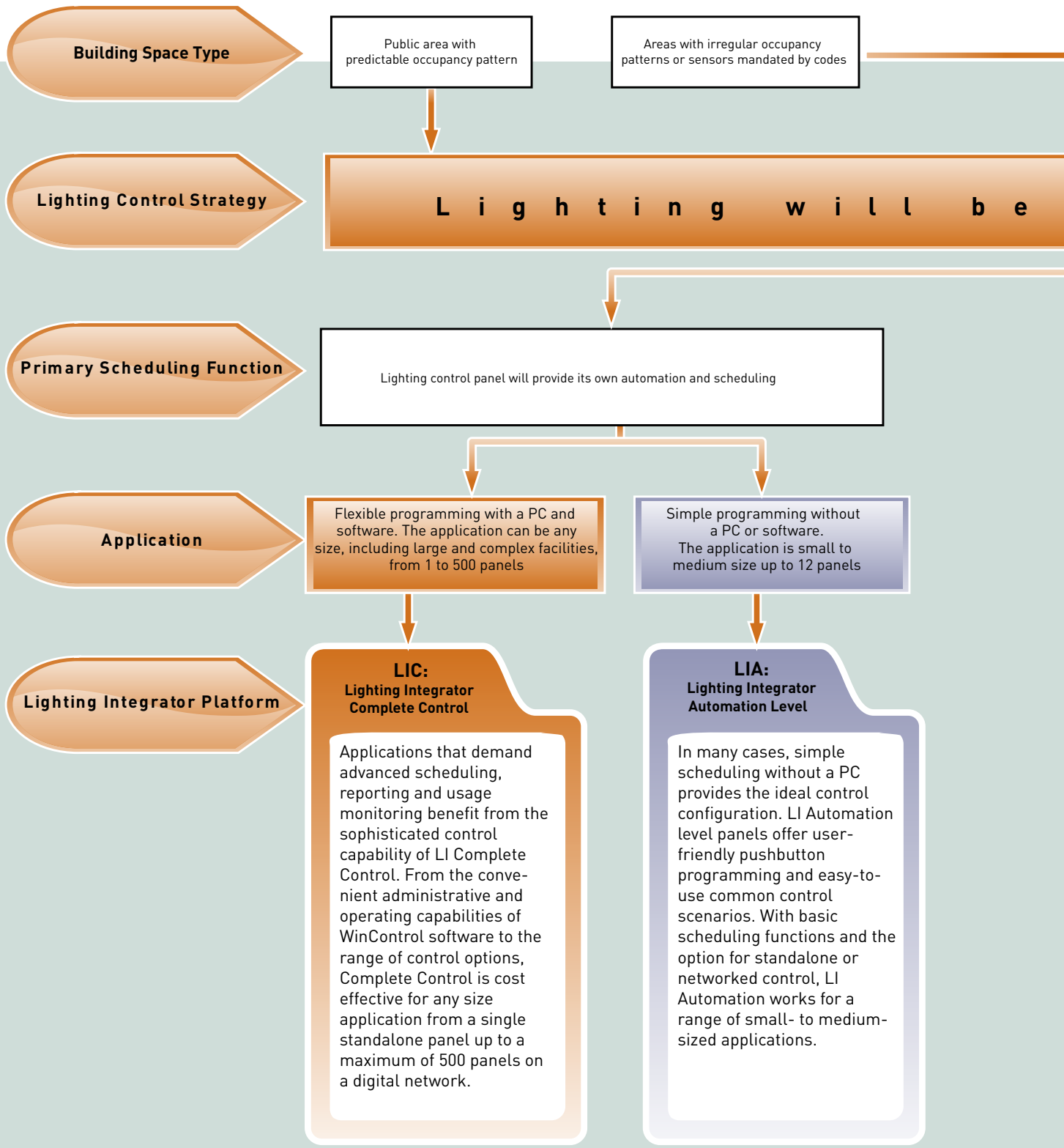
- **Unique Smartwired switching**

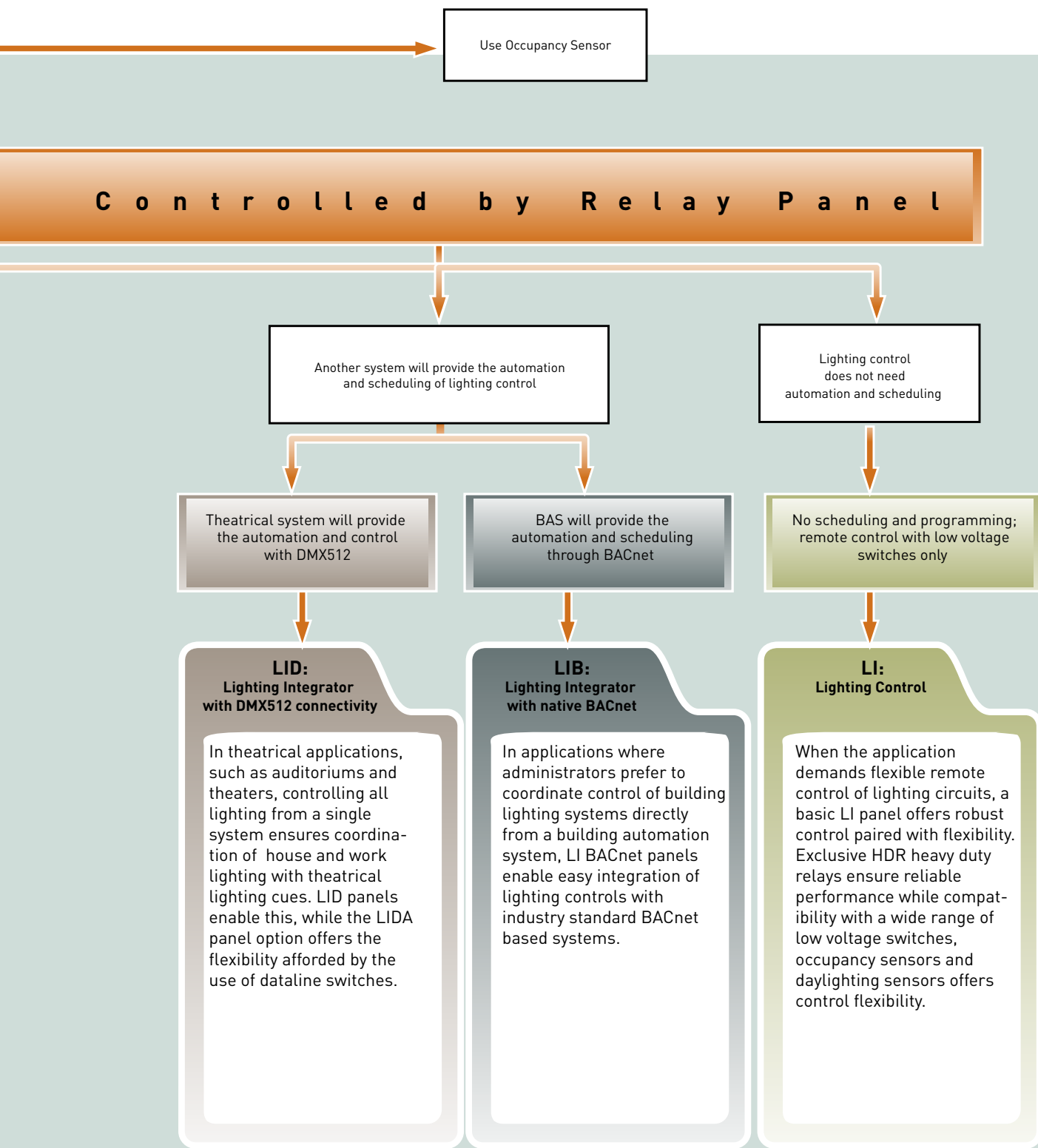
Simple pushbutton functionality allows users to quickly group relays for common on/off or pattern (scene) control.





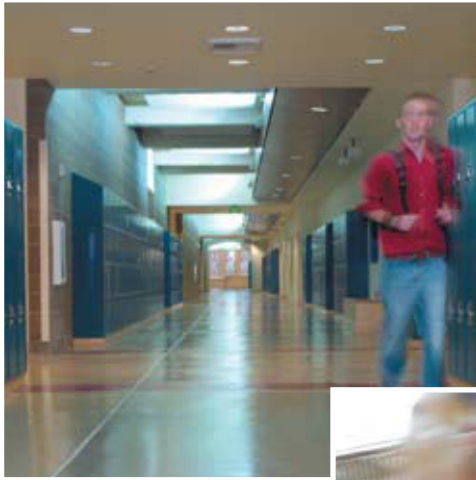
Lighting Control Panels Matrix







Lighting Control Panel Overview



Educational

- Supplement daytime scheduled control with after-hours occupancy-based control
- Add daylighting capabilities for classroom lighting
- Event Scheduler for convenient scheduled control of academic and athletic events



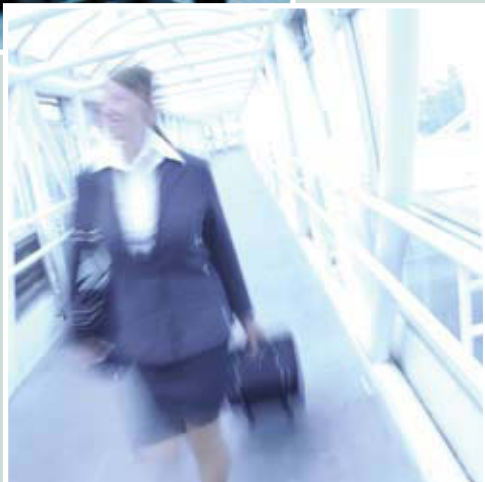
Retail

- Achieve code compliance without burdening managers with additional responsibilities
- Increase energy savings by integrating lighting, HVAC, and security systems
- Maintain security by easily adjusting exterior lighting schedules to provide secure environments



Office Buildings

- Integrate with other BACnet manufacturers' equipment for seamless control
- Provide personal desktop control
- Comply with mandated automated lighting shutoff code requirements



Public Spaces

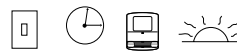
- Use trending and analysis to reduce energy consumption
- Enable multiple-user access simultaneously
- Simplify administration with PC based touch-screens and animated floor plans or virtual control panels



Designing with Lighting Control Panels

Step 1

Identify lighting control strategy (timed on/off, after-hour shutoff, etc.)

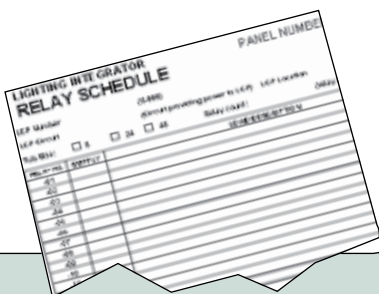


Step 2

Select panel configuration to achieve desired control strategy

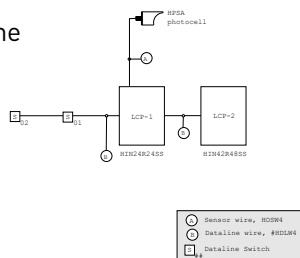
Step 4

Create lighting control schedules



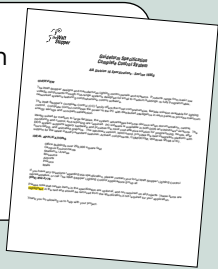
Step 3

Create single-line riser diagram



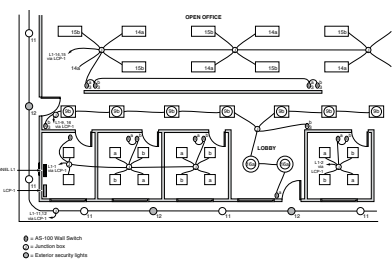
Step 5

Provide written description in project specifications



Step 6

Include lighting control device details on lighting plans





Designing with Lighting Control Panels

1. Identify your Lighting Control Strategy

Define your control strategy for each application before choosing the right product for the job. In most cases, your control strategy will include automatic shutoff, which is necessary to comply with mandatory energy codes. Further control strategy decisions involve how you want to turn lighting on, and what provisions are needed for overriding programmed schedules.

Possible control strategy decisions include:

- Dataline switches for occupant convenience
- Integration of occupancy sensors or AS automatic switches
- Photosensor or astronomic control of exterior lighting
- Seven day repeating schedules or 365 day scheduling
- Advanced scenarios (i.e., common area interlock, cleaning switch, or forced load shed)
- Automatic daylighting control
- Emergency lighting control
- Multi-user web access
- Graphical user interface
- Telephone or LAN-based override

For instance,

If you operate an office facility, enable occupants to manually control lighting with local switches while providing timed shutoff after hours. Or use occupancy sensors so lighting automatically turns on when the first person arrives, is held on during scheduled occupancy, then reverts to occupancy sensor control after hours. Finally, for corridor, lobbies and other common areas add automatic ON/OFF control based on a schedule.



2. Determine the Lighting Control Panel Configuration

Once you've identified your control strategies, it's time to choose the components.

Using a functionality matrix like the one below can simplify the decision making process.

	LIA	LIC	LID	LIB
Push-button Group Programming	•	•	•	•
Simple Small Networks	•			
Dataline Switch Functionality	•			
Automation without PC	•			
Contact Closure BAS Interface	•			
Full Networking (up to 500 Panels)		•		
PC with WinControl Software		•		
Distributed Processing/Schedules		•		
Personal Desktop PC Override		•		
Logging and Trending		•		
Web-based Access		•		
Theatrical Controller Connectivity			•	
Integrates with BAS via BACnet		•		•



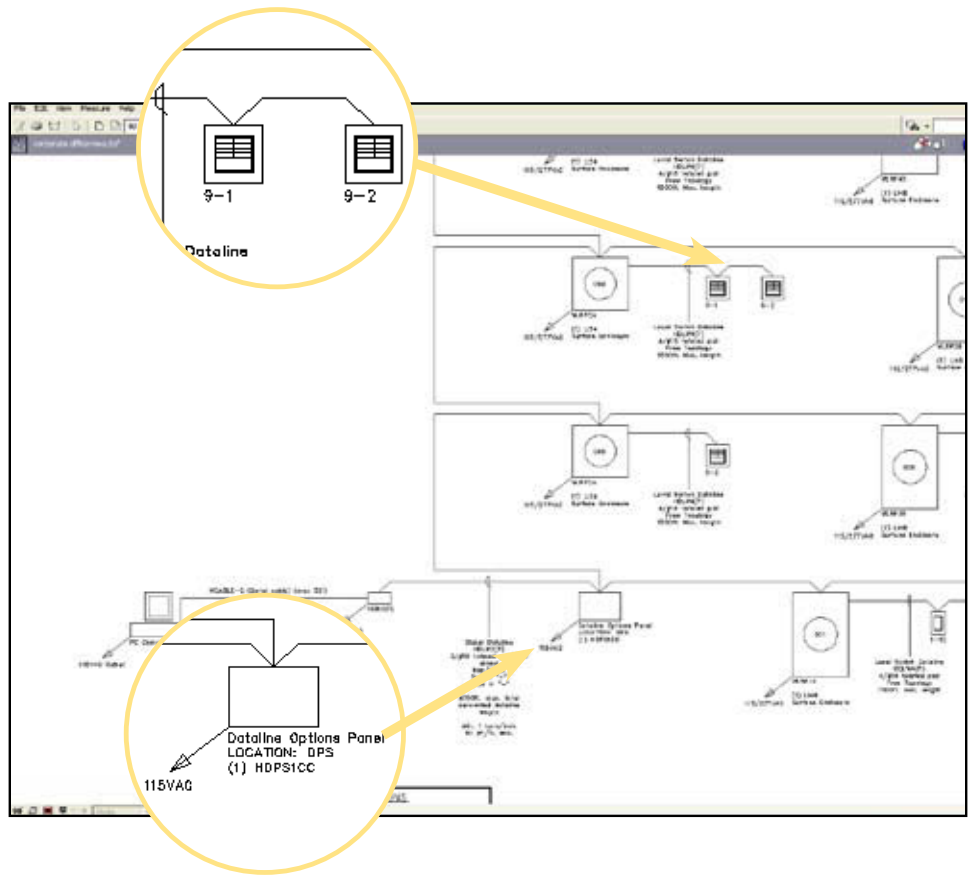
Designing with Lighting Control Panels

3. Create a Single-line Riser Diagram

A single-line riser diagram gives you a “snapshot” of the entire lighting control panel system. This gives the installing contractor and the control manufacturer an overview of the entire system, as well as how it is intended to be installed and used in a facility.

Riser diagrams include:

- Each lighting control panel with name label
- Each panel’s general location relative to other panels and devices
- The type of wire and number of conductors between panels and devices
- Connection to any other system or device (i.e., photocells, occupancy sensors, time clocks, building automation systems, etc).
- Any other important notes relative to the system’s overall layout and design



Single line drawings such as this can be created simply by using the free WinControl Designer, available at www.wattstopper.com/designer/



4. Create Lighting Control Schedules

Think of lighting control schedules as companions to the riser diagram. They document what is being controlled and how it is controlled. Usually, you'll need to complete several different kinds of schedules and include them all with the project drawings or specifications.

For best results, include these types of information:

- General panel information
- List of circuits or branch circuits the panel controls
- Assignment between circuits, switches, relays or contactors, and channels
- Description of the loads being controlled
- Switch locations and functions

Don't Forget!

Be as complete as possible when filling in the schedule information. The more complete your information, the more likely you'll have a trouble-free installation and operation.

The screenshot shows a software application window titled 'Untitled - irWinco' with a menu bar (File, View, Page, Help) and a toolbar. The main content area displays three 'PANEL SCHEDULE - LCP' tables, one for each of three panels (Panel #1, Panel #2, Panel #3). Each table is organized into columns: Panel, Circuit, Description, Switch/Relay/Contactor, Comments, Panel, Circuit, Description, and Switch/Relay/Contactor. The tables contain data for various circuits and their associated control components.



Designing with Lighting Control Panels

5. Provide Written Product Specifications

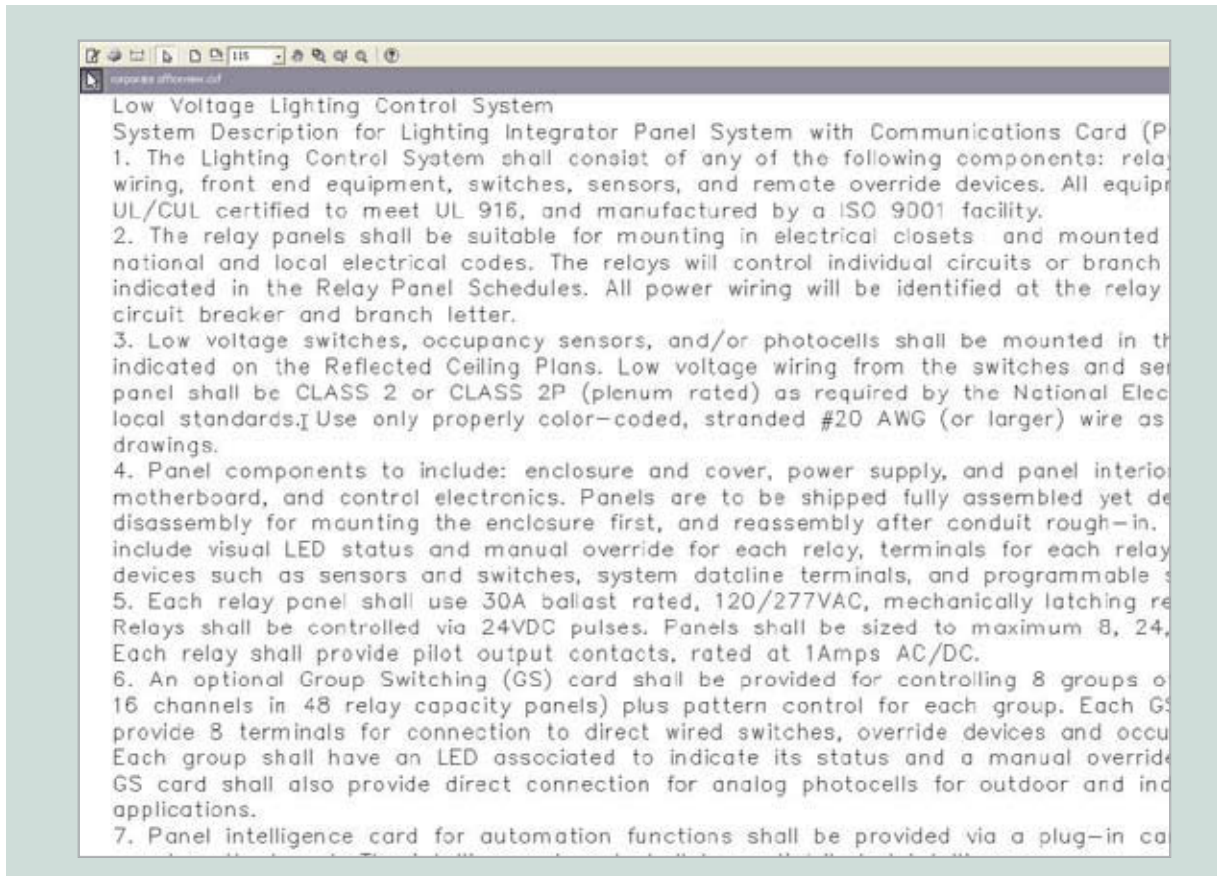
Written specifications provide a clear description of product function and features required for a project. These specifications are usually included in section 16500 of a standard architectural specifications package.

WinControl Designer software automatically generates project-specific documents based on your selections during the design process.



From The Tool Box:

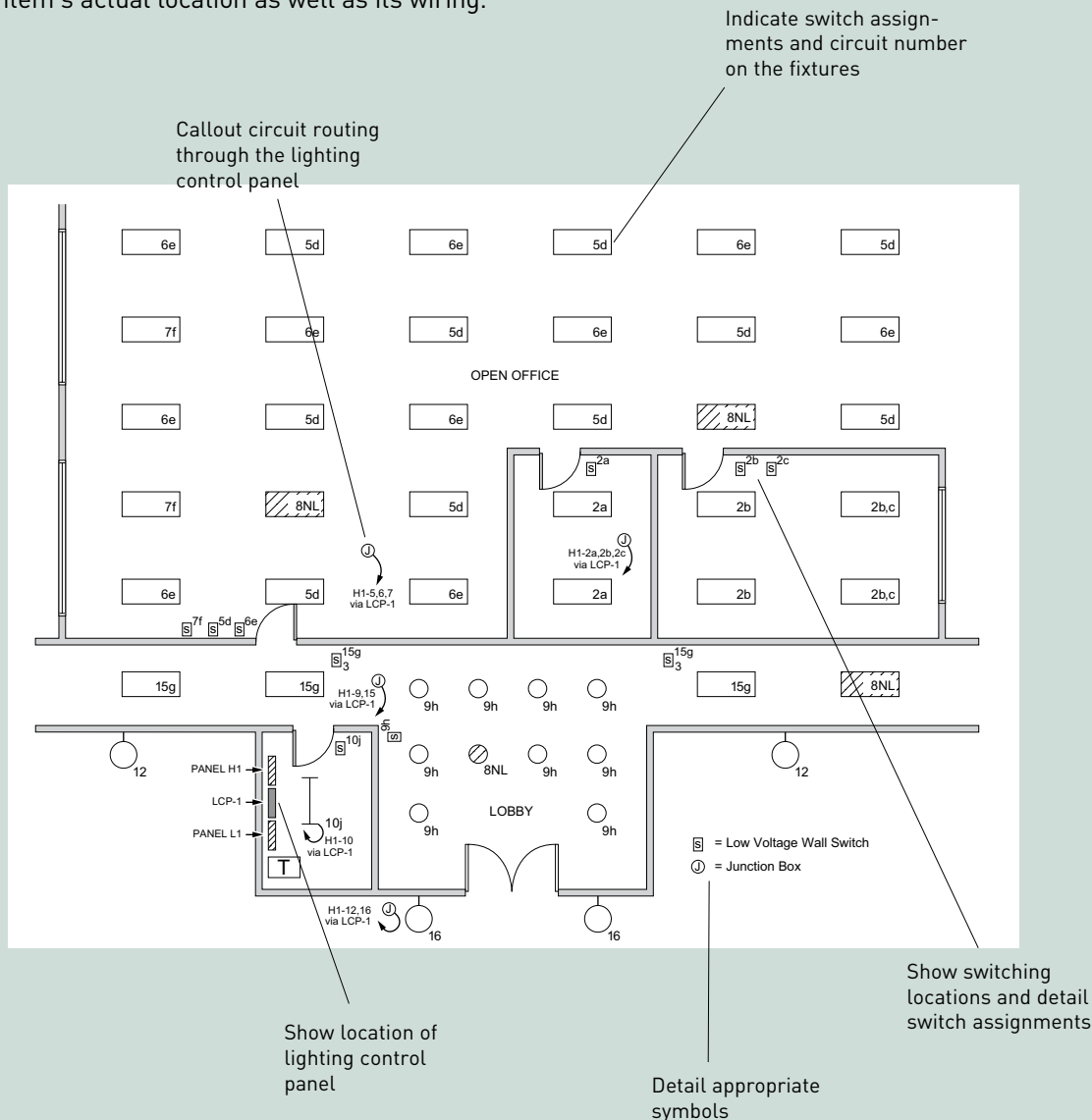
Obtain complete detailed guideform specifications at www.wattstopper.com.





6. Include Device Details on Lighting Plans

Include all switches, panels and associated devices on a project's lighting plans, so the installer has the details of each item's actual location as well as its wiring.





FROM
BUSINESS
NETWORK
SOLUTIONS



Table 30

Table 31

Alexander & Bennett 329

Equilibria
Business Network Solutions

Alexander & Bennett
Corporate Offshoring Solutions





Lighting Integrator Complete Control Level

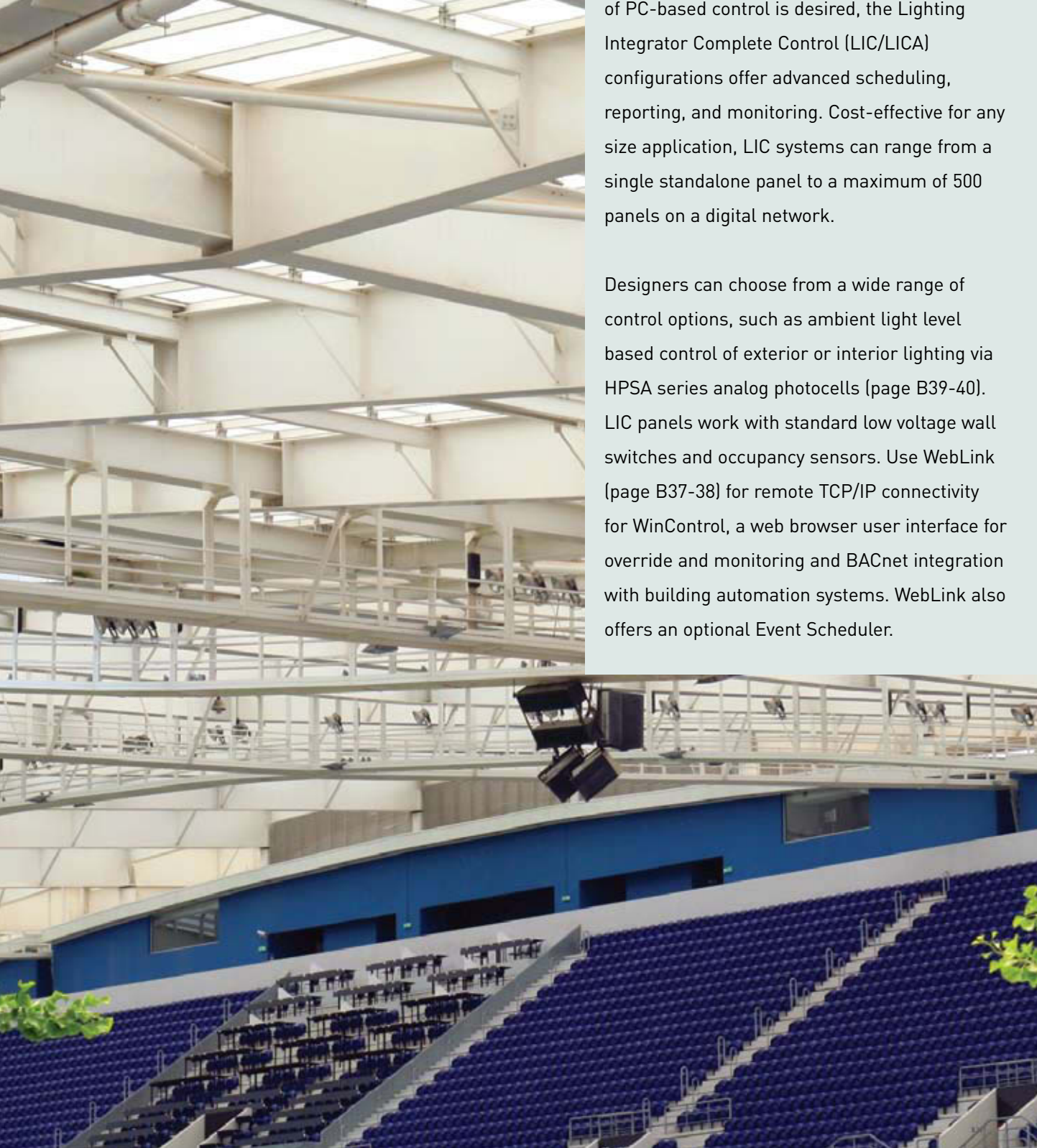
Applications that demand advanced scheduling, reporting and usage monitoring benefit from the sophisticated control capability of LI Complete Control (LIC). From the convenient yet comprehensive administrative and operating capabilities of WinControl software to the range of control options, Complete Control is cost effective for any size application from a single standalone panel up to a maximum of 500 panels on a digital network.

When local dataline control capabilities are desired, such as the convenience of programmable switch buttons or distributed control options, LI Complete Control offers options for the use of digital dataline switches and Automatic Relay Packs.





Choose LI Complete Control level for the most demanding applications

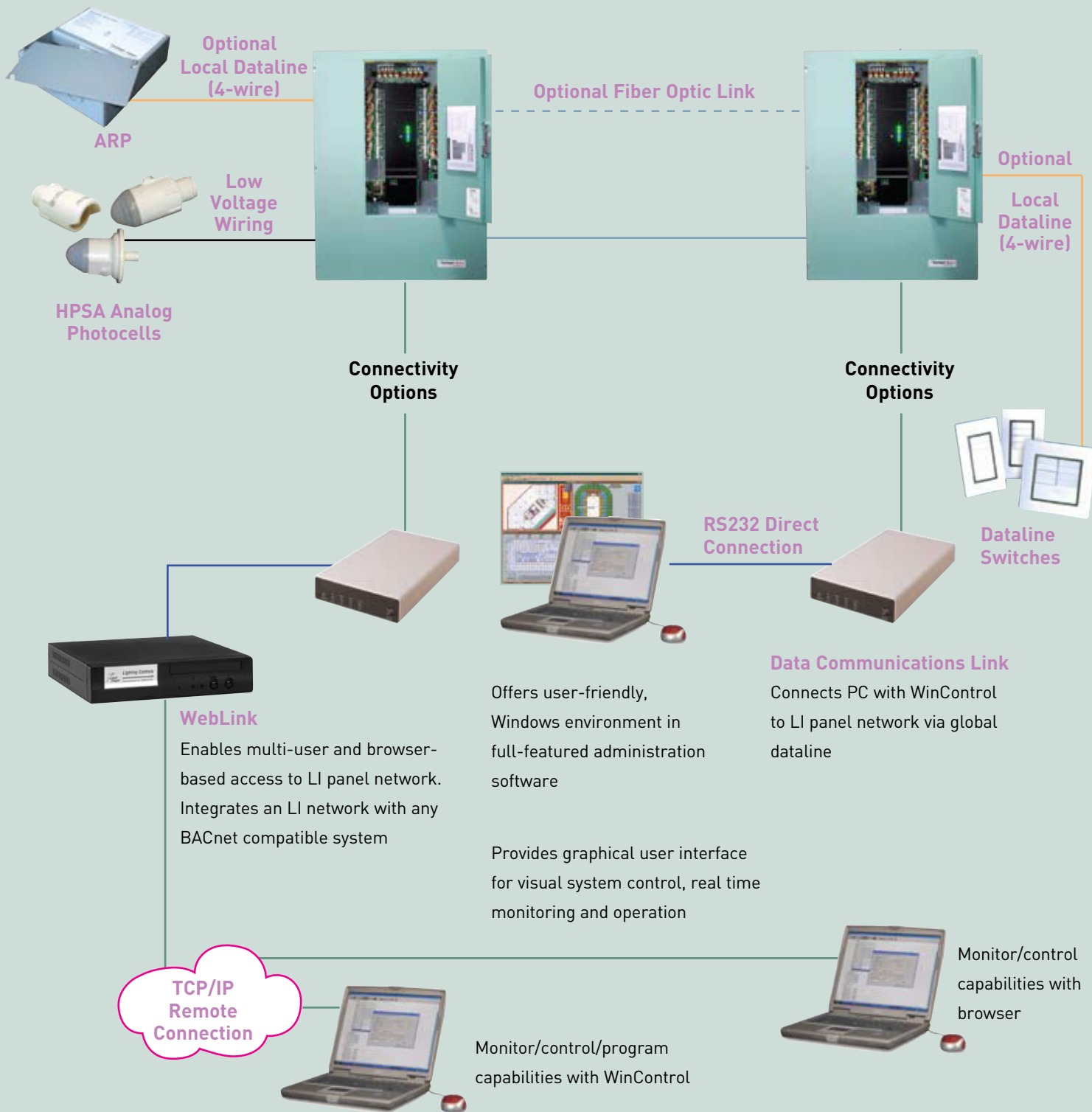


In settings where the flexibility and convenience of PC-based control is desired, the Lighting Integrator Complete Control (LIC/LICA) configurations offer advanced scheduling, reporting, and monitoring. Cost-effective for any size application, LIC systems can range from a single standalone panel to a maximum of 500 panels on a digital network.

Designers can choose from a wide range of control options, such as ambient light level based control of exterior or interior lighting via HPSA series analog photocells (page B39-40). LIC panels work with standard low voltage wall switches and occupancy sensors. Use WebLink (page B37-38) for remote TCP/IP connectivity for WinControl, a web browser user interface for override and monitoring and BACnet integration with building automation systems. WebLink also offers an optional Event Scheduler.



System Layout



Optional Local Dataline (4-wire)

ARP

Low Voltage Wiring

HPSA Analog Photocells

Connectivity Options

Optional Fiber Optic Link

Optional Local Dataline (4-wire)

Connectivity Options

Dataline Switches

RS232 Direct Connection

Data Communications Link

Connects PC with WinControl to LI panel network via global dataline

WebLink

Enables multi-user and browser-based access to LI panel network. Integrates an LI network with any BACnet compatible system

Offers user-friendly, Windows environment in full-featured administration software

Provides graphical user interface for visual system control, real time monitoring and operation

TCP/IP Remote Connection

Monitor/control/program capabilities with WinControl

Monitor/control capabilities with browser



Sophisticated control capabilities for complex applications



Office Buildings and Campuses

- Combine LI with occupancy sensors to interlock occupancy- and time-based controls
- Connect daylighting photocells to reduce electric light
- Maintain centralized control from remote PC with comprehensive trending and reporting capabilities
- Deploy a distributed control strategy with ARPs



Arena

- Individually control large number of fixtures
- Provide preset lighting control for multi-sport facilities
- Easily administer system via graphical user interface with touch screen
- Integrate control of emergency lighting circuits



Convention Centers

- Provide flexible control of exhibition hall lighting by circuit, zone, or individual fixture
- Enable facility-wide event based scheduling in addition to seven day weekly schedules
- Integrate daylighting control for atrium areas along with time-based control for other areas
- Provide system information visually via factory-customized color graphic screens on user interface option

LIC Highlights

- Advanced lighting control scenarios: time delay override, common area with egress timer, intelligent switch scenarios, load shed, daylight switching, cleaning function
- Distributed control and communication for up to 500 networked LI panels
- Connectivity via direct RS232, or via WebLink TCP/IP or BACnet/IP
- Programmable dataline switches for flexible user override
- Comprehensive usage, trending and alarming capabilities

LI Complete Control Level Interior (LIC8, LIC24, LIC48, LICA8, LICA24, LICA48)

Distributed processing architecture with robust 2-wire digital network communications

Complete scheduling, monitoring, and reporting capabilities via exclusive WinControl software



Priority array based logic engine for simple execution of complex control scenarios

Compatible with legacy Complete Control systems

PROJECT
LOCATION/TYPE

Product Overview

Description

The WattStopper Lighting Integrator Complete Control (LIC) system is a full featured networked control system that provides the maximum flexibility for lighting control by providing both panel based and distributed load control options. A digital communication bus allows user programming generated at the WinControl workstation to be transferred to the panels where it runs autonomously. Once loaded into the panels, the lighting automation features operate without the need for an online PC. This distributed processing capability ensures a high degree of reliability. LIC incorporates all the base features of the Lighting Integrator hardware platform including the HDR mechanically latching, heavy duty relay.

LICA panels, with local dataline support, provide local Dataline Switch functionality.

Operation

Each LIC panel stores the user generated programming in non volatile memory housed within the Complete Control intelligence card. This controller monitors all inputs and uses a unique priority array based logic engine to generate the appropriate load response (relay control) based on simple or complex combinations of input triggers that can include schedules, override switches, occupancy sensors, photocells and signals from other building systems.

LIC features a library of scenario based control schemes that provide powerful control options without the complexity of low level user programming. These control scenarios include provisions for common area logic with egress, cleaning crew overrides, load shed, force on, force off, blink warn, and after hour time delay.

Features

- Network up to 500 panels via open topology digital data bus
- Create user programming offline using WinControl software and transfer to panels
- Import site documentation from WinControl Designer project design and documentation software
- Programmable group codes with scenario based logic provide system-wide control
- Powerful data logging feature with manual and automatic log transfer to PC
- Option for seamless building system integration using BACnet protocol
- Supports WattStopper occupancy sensors directly without power packs
- Generate detailed documentation reports of all aspects of system hardware and software via WinControl software
- Programmable analog inputs provide multiple set points for photocells or other analog devices
- Programmable dataline switches connect to panel with 4 wire open topology digital data bus
- Provides full support for WattStopper AS series Automatic Wall Switch
- Remote network supervision and programming via TCP/IP connection using optional WebLink device
- Qualifies for use on ARRA-funded projects

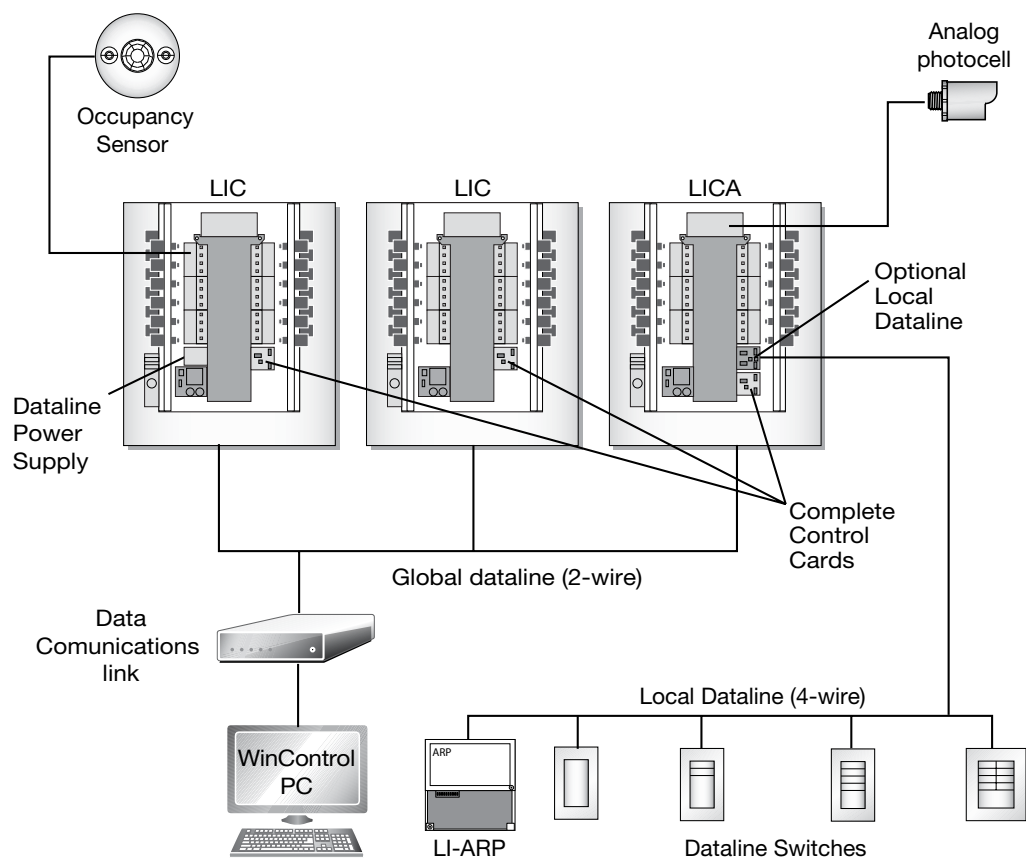


LIC Specifications

- Panel configurations provide 8, 24, or 48 relay size interiors
- Standard relay, individually replaceable WattStopper HDR series, latching SPST, meets new NEMA electronic ballast requirements, 14,000 Amps SCCR, with integral manual override
- Digital network dataline, one pair twisted and shielded, open topology allows linear, star, and T network configurations for panels/connectivity 4000' max length
- Network link device provides RS-232 connection to digital dataline for PC or WebLink and visual indication of system operation
- Analog input, 12 VDC source provided, 0 – 4 VDC input, 8 inputs provided per group switching card
- Optional local dataline, two pair twisted, open topology allows linear, star, and T configurations, 63 HDLS series switch addresses available per dataline, 1500' max length (LICA option)
- Analog set points, 32 maximum per panel, high set/low set with individual high/low time delays
- Direct wire switch inputs, one each per relay and group switch channel, automatically configure for occupancy sensor operation
- Pilot light output per relay and group switch channel, configurable for any Class 2 voltage
- DIN rail mounting for automation modules
- UL listed, one year warranty

LIC System Layout

Panel System Layout and Configuration



Note: Dataline power supply required in one panel only.



General LI Information

Description

WattStopper's Lighting Integrator (LI) is a low voltage, relay based lighting control panel. Panel interiors are configured as 8, 24 or 48 relay capacity with the quantity of relays installed as called for on the order. The interior mounts into the appropriate enclosure. The LI panel enclosure and cover are shipped separately from the panel interior to facilitate project rough-in requirements.

Operation

LI relays are driven to a latched on or off position via a 24 volt DC pulse generated by the relay driver cards. A momentary pushbutton is provided for each relay to manually toggle the relay's state with each button press. An isolated contact in the relays provides positive status feedback to the relay driver circuits, which are annunciated by an LED associated with each relay. Removable terminal blocks allow connection of direct wired low voltage devices for remote control of relays.

- Interior provides complete isolation between line and low voltage when used with an LI enclosure (LENC)
- Individual plug-in, latching style single pole HDR relays with isolated pilot/status contacts
- Integral push button override, status LED, and pilot light output per relay
- Two slots available for optional automation, networking and integration control cards

Operation (cont'd.)

Inputs can be wired to accommodate maintained or momentary three wire or two wire inputs. The switch input circuits are auto sensing and will automatically configure appropriately when WattStopper occupancy sensors are connected.

Group Switching

Group switching, also referred to as Smartwired switching, is a simple button press interface that allows any quantity of relays in a panel to be assigned quickly to each group switching channel for common on/off control or for pattern (scene) control. Each of the eight channels is provided with an override pushbutton, LED status indicator and terminals for connection of wall switches and occupancy sensors. An eight or 24 size panel can be ordered with one group switch card (8 channels), 48 size panels can have two group switch cards for a total of 16 channels (8 controllable by scheduling, eight by switching only).

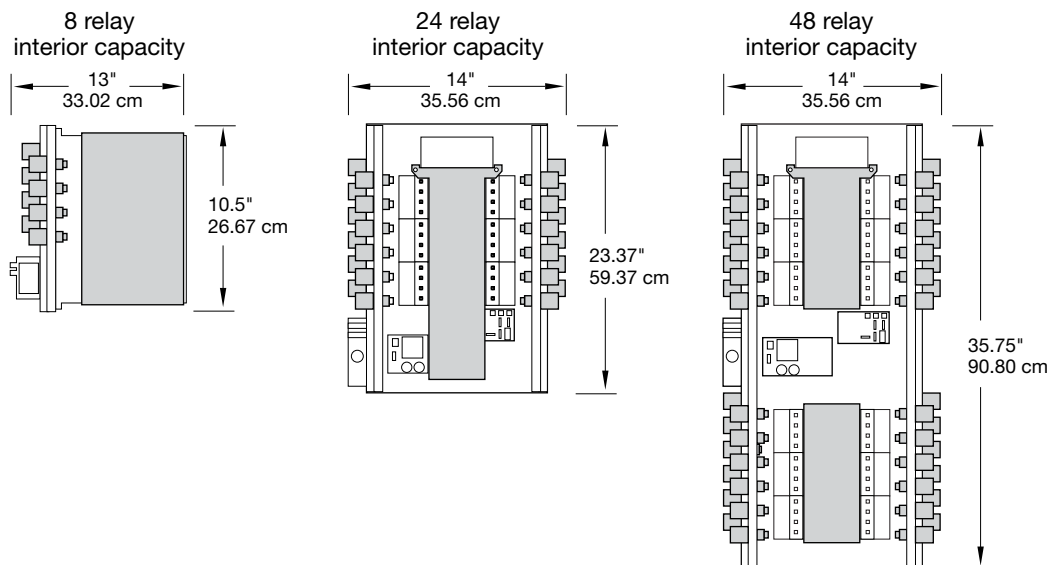
- Supports WattStopper low voltage occupancy sensors without need for separate sensor power packs
- Smartwiring feature allows grouping of relays for common control
- DIN rail mounting provided within the Class 2 section for mounting of optional accessories
- Control multi-pole circuits with optional contactors and compatible LENC enclosure
- Optional configuration available for use on emergency lighting circuits



General LI Specifications

- Interior capacity:
 - 8 SPST relays
 - 24 SPST relays
 - 48 SPST relays
- Input voltage options, 120/277V 60 Hz, 120/347V 60 Hz, 240V 50 Hz
- Group switching, eight channels per installed group switching card. One card max per LI8 and LI24. Two cards max LI48.
- Low voltage switch inputs, removable terminal blocks with tool-less connection, configurable for three wire momentary, two wire momentary (toggle), and two wire maintained dry contact switches or WattStopper occupancy sensors.
- Accessory power available
 - LI8: 1000 MA @24VAC or 800 MA @ 24VDC
 - LI24 and LI48: 1400 MA @ 24VAC or 800 MA @ 24VDC
- SCCR (short circuit current rating) 14,000 amps with HDR Heavy Duty Relay
- HDR SPST relays:
 - Coil voltage, 24 VDC, pulse ON and pulse OFF
 - Mechanically latched contacts
 - 1/2" K,O, mounting, LV plug-connection, individually replaceable
 - Contact ratings
 - 30 amps ballast @ 277V
 - 20 amps ballast @ 347V
 - 20 amps tungsten @ 120V
 - 30 amps resistive @ 347V
 - 1.5 HP @ 120V
 - Endurance: 300,000 mechanical cycles
- Pilot light output, 24 V rectified or 24VAC, other voltages configurable with external power supply
- One year warranty

Panel Interior Dimensions



Ordering Information

Interior Capacity	Installed Options					
	Voltage Options	Relay Count	Group Switch Card	Emergency Relays	Coil Voltage	Dataline Power Supply
<input type="checkbox"/> LIC8	<input type="checkbox"/> 115/277	<input type="checkbox"/> HDR relays installed (max of interior capacity)	<input type="checkbox"/> GS cards (max 1 in 8, 24, 2 in 48)	<input type="checkbox"/> EM relay count (Not available in 8-relay size panels; max. of 24 in 24-relay or 48-relay size interior)	<input type="checkbox"/> 115 <input type="checkbox"/> 240 <input type="checkbox"/> 277 <input type="checkbox"/> 347	<input type="checkbox"/> DP dataline power supply (one required per each network)
<input type="checkbox"/> LIC24	<input type="checkbox"/> 115/347					
<input type="checkbox"/> LIC48	<input type="checkbox"/> 240					
<input type="checkbox"/> LICA8						
<input type="checkbox"/> LICA24						
<input type="checkbox"/> LICA48						

Lighting Integrator Panel Enclosures

16-gauge all steel tubs with galvaneal finish

Screw on, powder coated cover permits temporary hanging via key hole screw slots

Surface or flush mounting with back mounting holes, screw cover

Lockable door access to Class 2 panel section, meets NFPA 70

Studs provided for quick installation of panel interior section

UL and CUL listed; one year warranty



PROJECT
LOCATION/TYPE

Product Overview

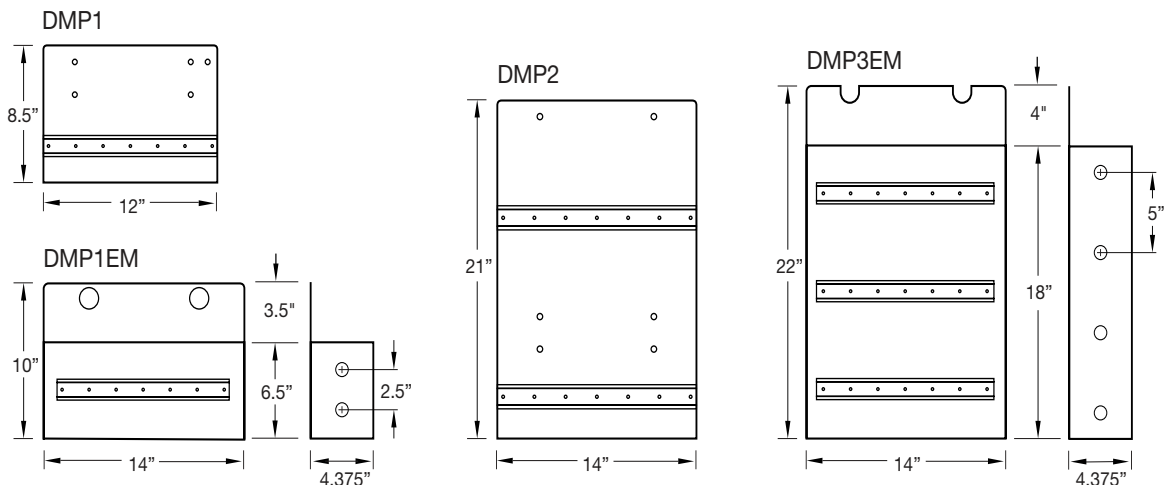
Description

Lighting Integrator panel enclosures are designed specifically to work with all configurations of LI panel interiors containing 8 to 48 relays. The enclosures are provided with integral mounting studs that are configured to accept the panel interior making the installation quick and easy. Covers are secured to the tubs with screws and have keyhole style mounting. This allows the cover to be temporarily hung on the tub during the construction phase of the project. All covers have hinged doors that expose only the low voltage (Class 2) section of the panel and are equipped with key locks and two keys each. All Lighting Integrator enclosures are NEMA 1 rated. Consult factory for other NEMA rated applications.

Configurations

Enclosures rated for 24 or 48 relay capacity have space provided at the bottom for optional mounting plates (DMP) to accept DIN rail mounted accessories such as multi-pole contactors and ELCU-100 Emergency Lighting Control Units. Standard LENC24 and LENC48 enclosures will accommodate up to six four pole contactors (requires DMP mounting plate) or four ELCU-100 units (requires DMP-1EM mounting plate). LENC8-24 and LENC24-48 enclosures have additional space provided and will accommodate up to twelve four pole contactors (requires DMP-2 mounting plate) or 12 ELCU-100 units (requires DMP-3EM mounting plate).

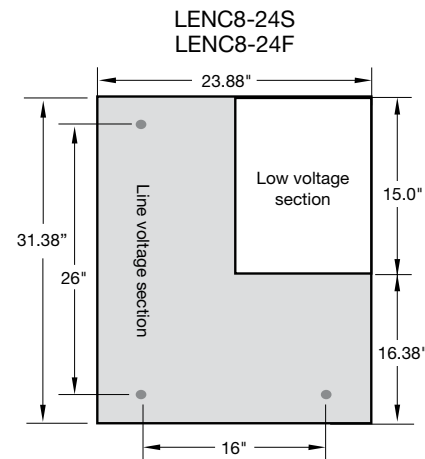
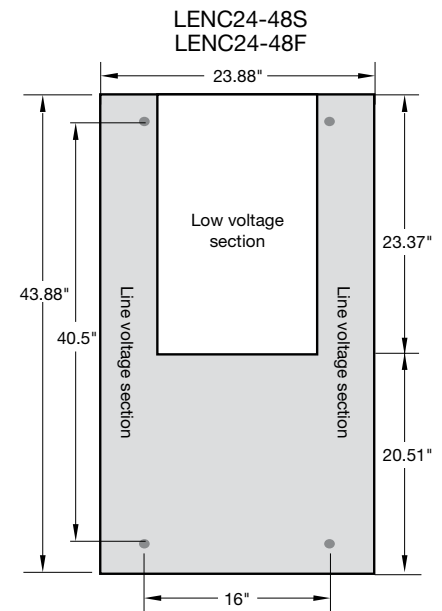
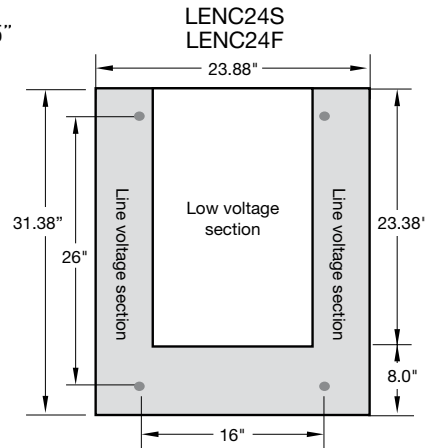
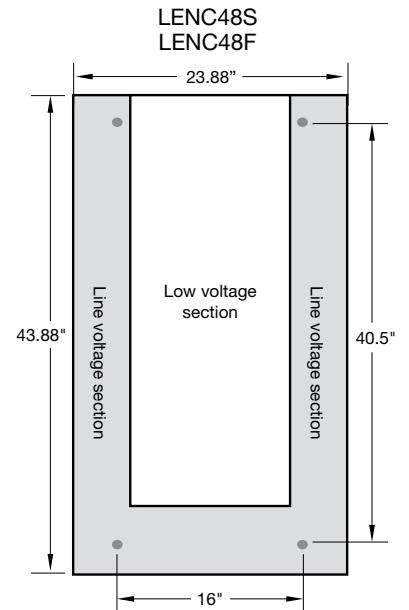
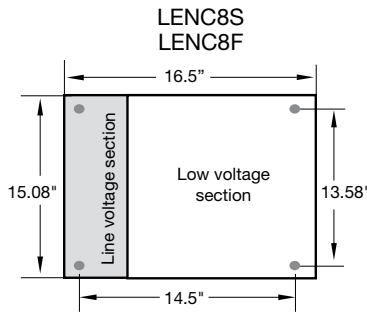
DIN Rail Mounting Options





Tub Dimensions

Note:
Tub depth 4.50"
Cover thickness .075"



Ordering Information

Catalog No.	Description	Overall Dimensions Including Cover (HxWxD)	Overall Weight
<input type="checkbox"/> LENC8S	8 relay capacity, surface mount	15.75" x 16.62" x 4.575"	18 lbs
<input type="checkbox"/> LENC8F	8 relay capacity, flush mount	17.10" x 18.48" x 4.575"	20 lbs
<input type="checkbox"/> LENC8-24S	8 relay capacity with 24 size tub, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC8-24F	8 relay capacity with 24 size tub, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24S	24 relay capacity, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC24F	24 relay capacity, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24-48S	24 relay capacity with 48 size tub, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC24-48F	24 relay capacity with 48 size tub, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> LENC48S	48 relay capacity, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC48F	48 relay capacity, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> DMP	mounting plate, one DIN rail for up to 6 contactors	8" x 12" x 4.625"	1.86 lbs
<input type="checkbox"/> DMP-2	mounting plate, two DIN rail for up to 12 contactors	21" x 14" x 4.625"	5.30 lbs.
<input type="checkbox"/> DMP-1EM	mounting plate, one DIN rail with barrier for up to 4 ELCU-100s	10" x 14" x 4.37"	3.64 lbs.
<input type="checkbox"/> DMP-3EM	mounting plate, three DIN rail with barrier for up to 12 ELCU-100s	22" x 14" x 4.37"	7.60 lbs.

Qualifies for use in ARRA-funded projects.

A Group brand Legrand

Lighting Integrator Emergency Relay Panel Option

UL924 listed for use on emergency circuits

Factory-assembled interior mounts in standard LI enclosure, ships completely wired

Meets NEC (NFPA70) UL 924 requirements for emergency lighting control



Allows normal control of emergency circuits via schedule, switch, photocell or other device

Guarantees that emergency lighting will turn on upon loss of normal power

PROJECT
LOCATION/TYPE

Product Overview

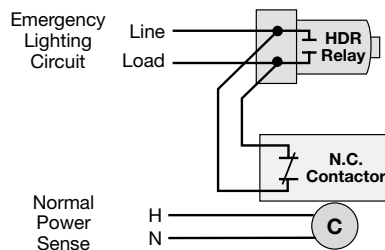
Description

The Lighting Integrator Emergency Relay Panel option provides certified fail-safe operation of lighting control circuits controlled by HDR relays in an LI lighting control panel. The option is available with any 24 or 48 size LI panel.

Operation

A dedicated normal power sense connection monitors the presence of normal power and allows the HDR relays to control the emergency lighting circuits based on ordinary control schedules and devices, such as switches, occupancy sensors, and daylighting control devices. When normal power is lost for any reason, all HDR relays controlling emergency circuits are each individually bypassed automatically by a set of normally closed contacts. The HDR relays do not change state during a power outage so lighting is restored when normal power is restored.

Wiring



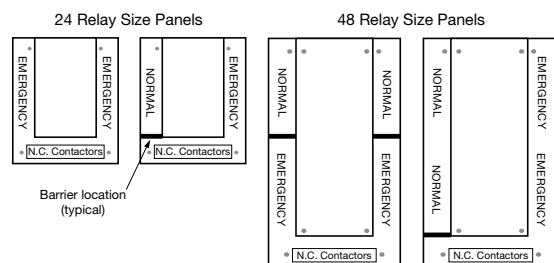
Applications

The Lighting Integrator emergency lighting control panel option is ideal for applications where always-hot emergency lighting circuits need to be controlled along with the normal lighting circuits. Because the lighting control panel with integrated yet dedicated emergency relays operates normally based on the type of intelligence card installed in the panel, this is suitable for virtually any type of application. These panels can be used reliably for fail safe emergency lighting operation in schools, office buildings, libraries, airports, industrial plants, warehouses, and auditoriums.

Specifications

- 30 Amp normally closed contactors used for shunt operation
- One to 24 emergency relays per panel, 24 or 48 size enclosure only
- Emergency relay rating: same as HDR
- Normal power sense input, 120, 277 or 347 volts, voltage specific
- UL listed for use on emergency circuits

Emergency Relay Panel Configurations

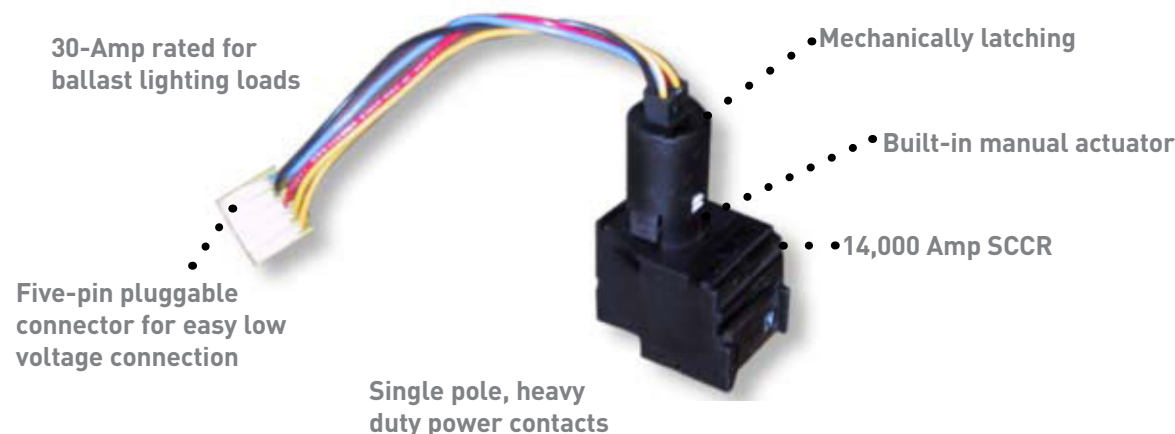


Description

Order LI Emergency Relay Panel option using the ordering section on the LI level panel cut sheet.



HDR Low Voltage Relay



PROJECT

LOCATION/TYPE

Product Overview

Description

This low voltage relay is used for control of lighting circuits and other electrical loads in WattStopper's Lighting Integrator control panels. Momentary, low voltage pulses from the panel's control system switch the relays on or off. Mechanical latching operation results in lower power consumption. The relay will remain in the last switched state in the event of a power loss. A built-in manual actuator allows lights to be turned on in the event of a panel or relay failure. The relay mounts into a standard knockout and comes with a plug-in cable for easy panel connection. Typically, users specify the number of relays and the panel is assembled and shipped with this quantity.

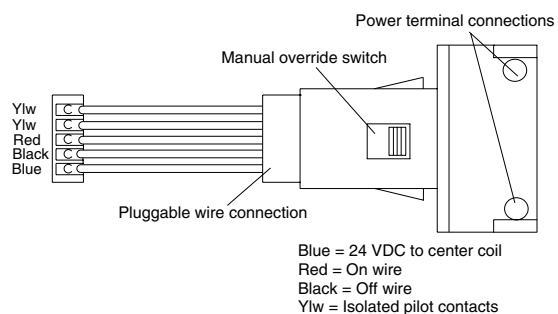
Specifications

- 1/2" knockout mounting
- Accepts wire gauge #10 - #14 AWG, copper wire, solid or stranded
- Operating voltage 24 VDC
- Isolated pilot relay contacts, .5 Amp @ 30 VAC/DC for status feedback
- Integral manual override
- Rated 14,000 amps Short Circuit Current Rating (SCCR)
- Suitable for use with all HID ballasted loads
- Expected service life is over 25 years at nominal load and cycle rate
- Dimensions: 3.2"x 1.3"x .85" (81.3 mm x 33.0 mm x 21.6 mm)
- UL listed, CSA certified; five year warranty

Ratings

- Ballast load 30 Amp @ 277 VAC (including HID) 20 Amp @ 347 VAC
- Tungsten load 20 Amp @ 120 VAC
- Resistive load 30 Amp @ 347 VAC
- Motor load 1½ HP @ 120 VAC

HDR Wiring



Catalog No. Description

<input type="checkbox"/> HDR5P	Mechanically Latching Relay (low voltage) with five-pin plug-in connector, pilot contacts, override switch
--------------------------------	------------------------------------------------------------------------------------------------------------

Qualifies for use in ARRA-funded projects.

Ordering Information

Automatic Relay Pack (ARP) for LI Complete Control

Adds distributed intelligent room control to Lighting Integrator systems



Two relay outputs work in tandem or as a bi-level pair

Low voltage switch, occupancy sensor and daylight sensor inputs

Automatic shutoff with blink warn and afterhour time delays

Product Overview

Description

The Lighting Integrator (LI) ARP Automatic Relay Pack is a self-contained room controller that provides distributed intelligent control of lighting loads. Because the ARP is installed where the control is needed, it reduces the cost and complexity of design and installation. The ARP shares data with the LI Complete Control (LIC) system and allows an integrated time, occupancy and daylight based lighting control solution.

Operation

Although the two relays in the ARP must share the same schedule, they can be controlled independently using the two low voltage switch inputs, or together using a single switch. The default settings for the ARP are manual-on/automatic-off to maximize energy savings. When the ARP receives an occupancy signal from the LIC system, the relays will not turn on until activated by the wall switch. When the space becomes vacant, the lights will blink to warn of impending shutoff after a five-minute grace period. During

Features

- Default configuration maximizes energy savings and simplifies application
- Distributed intelligence enhances operation of integrated control strategies and ensures reliability
- Two relays can be used independently for bi-level or load shed applications
- Isolated form C contacts for each relay allow custom integration with other devices
- Two low voltage switch inputs support three-wire momentary or two-wire alternate configuration
- Standard inputs accommodate two switches, one occupancy sensor and one daylight sensor
- NEMA 1 housing is suitable for use in return air plenums
- Robust digital network is polarity-insensitive and can be installed using linear, "T" tap, or star topologies
- Fully integrates with LI Complete Control systems using WinControl software
- Stand-alone mode allows use without network
- Qualifies for use in ARRA-funded projects

PROJECT

LOCATION/TYPE

Operation cont'd.

the grace period, the occupant can cancel the off by activating the wall switch. If an occupancy sensor is connected to an ARP input, it will operate normally during unoccupied periods. During occupied periods, the occupancy sensor will default to manual-on/automatic-off control. This operating scenario minimizes energy waste while eliminating nuisance activation of lighting from walk-by traffic.

Applications

The ARP is ideal for applications where a combination of time, occupancy, and daylight-based strategy is needed for multiple areas in the building. This room controller concept places the multi-strategy distributed intelligence directly in the area being controlled, eliminating runs to the electrical closet. Since the ARP contains two relays, it provides an excellent solution for bi-level switching or load shedding within a single space. The ARP is perfect for classrooms, offices, conference rooms and other small spaces.

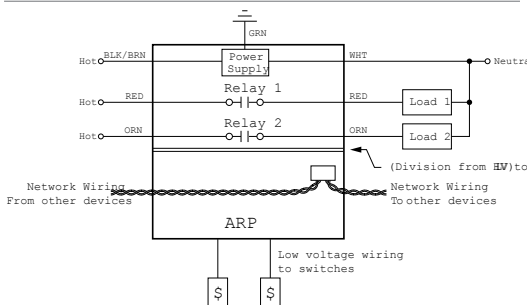


Specifications

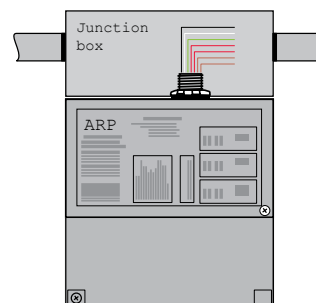
- 120/277 VAC, 60 Hz
- Load relays rated 20 amps ballast at 120/277 VAC 60Hz, 20 amps incandescent at 120 VAC 60Hz, 1 hp at 250 VAC 60Hz
- Auxiliary relay contacts, 1 amp at 24 VDC, form C
- Pilot light output, 24 VDC each relay
- Auxiliary power, 200 mA at 24 VDC
- Network dataline, one pair twisted, 1500' max, free topology
- Enclosure, 1/2" pipe thread mount, NEMA 1, approved for use in return air plenum
- 6.63"x 6.13" x 2.13" (168mm x 156mm x 54mm) H x W x D
- FCC Compliant Part 15, sub-part J for commercial and residential
- UL and CUL listed; three-year warranty

Wiring Configurations

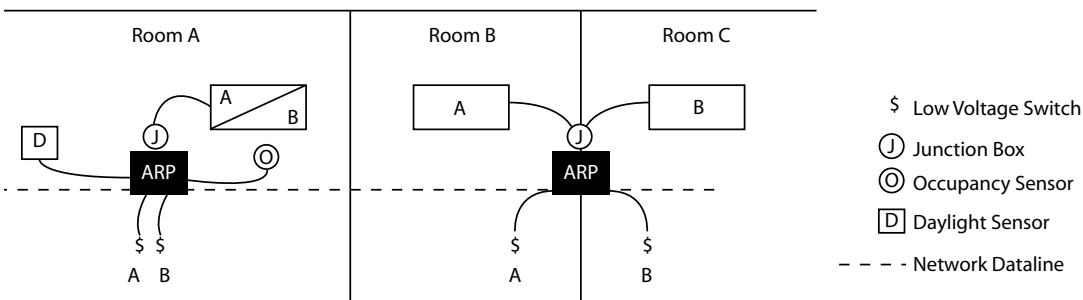
ARP Low Voltage Wiring



ARP Junction Box Wiring



ARP Application Examples



- \$ Low Voltage Switch
- Ⓝ Junction Box
- Ⓞ Occupancy Sensor
- Ⓛ Daylight Sensor
- - - Network Dataline

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LIARP 120/277	Lighting Integrator ARP Automatic Relay Pack
Accessories	
<input type="checkbox"/> LVS-1	Three-wire momentary toggle switch
<input type="checkbox"/> L1S (color)	Single button alternate action switch with pilot

WinControl Software for LI Complete Control

Windows-based control and automation for Lighting Integrator Complete Control panels

Panel programming off- or online

Detailed activity logs, runtime reports, and graphs



System management and administration

Design, layout and document lighting control projects

Simulator function for training purposes

Product Overview

Description

WinControl Software provides PC-based automation and control for WattStopper Lighting Integrator Complete Control (LIC and LICA) panel systems. The integral design program, WinControl Designer, can layout and document lighting control projects, and produce CAD-ready diagrams in DXF format.

Operation

WinControl provides a user interface for programming, monitoring and controlling functions for LIC panel networks. Administrators can use the software to program control schedules off-line, and then execute updates with a simple command. Once programmed using WinControl, the panels execute control scenarios, including scheduled off with blink warning, time delay overrides with blink warning, or automatic daylight switching with occupant interlock/override. Administrators can configure password-protected security settings to specify users with authority to change programming or documentation, and execute control functions. Online operation enables users to control individual relays or make immediate changes to scheduled operations.

PROJECT

LOCATION/TYPE

System Reports and Analysis

WinControl provides comprehensive monitoring and reporting capabilities, including reports for documenting control system devices and schedules. It generates activity logs, exception reports and run-time graphs that can be used for trend analysis or to track actual lighting usage (down to the individual relay level, if desired) and evaluate energy costs. The software can also verify that the system is operating as intended, or identify and diagnose potential concerns.

Applications

Facilities with multiple LIC panels, such as office building campuses, convention centers, airports, arenas and large commercial facilities are ideal settings for lighting control management via WinControl. Capable of automating and controlling all types of interior and exterior lighting applications, WinControl is also adept at administration down to the relay level. Operators can tailor lighting control to building and occupant activities on a daily or weekly basis with programmable holiday and exception schedules.

Features

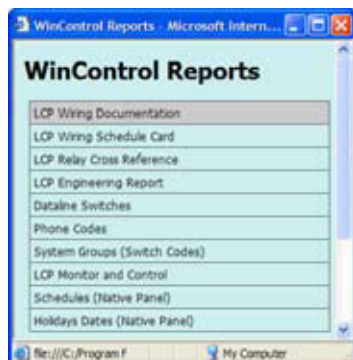
- Explorer-like view of all system components
- Remote operation capabilities via modem network or TCP/IP connection via WebLink
- Design export to DXF format with output, including single line riser diagram, panel schedules and specification summary
- Weekly scheduling with holiday and astronomic control
- Designer wizard creates lighting control project layouts
- User-programmable override and time delays
- Full support for AS-100 Automatic Control Switches and LI-ARP automatic relay packs
- Program panels for HPSA Analog Photocell operation with up to 32 setpoints
- Configure panels for varied occupancy sensor behavior to check occupied and unoccupied periods
- Qualifies for use in ARRA-funded projects



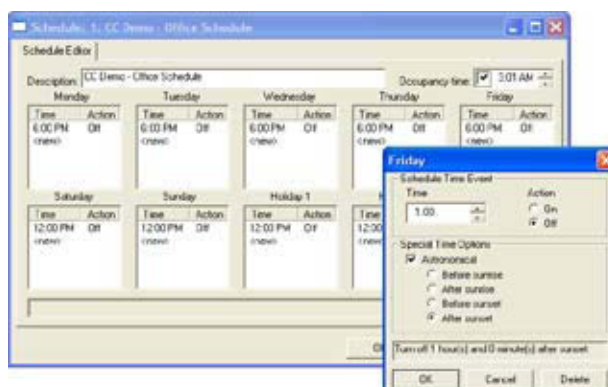
Specifications

- Compatible with Windows Vista Business and XP Professional
- PC Requirements: 256 MB RAM, CD-ROM, 100 MB free hard disk space
- Monitor Requirements: 16-bit color, minimum 800x600 resolution
- Data Communications Link (HLINKCC) required to connect PC to LIC panel network

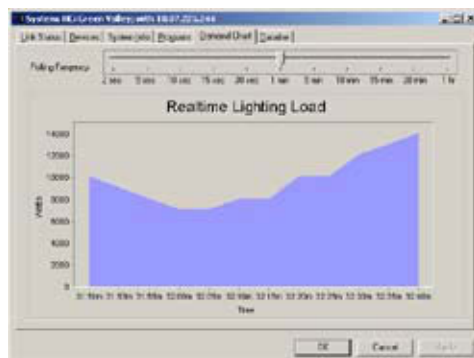
Sample WinControl Screens and Reports



Users can select reports from a browser-like screen.



Users set up weekly schedules, modify daily events, and specify actions for weekends and holidays on this scheduling screen.



Real time load report graph provides administrator with a snapshot of lighting system usage.

Monitoring and trend analysis are enabled by reports such as these runtime and runtime exception reports.

Type	Circuit	Description	LV Switch	Comment	Circuit Load	Normal Schedule	Override Duration	Variable Override	Blank Warn	Pulse	HID Load	Log Tracks	Common	Relay Number
1	Pilot	HB-2-1	Office 201	201	90	0001 - CC Di	00:10	<None>	✓	No	✓	✓	No	1
2	Pilot	HB-2-1	Office 202	202	90	0001 - CC Di	00:10	<None>	✓	No	✓	✓	No	2
3	Pilot	HB-2-2	Open Office East 1		225	0001 - CC Di	00:00	<None>	✓	No	✓	✓	No	3
4	Pilot	HB-2-2	Open Office East 2		450	0001 - CC Di	00:00	<None>	✓	No	✓	✓	No	4
5	Pilot	HB-2-3	Open Office West 1		315	0001 - CC Di	00:00	<None>	✓	No	✓	✓	No	5
6	Pilot	HB-2-3	Open Office West 2		630	0001 - CC Di	00:00	<None>	✓	No	✓	✓	No	6
7	Pilot	HB-2-4	Corridor / Lobby	203	495	<None>	00:03	<None>	✓	No	✓	✓	Yes	7
8	Pilot	HB-2-5	Conference Room 204		210	<None>	00:00	<None>	✓	No	✓	✓	No	8
9	Pilot	HB-2-5	Conference Room 205		135	<None>	00:00	<None>	✓	No	✓	✓	No	9
10	Pilot	HB-2-6	Mens Restroom, Fall		140	<None>	00:00	<None>	✓	No	✓	✓	No	10
11	Pilot	HB-2-6	Womens Restroom		140	<None>	00:00	<None>	✓	No	✓	✓	No	11

Documenting, programming and controlling panel relays is simplified with point and click screens and drop down menus.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> WCHSTD250	WinControl Software for Lighting Integrator Complete Control 250-relay system
<input type="checkbox"/> WCHSTD500	WinControl Software for Lighting Integrator Complete Control 500-relay system
<input type="checkbox"/> WCHSTD750	WinControl Software for Lighting Integrator Complete Control 750-relay system
<input type="checkbox"/> WCHSTDUL	WinControl Software for Lighting Integrator Complete Control unlimited-relay system
Additional networking component:	
<input type="checkbox"/> HLINKCC	Lighting Integrator Data Communications Link (required for PC connection to LI dataline)

WinControl Graphics for LI Complete Control

Graphical enhancement to standard WinControl software

Facility-specific on-screen system graphics

Supports multiple graphics peripherals and file formats



Real time programming and monitoring

Status, documentation, and programming data for each system device

Multiple site graphics on single screen view

PROJECT
LOCATION/TYPE

Product Overview

Description

An optional package for WinControl Software, WinControl Graphics provides capabilities for on-screen system programming changes, real time monitoring and operation in a graphical environment. It functions with WattStopper Lighting Integrator Complete Control (LIC) panel systems.

Operation

WinControl Graphics works seamlessly with WinControl. All panel, load, and scheduling data entered in WinControl is automatically shared and available for access from within the WinControl Graphics environment, eliminating duplication of data input. The customized graphic screen displays enable system administrators to instantly identify the status of specific devices, or control the system with ease (e.g., turn individual lamps or relays on or off using a simple mouse click). WinControl Graphics also supports multiple graphic file formats so users can easily import graphics from other applications to customize displays.

Customized Graphical Displays

WinControl Graphics allows users to create and modify graphic displays for customizing the application and to view system lighting status on screen in real time. Typically, a floor or building plan, map, photograph or similar graphic is imported to create a custom control screen so that users may easily identify lighting zones. Customized lighting control buttons are associated with the graphic so that a lighting operation can be turned on or off via a simple mouse click. Users can accommodate multiple graphic displays on a single screen, enabling them to conduct system administration on different sites from a single location.

Applications

For large, complex facilities, such as convention centers, airports, stadiums, or high-rise office buildings, WinControl Graphics offers a versatile, user-friendly system administration tool.

Features

- Multiple site graphics on single screen view
- On-screen simulation of system operation
- Point and click control of individual relays or groups of relays
- Displays system activities in context of specific building plans
- Supports BMP, WMF, JPEG, AVI, PCX, DCX graphics file formats
- Zoom, resize, and scroll capabilities for easy maneuverability
- Screens and control buttons may be tailored to individual requirements
- Qualifies for use in ARRA-funded projects

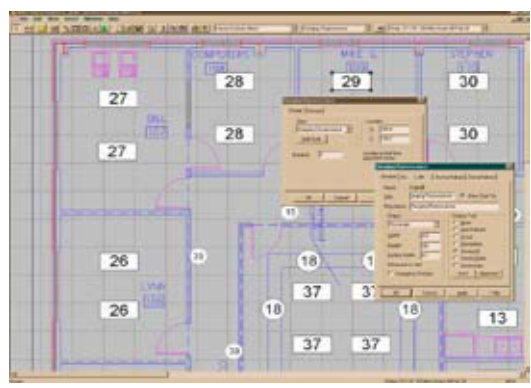


System Requirements

- Compatible with Windows Vista Business and XP Professional
- PC Requirements: 512 MB RAM plus 1.0 MB per graphic screen, CD-ROM, 100 MB free hard disk space plus 1.0MB per graphic screen
- Monitor Requirements: 16-bit color, minimum 800x600 resolution
- Data Communications Link (HLINKCC) required to connect PC to LIC panel network

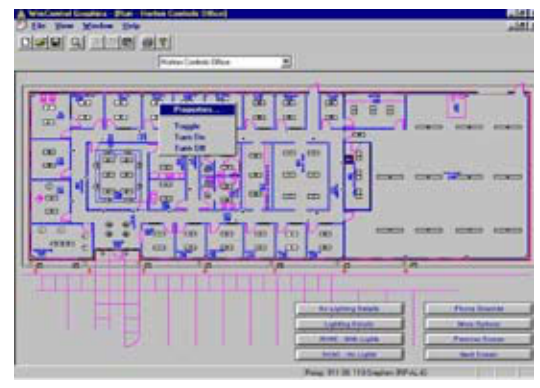
Sample WinControl Graphics Screens

WinControl Graphics System Screen



Graphic screens accurately display fixtures, switches, and other system devices and their on/off status.

WinControl Graphics Run Mode



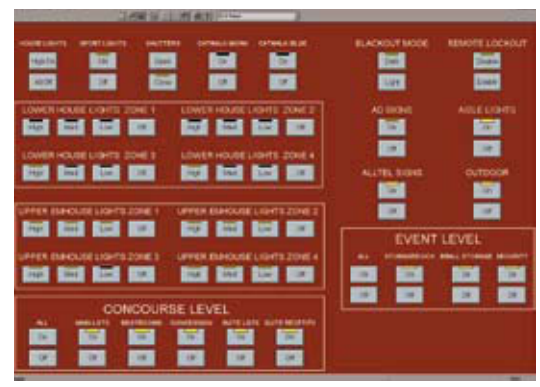
The run mode enables users to see programming changes on-screen and in real time.

Multiple Site Viewing on Single Screen



Multiple site graphics are accessible on a single screen.

Customized Graphical Displays



Users can customize graphic displays to streamline system administration.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> WCHGR250	WinControl Graphic Software for Lighting Integrator Complete Control 250-relay system
<input type="checkbox"/> WCHGR500	WinControl Graphic Software for Lighting Integrator Complete Control 500-relay system
<input type="checkbox"/> WCHGR750	WinControl Graphic Software for Lighting Integrator Complete Control 750-relay system
<input type="checkbox"/> WCHGRUL	WinControl Graphic Software for Lighting Integrator Complete Control unlimited-relay system
Required software package:	
<input type="checkbox"/> WCHSTD	WinControl Software for Lighting Integrator Complete Control
Additional networking component:	
<input type="checkbox"/> HLINKCC	Lighting Integrator Data Communications Link (required for PC connection to LI data line)

Data Communications Link for LI Complete Control



Product Overview

Description

The Data Communications Link (HLINKCC) provides the connection between a PC and an LIC/LICA network. It enables PCs running WinControl software to communicate to multiple panels linked together.

Operation

The Data Communications Link interfaces PCs with the panel network. It connects at any point on the shielded, twisted pair communications wire. The device enables all the lighting control panels in an LIC/LICA system to be programmed and monitored from a computer using WinControl software. It also provides notification of failed field devices or relays, including a failure in the Data Communications Link itself via an LED and a set of relay contacts. The Data Communications Link is connected to a PC using the cable (HCABLE-C).

Networking

The Data Communication Link enables PC control and automation of networked LIC or LICA panels. Multiple units can be used on an LI panel network to provide multiple operator stations or as portals to other building control systems.

Administrators may select from additional networking options. For remote access via telephone lines, the LI modem option (HMODEM) may be selected, which connects to the Data Communications Link. If multi-user access to the panel network is desired via TCP/IP or the internet, the WebLink appliance (WL-BASE) can be added.

Features

- System synchronization clock with automatic daylight savings and leap year adjustment
- LED status indicators for power, online, and data activity
- Alarm contacts and LEDs to annunciate failed devices
- Terminals for connection to global dataline
- Qualifies for use in ARRA-funded projects

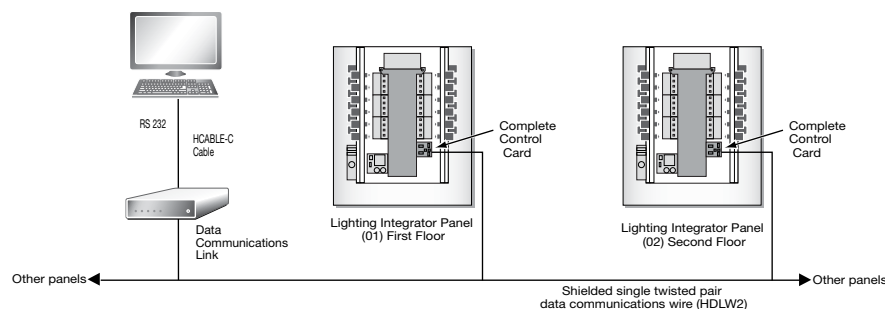


Specifications

- RS232 serial communications port
- 300/1200/2400/4800/9600/19200 auto baud
- Alarm contacts rated at 28 VDC and 2 mA maximum
- 115 VAC plug-in transformer power supply
- Shipping weight: 3 lbs. (1.36 kg.)
- UL and CUL listed
- One year warranty

System Layout

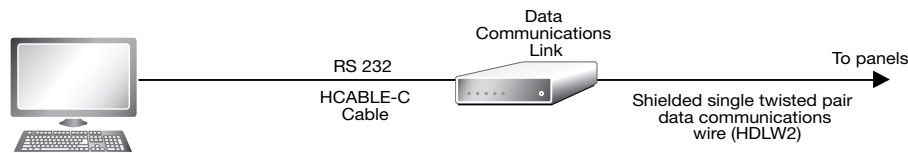
Networked System Layout



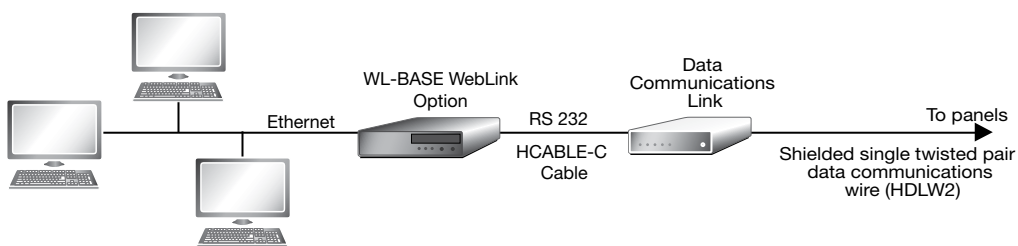
LIC panel network with PC connection via Data Communications Link

Networking Options

Data Communication Link Applications



Communications components for single-user connections.



Communications components for multi-user LAN, WAN or internet connections

Ordering Information

Catalog No.	Description
<input type="checkbox"/> HLINKCC	Data Communications Link with 115V power supply for LI Complete Control
Additional networking components and options:	
<input type="checkbox"/> HMODEM	LI Modem
<input type="checkbox"/> HCABLE-M	RS 232 Modem Connection Cable
<input type="checkbox"/> WL-BASE	WebLink Appliance
<input type="checkbox"/> HDWL2	Shielded single twisted pair data communications wire
<input type="checkbox"/> WCHSTD-xxx	WinControl software
<input type="checkbox"/> HCABLE-C	RS232 connection cable

WebLink Network Appliance for LI Complete Control

IP connectivity to Lighting Integrator panel network

Multi-user access for those using WinControl software

Set up control schedules through Web browser interface

Integrate with BAS system via BACnet protocol



PROJECT
LOCATION/TYPE

Product Overview

Description

The WebLink Network Appliance is one option for connectivity between a standard IP network and a Lighting Integrator (LI) panel network. It enables multiple users to access and control a network of LI Complete Control (LIC) panels from any location on an Ethernet network (e.g., LAN, WAN or internet). Optional WebLink Scheduler Software provides scheduling capabilities via a standard web browser. Optional My Lights Software offers personal lighting control via individual desktop PCs. Optional BACnet Integration exposes relays and group codes as BACnet objects.

Operation

WebLink connects to and automatically maintains communications directly with a LIC network through a Data Communications Link (HLINKCC) serial connection. The WebLink provides web browser-based access to panels on the network for viewing panel status and overriding relays. It allows panel network connectivity to be shared among multiple user connections for simultaneous access, providing an IP connection to other installations of WinControl software on remote PCs over a dedicated or enterprise LAN or WAN.

WebLink Scheduler Software

With optional WebLink Scheduler Software, users can employ their browser instead of WinControl to schedule a full calendar. Annual, monthly, weekly and daily calendars are displayed to multiple PCs as web pages. Users can set up new events for any time period by selecting a specific date, time and action, or easily perform modifications of one-time or recurring events. Schedule templates enable creation and storage of alternative schedules for special events that need unique lighting scenarios, an ideal feature for convention and multiuse centers, stores and arenas.

My Lights Software

Optional My Lights software offers personal space lighting control via desktop PC. In its manual mode, My Lights provides users with on/off control via a display on their PC. In automatic mode, My Lights maintains space lighting by monitoring PC mouse and keyboard activity; when activity ceases, My Lights turns lighting off after a preset interval initiated by a blink warning. Users may override this automatic off with any mouse or keyboard movement.

Features

- Enables IP network connectivity to LIC panel network for multiple users via WinControl
- Compatible with legacy CC panels
- Configurable for DHCP services or static IP address
- Optional shelf for rack mounting
- Modem option for phone dial-up remote access (where remote IP access is not convenient)
- Labels and descriptors of LIC network devices (i.e., relays, switches) automatically synchronize with WinControl for easy device selection
- Provides connectivity with BAS systems using industry standard BACnet protocol
- Qualifies for use in ARRA-funded projects

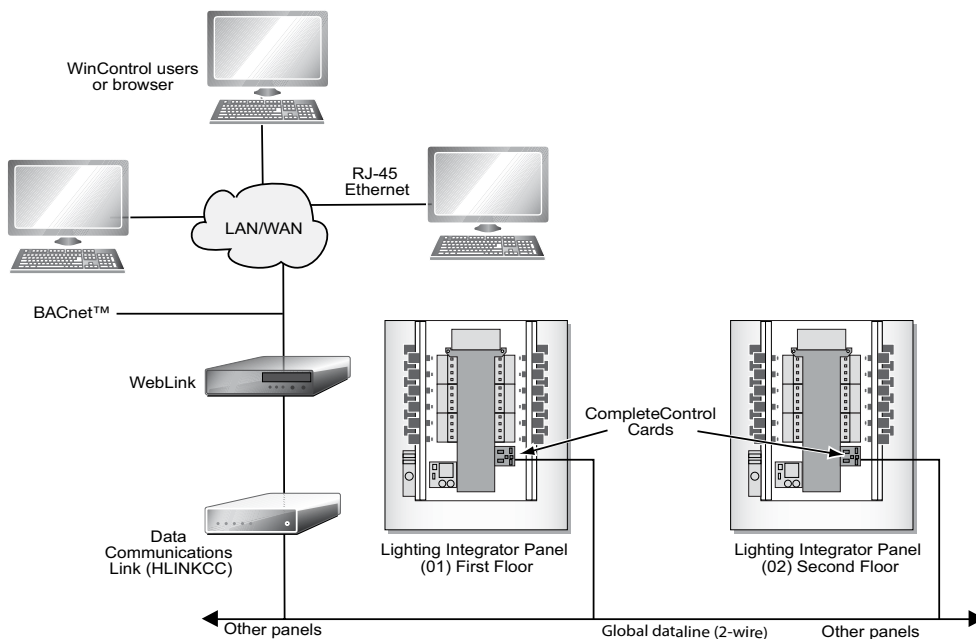


Specifications

- Includes AC Adapter: Input (AC 100~240 V)
- Serial DB9 connector - for connection to HLINK
- 10/100 RJ45 Ethernet LAN connector
- Dimensions: 11.5" x 2.5" x 10.75" (292.1 mm x 63.5 mm x 273.1 mm) W x H x D
- Shipping weight: 10 lbs (4.5 kg)
- One-year warranty

System Layout

LIC Panel System with WebLink



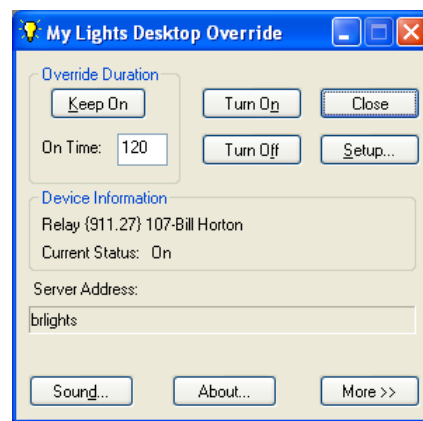
WebLink Options

Main Scheduler Screen



WebLink's main scheduler screen shows recent actions on the LI network, actions scheduled for the day, and quick links to alternate views.

My Lights



Individual users can access this control display from desktop PCs launched from a simple applet in the Windows system tray.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> WL-BASE	WebLink Network Appliance with AC adapter
<input type="checkbox"/> WL-OPTSCHED	WebLink Scheduler Software (browser-based)
<input type="checkbox"/> WL-MYLIGHTS	My Lights Software for personal desktop PC control and override
<input type="checkbox"/> WL-OPTMODEM	Modem for remote access via dial-up phone network
<input type="checkbox"/> WL-RACKSHELF	Black Shelf for rack mounting up to 50 lbs., 5.25"x17.25"x12.13" (133.4mm x 438.2mm x 308.1mm) HxWxD
<input type="checkbox"/> WL-UPS	UPS backup for WebLink

Analog Photocell for Lighting Integrator Complete Control

Color-coded Class 2 connection to panel

All adjustments made via WinControl software



Calibration remote from sensor (compliant with CA Title 24 requirements)

Three application-specific models for easy selection

Product Overview

Description

Analog series photocells provide ambient light level measurements to Lighting Integrator Complete Control (LIC) panels, enabling flexible, multi-setpoint control of lighting. The outdoor model, HPSA, is completely weatherproof and equipped with a hooded lens to help protect against snow and glare. Indoor models include the HPSA-S for mounting in skylights, clearstories and atriums, and the HPSA-I, which is ideal for daylight shed applications and is mounted on the ceiling or wall.

Applications

The outdoor model HPSA is typically mounted on the building roof facing north. The HPSA provides exterior ambient light level information to the LIC panel where one or more setpoints have been established to control exterior lighting. The skylight model HPSA-S is designed to be compatible with the high light levels encountered near the glass in skylights, atriums and clearstories. Typically, the HPSA-S will provide light level information to the panel and be used to hold off/shed unnecessary interior lighting during bright daylight hours. The HPSA-I is also used to shed interior lighting in response to daylight, but is designed to operate in the relatively low ambient light levels present at the ceiling in interior rooms.

Features

- Exterior and skylight models provide flexible mounting options via 1/2" threaded conduit fitting
- No calibration or adjustments required at the photocell location; all setup done in software
- Interior model mounts simply, without tools, using the provided peel and stick adhesive
- Color-coded flying leads and matching color-coded terminals in panel simplify installation
- Qualifies for use in ARRA-funded projects

PROJECT
LOCATION/TYPE

Operation

Analog series photocells are powered by Class 2 DC voltage supplied from any input terminal on a Group Switching card installed in an LIC panel. The photocells return a DC signal to the panel in proportion to the amount of light striking the photocell lens. No adjustments are needed at the photocell head. Powerful WinControl software normalizes the photocell signal and provides an easy user interface, permitting setup of lighting control scenarios based on footcandle level setpoints. Two modes allow for basic applications where default settings produce the desired control. An advanced mode allows the setpoints, time delays and dead-band to be fine-tuned for more sophisticated application requirements

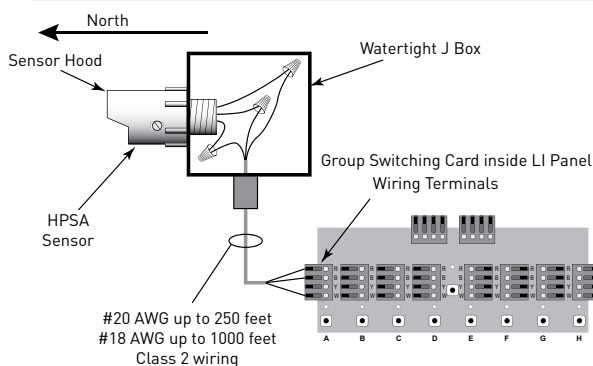


Specifications

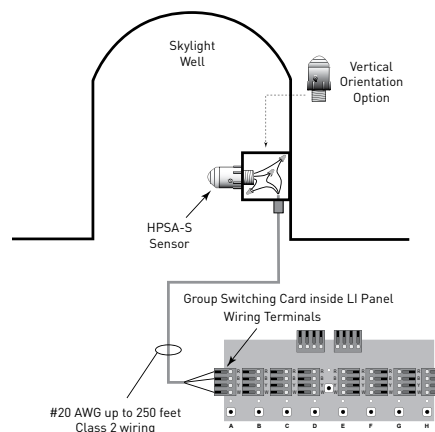
- Calibration: none (controlled by system software)
- Input Voltage: 12VDC
- Sensor Output: 0-4.4 VDC
- Peak Current: 4.5 mA maximum
- Slew Rate:
One minute full scale response time
- Wire Color Code: Red: +12VDC; Black: 0-4.4VDC signal to panel; White: DC common
- Operating Temperature:
-40°F-140°F (-40°C- 60°C)
- Mounting:
HPSA and HPSA-S: 1/2" NPT x .69" stem;
HPSA-I : 0.5" x .64" stem with 3M® adhesive pad
- Housing: UV stabilized plastic
- Dimensions:
HPSA: 2.25" x 1.28" diameter
HPSA-I: 1.23" x 2.00" diameter
HPSA-S: 2.25" x 1.28" diameter

Application Diagrams

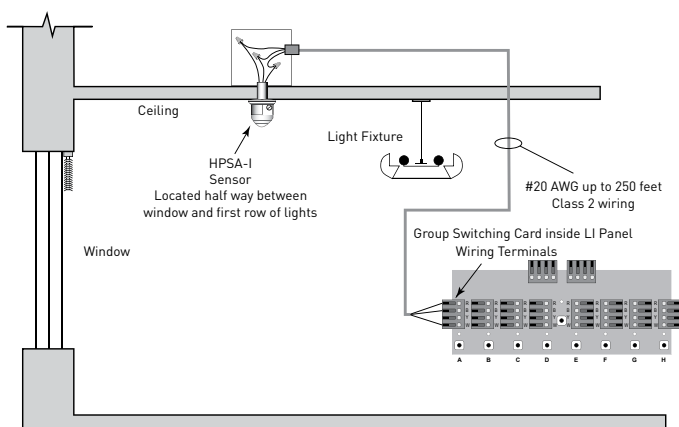
HPSA Outdoor Wiring



HPSA-S Skylight Wiring



HPSA-I Indoor Wiring



Ordering Information

Catalog No.	Description	Application Range
<input type="checkbox"/> HPSA	Outdoor analog photocell sensor, white housing	0 - 200 FC
<input type="checkbox"/> HPSA-I	Indoor analog photocell sensor, white housing	0 - 500 FC
<input type="checkbox"/> HPSA-S	Skylight analog photocell sensor, white housing	0 - 6000 FC

NOTE: May be ordered with custom calibration by adding suffix "X" and stating desired range.

Dataline Switch for LI Automation and Complete Control

Pushbutton control for single relays, groups of relays, and/or channels in Lighting Integrator panel systems

Screwless wallplate and removable lens caps for labeling

Pilot light LEDs for visual status feedback



1-, 2-, 4-, and 8-button configurations

Locator light bar for visibility when dark

Local dataline compatibility provides easy installation and operation

PROJECT
LOCATION/TYPE

Product Overview

Description

The Lighting Integrator (LI) Dataline Switch (HDLSxSS) is designed for use with LI Automation (LIA), LI Complete Control (LICA), and LI DMX (LIDA) panels and offers flexible and user-friendly lighting control of a single relay or a group of relays in one panel or a network of panels.

Operation

Dataline Switches install into standard wallboxes and connect to an LIA/LICA/LIDA panel via dual twisted pair digital bus wiring. Each switch unit contains one master button and up to eight individual switch buttons which can be individually programmed (smartwired) to control relays or groups of relays. Individual switch buttons are programmed directly from WinControl software on LICA systems or by lifting the switch covers to uncover the smartwiring buttons on LIA and LIDA systems. Pressing these buttons (see Switch Programming and Wiring) sends a unique digital code that identifies the buttons and switch to the panel. The buttons can then be assigned to a relay or a group of relays. The master button is programmed via DIP switches on the back of the switch with a choice of functions.

Control Capabilities

Dataline switches can be used with LIA, LICA, and LIDA systems. In LIA systems, buttons can be programmed to control either a group of relays in a single panel or a channel in one or more panels. In LICA systems, the buttons may also control system-wide group codes.

Applications

Multiple Dataline Switches connect together and to a panel via 4-conductor data communications wiring (also referred to as the local dataline). This reduces the wiring required by conventional switches, since up to 63 devices per panel can share the dataline. Dataline Switches are ideal for commercial office or other buildings where individual occupant lighting control needs are paramount. These switches are flexible enough to accommodate individual needs while facilitating efficient, area-wide automated lighting control. The "cleaning" scenario enables maintenance crews to control needed lighting without interfering with the needs of individuals working after hours.

Features

- Works with with LIA, LICA, and LIDA systems
- Bi-color pilot light status LEDs indicates relay states for each button (red = All On, green = mixed state, no color = All Off)
- Locator light bar for finding switch in the dark
- Optional key lock version for public locations
- Optional cleaning control scenario
- Optional On Only setting to prevent inadvertently turning lights off
- Master button with programmable configurations (Restore/All Off; All Off, All On/All Off, or Disabled)
- Available in white, ivory, almond, and gray
- Qualifies for use in ARRA-funded projects



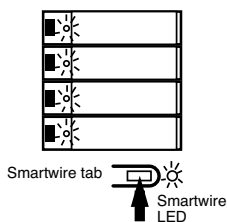
Specifications

- Standard wallbox mounting, non-gangable
- Removable switch button lens caps accommodate 3/8" (9mm) laminated tape
- Custom engraving available
- Environmental: Operating temperature range 32 to 139°F (0 to 60°C), 5-95% RH noncondensing
- Dimensions: 4.5" x 2.75" x 1.8" (69.8mm x 114.3mm x 46mm) HxWxD for 1-, 2-, and 4-button switch; 4.5" x 4.5" x 1.8" (114.3mm x 114.8mm x 46mm) HxWxD for 8-button switch
- One year warranty

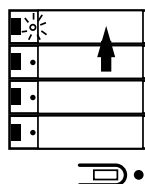
Switch Programming and Wiring

Smartwiring a Dataline Switch

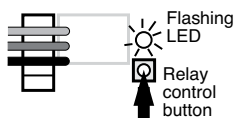
- 1** Remove wallplate and Press Smartwire tab once. Smartwire LED flashes once. All switch button LEDs begin flashing.



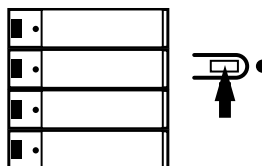
- 2** Press switch button to be programmed. Selected button LED continues to flash. Other LEDs stop flashing.



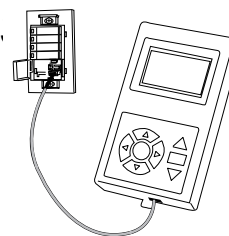
- 3** Press relay control button to add or delete from group.



- 4** Press Smartwire tab again. All LEDs stop flashing. Smartwiring is completed. Repeat for other buttons as needed.

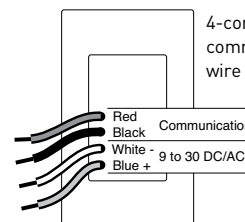


Switch Programming



Users can program Dataline Switches in the field with the Network Clock (if using WinControl, Network Clock is not required).

Dataline Switch Wiring



4-conductor data communications wire (HDLW4)

Ordering Information

Catalog No.	Color	Description	Catalog No.	Color	Description	Size	Power Consumption
<input type="checkbox"/> HDLS1SS-7	White	Single Dataline Switch	<input type="checkbox"/> HDLS1SSK-7	White	Keyed Single Dataline Switch	Single-gang	45 mA
<input type="checkbox"/> HDLS1SS-2	Ivory		<input type="checkbox"/> HDLS1SSK-2	Ivory			
<input type="checkbox"/> HDLS1SS-4	Light Almond		<input type="checkbox"/> HDLS1SSK-4	Light Almond			
<input type="checkbox"/> HDLS1SS-9	Gray		<input type="checkbox"/> HDLS1SSK-9	Gray			
<input type="checkbox"/> HDLS2SS-7	White	Dual Dataline Switch [2 individual buttons + Master button]	<input type="checkbox"/> HDLS2SSK-7	White	Keyed Dual Dataline Switch [2 individual buttons + Master button]	Single-gang	50 mA
<input type="checkbox"/> HDLS2SS-2	Ivory		<input type="checkbox"/> HDLS2SSK-2	Ivory			
<input type="checkbox"/> HDLS2SS-4	Light Almond		<input type="checkbox"/> HDLS2SSK-4	Light Almond			
<input type="checkbox"/> HDLS2SS-9	Gray		<input type="checkbox"/> HDLS2SSK-9	Gray			
<input type="checkbox"/> HDLS4SS-7	White	Quad Dataline Switch [4 individual buttons + Master button]	<input type="checkbox"/> HDLS4SSK-7	White	Keyed Quad Dataline Switch [4 individual buttons + Master button]	Single-gang	55 mA
<input type="checkbox"/> HDLS4SS-2	Ivory		<input type="checkbox"/> HDLS4SSK-2	Ivory			
<input type="checkbox"/> HDLS4SS-4	Light Almond		<input type="checkbox"/> HDLS4SSK-4	Light Almond			
<input type="checkbox"/> HDLS4SS-9	Gray		<input type="checkbox"/> HDLS4SSK-9	Gray			
<input type="checkbox"/> HDLS8SS-7	White	Octal Dataline Switch [8 individual buttons + Master button]	<input type="checkbox"/> HDLS8SSK-7	White	Keyed Octal Dataline Switch [8 individual buttons + Master button]	Double-gang	75 mA
<input type="checkbox"/> HDLS8SS-2	Ivory		<input type="checkbox"/> HDLS8SSK-2	Ivory			
<input type="checkbox"/> HDLS8SS-4	Light Almond		<input type="checkbox"/> HDLS8SSK-4	Light Almond			
<input type="checkbox"/> HDLS8SS-9	Gray		<input type="checkbox"/> HDLS8SSK-9	Gray			





Lighting Integrator Automation Level

In many cases, a simple networked clock/programmer provides the ideal control configuration. LI Automation (LIA) level offers user-friendly, digital pushbutton programming and easy-to-use common control scenarios. With basic scheduling functions and the option for standalone or networked control, LI Automation level works for a range of small- to medium-sized applications.





Choose LI Automation level for simple, cost-effective lighting control

In many cases, the ideal control configuration involves simple pushbutton programming and “fill in the blank” common control scenarios. This may be the case in smaller applications where relatively few panels are required, or in situations where minimal operator training is desired.

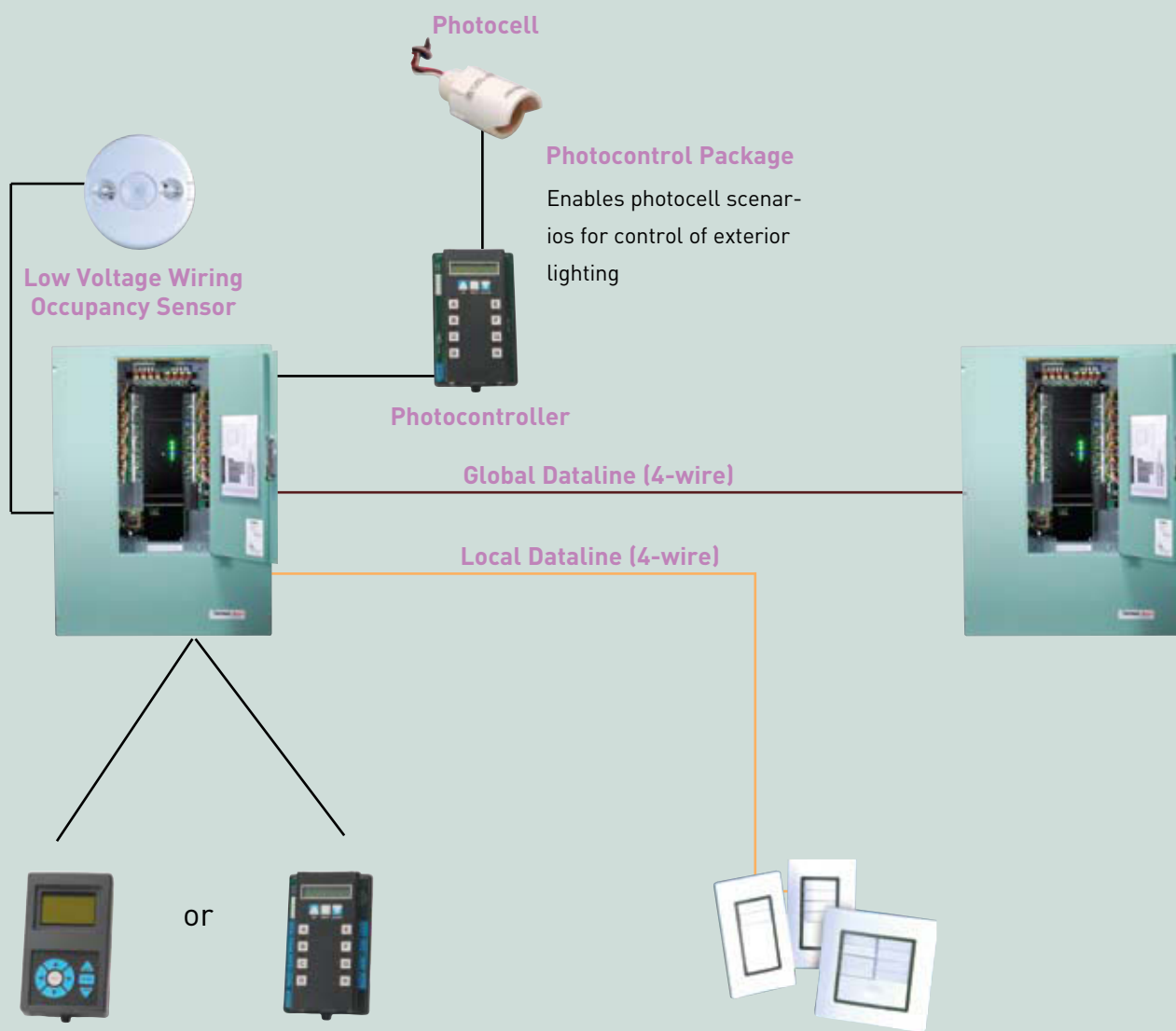
LI Automation level provides basic scheduling functions via either a single standalone panel or as a system where up to 12 panels are connected by a digital dataline. Designers can choose the hand-held Network Clock/Programmer (page B57-58) for smaller systems.

LIA panel systems work with low voltage wall switches, occupancy sensors, and daylighting control devices, as well as digital dataline switches (page B65-66).

Other compatible options include simple contact closure interfaces with BMS systems via the Building Management System interface module (page B59-60), using low voltage switches as if they were digital dataline switches via the Universal Switch Module (page B63-64), and controlling multiple exterior lighting control zones via the Photocontrol Package (page B61-62).



System Layout



Low Voltage Wiring Occupancy Sensor

Photocell

Photocontrol Package

Enables photocell scenarios for control of exterior lighting

Photocontroller

Global Dataline (4-wire)

Local Dataline (4-wire)

or

Network Clock

Provides convenient time and holiday scheduling and preprogrammed control scenarios

BMS Interface

Enables interface of lighting control with building automation systems for integrated systems scheduling

Dataline Switches

Simplify wiring with programmable switches, and deliver local and system automation override of lighting circuits

Simplify control in small to medium sized applications



Educational Facilities

- Seamless interaction of scheduled control and daylighting control during the day with occupancy-based control afterhours
- Convenient pushbutton control scenarios for cleaning crews, special events



Small-moderate retail operations

- Preprogrammed control scenarios for simplified operation by store managers
- Ability to coordinate interior and exterior lighting control
- Easy afterhours control for stocking and cleaning



LIA Highlights

- Accepts control from network clock scheduling, astronomic events, photocell light level, or building automation systems
- Standalone automation via easy pushbutton programming and control modules
- Preprogrammed lighting control scenarios and scheduling of each channel with blink warning, afterhours time delays, Manual on, Auto-on via network clock

Moderate size office buildings

- Code-compliant automated shutoff
- Supports advanced control strategies such as manual on and bi-level switching
- Dataline switches allow for pilot light annunciation of lighting zones and simplified wiring
- Easily integrated daylighting control for areas with adequate ambient light contributions, such as lobbies and corridors



Lighting Integrator Automation Level Interior (LIA8, LIA24, LIA48)

Add on modules provide automation features

HDR relays provide manual overrides even when panel is powered off

Eight independent control channels



Scheduling via network clock or BMS interface

Standalone or networked operation

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's Lighting Integrator Automation (LIA) level panel provides a simple network enabling automation of lighting functions throughout an entire facility. A selection of function-specific automation modules can be specified to add control features such as scheduling, photocell control, remote override, telephone override, or BAS integration on an as-needed basis.

Operation

LIA panels provide eight channels for manual control of lighting or implementation of unique pre-programmed automation scenarios. These scenarios, implemented through functional automation modules, include: Scheduled ON/OFF, Manual ON/Scheduled OFF, Manual ON/AS-100 Sweep OFF, Astro ON/Astro OFF, Astro ON/Scheduled OFF, Photocell ON/OFF, and Photocell ON/Scheduled OFF. Dataline switches connect to the panels using a local four-wire dataline and provide manual and afterhours override control.

Smartwiring

Lighting Integrator provides a unique and flexible means for grouping relays into channels for common control and scheduling. Using a simple button-press user interface called Smartwiring, the user can quickly include or exclude relays from the channels within a panel (requires group switching card). Similarly, smartwiring can be used to group relays or channels for common control by buttons on dataline switches. Relay groups can also be created or adjusted via the plug-in clock/programmer.

Applications

Automation level Lighting Integrator, along with the desired function-specific automation modules, are ideal for small to medium size projects that require networking of up to 12 panels. Applications include office buildings, schools, retail, warehouses and any other application that requires a basic level of lighting automation without the need for a PC and software.

Features

- Standard single pole heavy duty relays
- Available in interiors sized for 8, 24, or 48 relays maximum
- DIN rail in Class 2 compartment for mounting function-specific automation modules
- Compatible with AS-100 automatic switches for sweep-based automatic shutoff
- Direct wired switch inputs configure automatically for use with WattStopper occupancy sensors
- Direct wired switch inputs are compatible with three-wire or two-wire momentary or maintained contacts
- Programmable dataline switches for control of relays or channels
- Provision for integral Lightsaver daylighting controls
- Qualifies for use in ARRA-funded projects

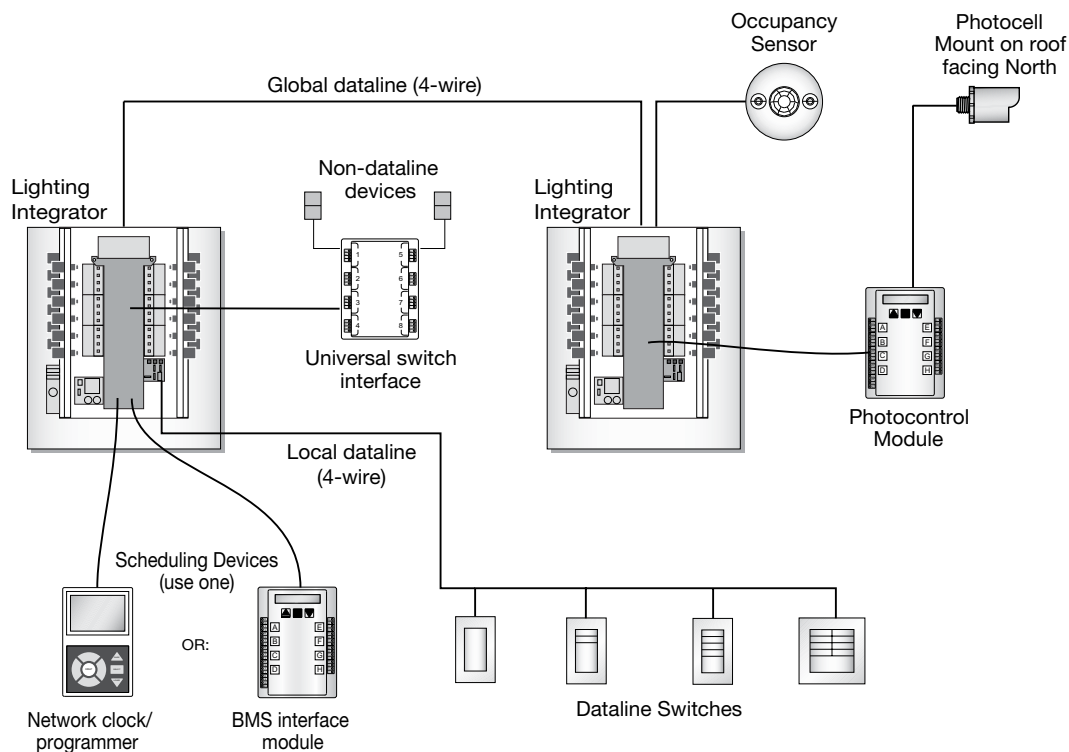


LIA Specifications

- Interior configurations provide up to 8, 24, or 48 relays each
- Standard relay, individually replaceable Watt Stopper HDR series, latching SPST, meets new NEMA electronic ballast requirements, 14,000 Amps SCCR, with integral manual override (other relay types available)
- Digital global dataline, one pair twisted, open topology allows linear, star and T network configurations for panels, 1500' max length free topology (8000' linear topology)
- Local dataline, two pair twisted, open topology allows linear, star and T configurations, 63 HDLS series switch addresses available per dataline, 1500' max length
- Automation channels: 8 per panel, provide global schedule and control functions
- Direct wire switch inputs, one each per relay and group switch channel, automatically configure for occupancy sensor operation
- Pilot light output per relay and group switch channel, configurable for any Class 2 voltage
- UL, CUL listed, one year warranty

LIA System Layout

LI Automation Panel System Layout





General LI Information

Description

WattStopper's Lighting Integrator (LI) is a low voltage, relay based lighting control panel. Panel interiors are configured as 8, 24 or 48 relay capacity with the quantity of relays installed as called for on the order. The interior mounts into the appropriate enclosure. The LI panel enclosure and cover are shipped separately from the panel interior to facilitate project rough-in requirements.

Operation

LI relays are driven to a latched on or off position via a 24 volt DC pulse generated by the relay driver cards. A momentary pushbutton is provided for each relay to manually toggle the relay's state with each button press. An isolated contact in the relays provides positive status feedback to the relay driver circuits, which are annunciated by an LED associated with each relay. Removable color-coded terminal blocks allow connection of direct wired low voltage devices for remote control of relays.

- Interior provides complete isolation between line and low voltage when used with a compatible LENC series enclosure
- Individual plug-in, latching style single pole relays with isolated pilot/status contacts
- Integral push button override, status LED, and pilot light output per relay
- Two slots available for optional automation, networking and integration control cards

Operation (cont'd.)

Inputs can be wired to accommodate maintained or momentary three wire or two wire inputs. The switch input circuits are auto sensing and will automatically configure appropriately when WattStopper occupancy sensors are connected.

Smartwiring

A unique WattStopper switching function, this simple button press interface allows any quantity of relays to be assigned quickly to each group switching channel for common on/off control or for pattern (scene) control. Each of the eight channels is provided with an override pushbutton, LED status indicator and terminals for connection of wall switches and occupancy sensors. An eight or 24 size panel can be ordered with one group switch card (8 channels), 48 size panels can have two group switch cards for a total of 16 channels (8 controllable by scheduling, eight by switching only).

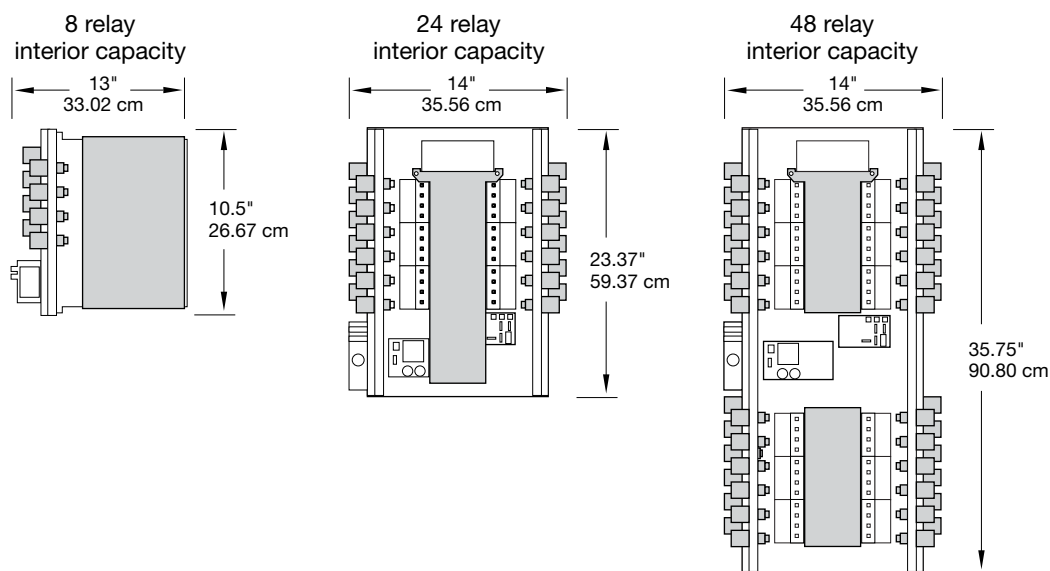
- Supports WattStopper low voltage occupancy sensors without need for separate sensor power packs
- Smartwiring feature allows grouping of relays for common control
- DIN rail mounting provided within the Class 2 section for mounting of optional accessories
- Control multi-pole circuits with optional contactors and compatible LENC enclosure
- Optional configuration available for use on emergency lighting circuits



General LI Specifications

- Interior capacity:
 - 8 SPST relays
 - 24 SPST relays
 - 48 SPST relays
- Input voltage options, 120/277V 60 Hz, 120/347V 60 Hz, 240V 50 Hz
- Low voltage switch inputs, removable terminal blocks with screw-less connection, configurable for three wire momentary, two wire momentary (toggle), and two wire maintained dry contact switches or WattStopper occupancy sensors.
- Accessory power available
 - LI8: 1000 MA @24VAC or 800 MA @ 24VDC
 - LI24 and LI48: 1400 MA @ 24VAC or 800 MA @ 24VDC
- Group switching, eight channels per installed group switching card. One card max per LI8 and LI24. Two cards max LI48.
- SCCR (short circuit current rating) 14,000 amps with HDR Heavy Duty Relay
- HDR relays:
 - Coil voltage, 24 VDC, pulse ON and pulse OFF
 - Mechanically latched contacts
 - ½" K,O, mounting, LV plug-connection, individually replaceable
 - Contact ratings
 - 30 amps ballast @ 277V
 - 20 amps ballast @ 347V
 - 20 amps tungsten @ 120V
 - 30 amps resistive @ 347V
 - 1.5 HP @ 120V
 - Endurance: 300,000 mechanical cycles
- Pilot light output, 24 V rectified or 24VAC, other voltages configurable with external power supply
- One year warranty

Panel Interior Dimensions



Ordering Information

Interior Capacity	Installed Options				
	Voltage Options	Relay Count	Group Switch Card	Emergency Relays	Coil Voltage
<input type="checkbox"/> LIA8	<input type="checkbox"/> 115/277	___ HDR relays	___ GS cards (max	___ EM relay count	<input type="checkbox"/> 115
<input type="checkbox"/> LIA24	<input type="checkbox"/> 115/347	installed (max	1 in 8, 24, 2 in 48)	(Not available in 8-relay size	<input type="checkbox"/> 240
<input type="checkbox"/> LIA48	<input type="checkbox"/> 240	of interior		panels; max. of 24 in 24-relay	<input type="checkbox"/> 277
		capacity)		or 48-relay size interior)	<input type="checkbox"/> 347

Lighting Integrator Panel Enclosures

16-gauge all steel tubs with galvaneal finish

Screw on, powder coated cover permits temporary hanging via key hole screw slots

Surface or flush mounting with back mounting holes, screw cover

Lockable door access to Class 2 panel section, meets NFPA 70

Studs provided for quick installation of panel interior section

UL and CUL listed; one year warranty



PROJECT
LOCATION/TYPE

Product Overview

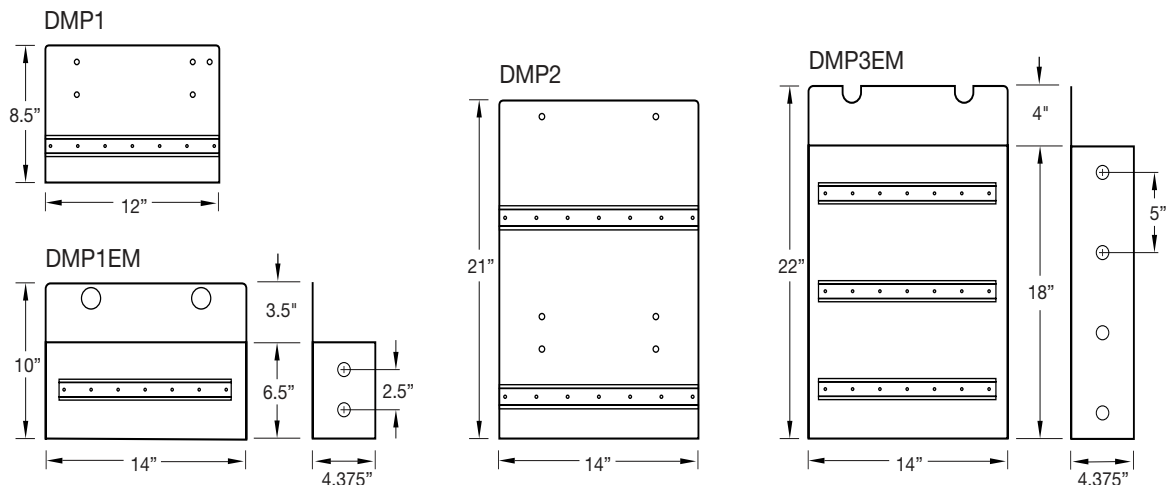
Description

Lighting Integrator panel enclosures are designed specifically to work with all configurations of LI panel interiors containing 8 to 48 relays. The enclosures are provided with integral mounting studs that are configured to accept the panel interior making the installation quick and easy. Covers are secured to the tubs with screws and have keyhole style mounting. This allows the cover to be temporarily hung on the tub during the construction phase of the project. All covers have hinged doors that expose only the low voltage (Class 2) section of the panel and are equipped with key locks and two keys each. All Lighting Integrator enclosures are NEMA 1 rated. Consult factory for other NEMA rated applications.

Configurations

Enclosures rated for 24 or 48 relay capacity have space provided at the bottom for optional mounting plates (DMP) to accept DIN rail mounted accessories such as multi-pole contactors and ELCU-100 Emergency Lighting Control Units. Standard LENC24 and LENC48 enclosures will accommodate up to six four pole contactors (requires DMP mounting plate) or four ELCU-100 units (requires DMP-1EM mounting plate). LENC8-24 and LENC24-48 enclosures have additional space provided and will accommodate up to twelve four pole contactors (requires DMP-2 mounting plate) or 12 ELCU-100 units (requires DMP-3EM mounting plate).

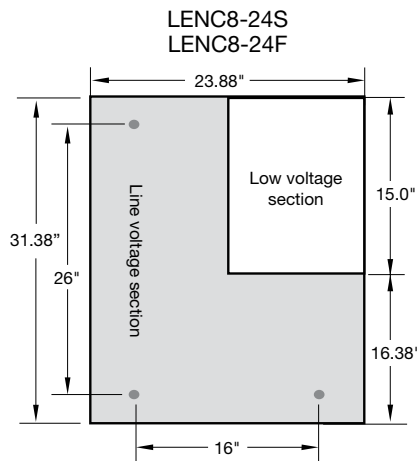
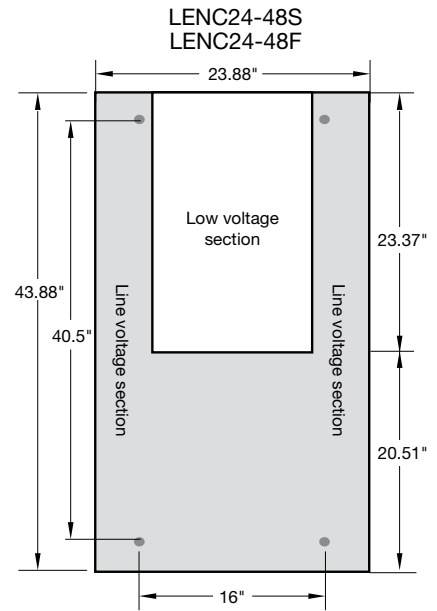
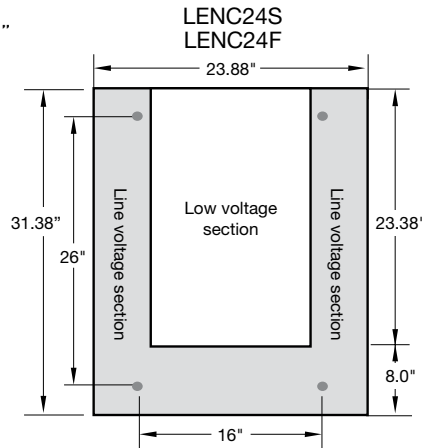
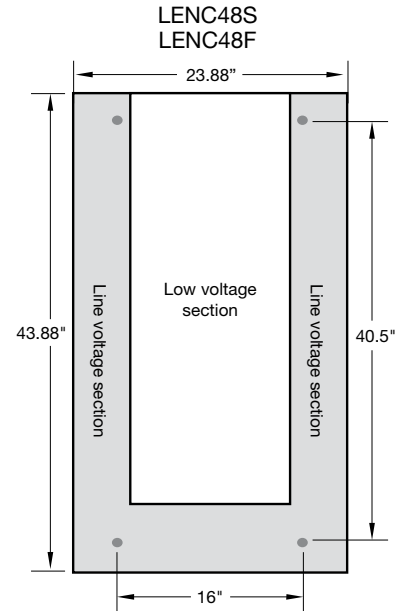
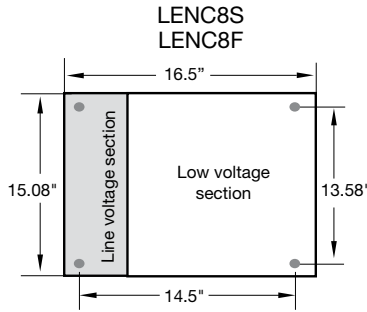
DIN Rail Mounting Options





Tub Dimensions

Note:
Tub depth 4.50"
Cover thickness .075"



Ordering Information

Catalog No.	Description	Overall Dimensions Including Cover (HxWxD)	Overall Weight
<input type="checkbox"/> LENC8S	8 relay capacity, surface mount	15.75" x 16.62" x 4.575"	18 lbs
<input type="checkbox"/> LENC8F	8 relay capacity, flush mount	17.10" x 18.48" x 4.575"	20 lbs
<input type="checkbox"/> LENC8-24S	8 relay capacity with 24 size tub, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC8-24F	8 relay capacity with 24 size tub, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24S	24 relay capacity, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC24F	24 relay capacity, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24-48S	24 relay capacity with 48 size tub, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC24-48F	24 relay capacity with 48 size tub, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> LENC48S	48 relay capacity, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC48F	48 relay capacity, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> DMP	mounting plate, one DIN rail for up to 6 contactors	8" x 12" x 4.625"	1.86 lbs
<input type="checkbox"/> DMP-2	mounting plate, two DIN rail for up to 12 contactors	21" x 14" x 4.625"	5.30 lbs.
<input type="checkbox"/> DMP-1EM	mounting plate, one DIN rail with barrier for up to 4 ELCU-100s	10" x 14" x 4.37"	3.64 lbs.
<input type="checkbox"/> DMP-3EM	mounting plate, three DIN rail with barrier for up to 12 ELCU-100s	22" x 14" x 4.37"	7.60 lbs.

Qualifies for use in ARRA-funded projects.

A Group brand Legrand

Lighting Integrator Emergency Relay Panel Option

UL924 listed for use on emergency circuits

Factory-assembled interior mounts in standard LI enclosure, ships completely wired

Meets NEC (NFPA70) UL 924 requirements for emergency lighting control



Allows normal control of emergency circuits via schedule, switch, photocell or other device

Guarantees that emergency lighting will turn on upon loss of normal power

PROJECT
LOCATION/TYPE

Product Overview

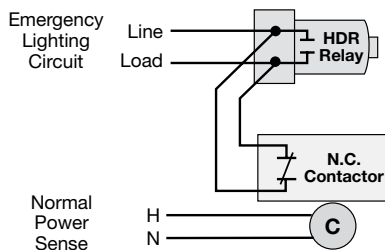
Description

The Lighting Integrator Emergency Relay Panel option provides certified fail-safe operation of lighting control circuits controlled by HDR relays in an LI lighting control panel. The option is available with any 24 or 48 size LI panel.

Operation

A dedicated normal power sense connection monitors the presence of normal power and allows the HDR relays to control the emergency lighting circuits based on ordinary control schedules and devices, such as switches, occupancy sensors, and daylighting control devices. When normal power is lost for any reason, all HDR relays controlling emergency circuits are each individually bypassed automatically by a set of normally closed contacts. The HDR relays do not change state during a power outage so lighting is restored when normal power is restored.

Wiring



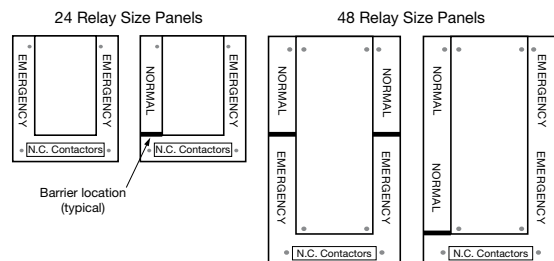
Applications

The Lighting Integrator emergency lighting control panel option is ideal for applications where always-hot emergency lighting circuits need to be controlled along with the normal lighting circuits. Because the lighting control panel with integrated yet dedicated emergency relays operates normally based on the type of intelligence card installed in the panel, this is suitable for virtually any type of application. These panels can be used reliably for fail safe emergency lighting operation in schools, office buildings, libraries, airports, industrial plants, warehouses, and auditoriums.

Specifications

- 30 Amp normally closed contactors used for shunt operation
- One to 24 emergency relays per panel, 24 or 48 size enclosure only
- Emergency relay rating: same as HDR
- Normal power sense input, 120, 277 or 347 volts, voltage specific
- UL listed for use on emergency circuits

Emergency Relay Panel Configurations



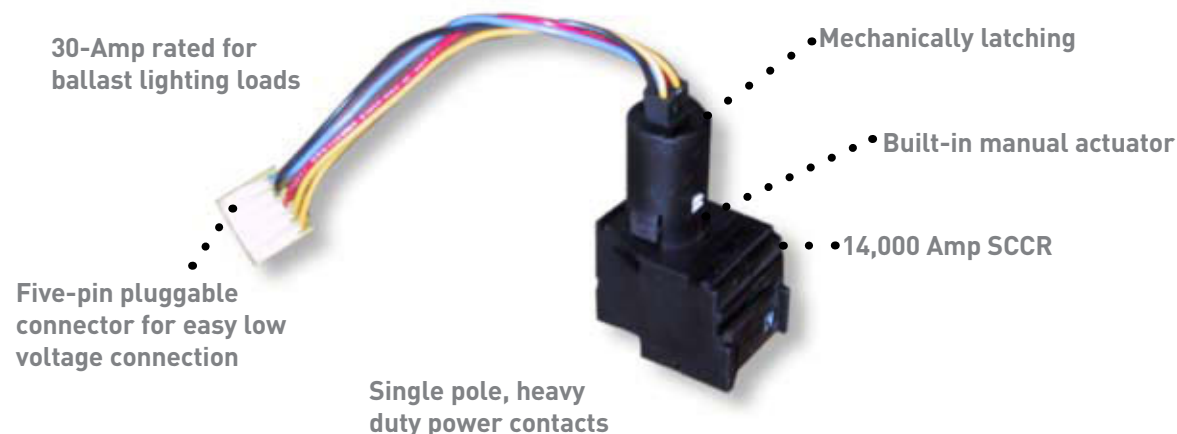
Description

Order LI Emergency Relay Panel option using the ordering section on the LI level panel cut sheet.

Ordering Information



HDR Low Voltage Relay



PROJECT

LOCATION/TYPE

Product Overview

Description

This low voltage relay is used for control of lighting circuits and other electrical loads in WattStopper's Lighting Integrator control panels. Momentary, low voltage pulses from the panel's control system switch the relays on or off. Mechanical latching operation results in lower power consumption. The relay will remain in the last switched state in the event of a power loss. A built-in manual actuator allows lights to be turned on in the event of a panel or relay failure. The relay mounts into a standard knockout and comes with a plug-in cable for easy panel connection. Typically, users specify the number of relays and the panel is assembled and shipped with this quantity.

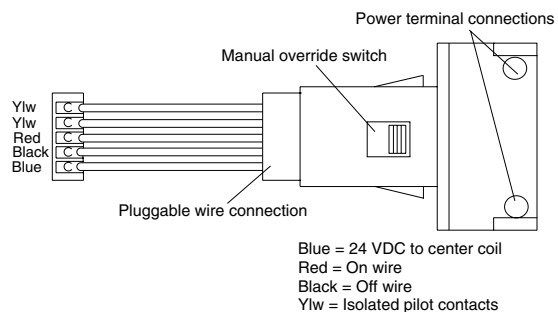
Specifications

- 1/2" knockout mounting
- Accepts wire gauge #10 - #14 AWG, copper wire, solid or stranded
- Operating voltage 24 VDC
- Isolated pilot relay contacts, .5 Amp @ 30 VAC/DC for status feedback
- Integral manual override
- Rated 14,000 amps Short Circuit Current Rating (SCCR)
- Suitable for use with all HID ballasted loads
- Expected service life is over 25 years at nominal load and cycle rate
- Dimensions: 3.2"x 1.3"x .85" (81.3 mm x 33.0 mm x 21.6 mm)
- UL listed, CSA certified; five year warranty

Ratings

- Ballast load 30 Amp @ 277 VAC (including HID) 20 Amp @ 347 VAC
- Tungsten load 20 Amp @ 120 VAC
- Resistive load 30 Amp @ 347 VAC
- Motor load 1½ HP @ 120 VAC

HDR Wiring



Catalog No. Description

<input type="checkbox"/> HDR5P	Mechanically Latching Relay (low voltage) with five-pin plug-in connector, pilot contacts, override switch
--------------------------------	------------------------------------------------------------------------------------------------------------

Qualifies for use in ARRA-funded projects.

Ordering Information

Network Clock/Programmer for LI Automation Level

Time scheduling module for Lighting Integrator Automation panels

Five preprogrammed control scenarios

Astronomical control for exterior lighting operation



Controls up to eight channels across a lighting control network

Programming mode for panels and system switches

Simple menu-driven data entry

PROJECT
LOCATION/TYPE

Product Overview

Description

The Network Clock/Programmer (HCLK8SS) adds time scheduled capability to WattStopper Automation Level Lighting Integrator (LIA) panels. The HCLK8SS provides global scheduling of up to eight different lighting groups using preprogrammed automated control scenarios.

Operation

The LIA Network Clock/Programmer mounts on the accessory DIN rail and plugs into the Automation card of any LIA panel on the network. In a multi-panel application, a single HCLK8SS will support multiple panels, provided each panel contains an Automation card. The installer follows simple menu screens to set up and schedule each of eight global channels in the system based on the control needs of each specific lighting group. The clock also operates as a handheld programmer for dataline switches at their remote locations or for smartwiring relays to channels in a panel.

Scheduling and Control Scenarios

The HCLK8SS offers multiple scheduling scenarios for interior applications with the use of AS-100 Automatic Control Switches: Manual On/Scheduled Off, Scheduled On/Off, Dark On/Light Off, Dark On/Scheduled Off and Manual On/Sweep. These scenarios offer blink warnings and user-selectable time delays. Exterior lighting scenarios include Astro or Photocell On/Scheduled Off, and Astro or Photocell On/Off. Photocell controlled scenarios require the use of an LI Photocontrol Package.

Applications

The control scenarios are suitable for many common commercial applications. Retail lighting loads (e.g., general sales, stocking lights, exterior signage, and accent/showcase) can be controlled via different scenarios. In office buildings, lighting loads with similar control needs (e.g., common areas, hallways, and open office areas) can be grouped into channels and scheduled together. Using Dataline and AS-100 Switches provides occupants with manual override capabilities.

Features

- After-hour occupancy-based and scheduling scenario control for up to eight channels
- Diagnostics function identifies dataline devices and confirms communications
- Automatic interface to optional LI Photocontrol Package for exterior lighting control scenarios
- Easy astronomical setup with input choice of city/state or latitude/longitude coordinates
- LED annunciation per channel of occupied/unoccupied status
- Scheduling capabilities include seven-day with up to 36 holidays and six holiday date ranges
- Automatic daylight savings adjustment
- Functions as hand-held programmer for dataline switches and relay smartwiring
- Supports use of AS-100 Automatic Control Switches in Manual On/AS-100 sweep off scenarios
- Qualifies for use in ARRA-funded projects

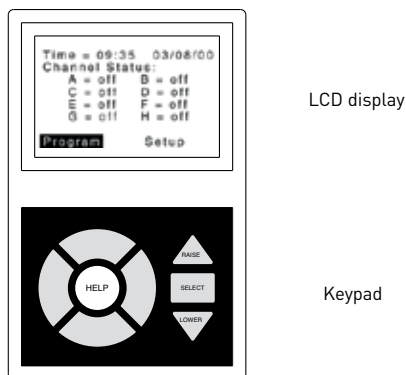


Specifications

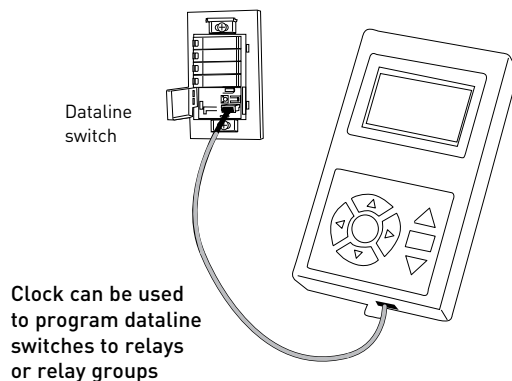
- Power consumption from the lighting control panel 150mA at 24VAC
- Eight channels with five preprogrammed scenarios
- User-selectable locations or latitude/longitude coordinates for astronomical clock setup
- Supports optional use of Automatic Control Switch (AS-100) for local manual override
- DIN rail mounting in LI and accessory panels;
- factory connection cable included
- Programming carry-over during power outage for up to ten years
- Clock time carry-over during power outage up to two weeks
- Weight 1.0 lbs./0.45 kg.
- Operating temperature: 32-139°F (0-60°C); 5-95% RH noncondensing, noncorrosive atmosphere
- Dimensions: 7.5" x 4.5" x 1.5" (191mm x 114mm x 43mm) H x W x D
- One-year warranty

Controls and Modes

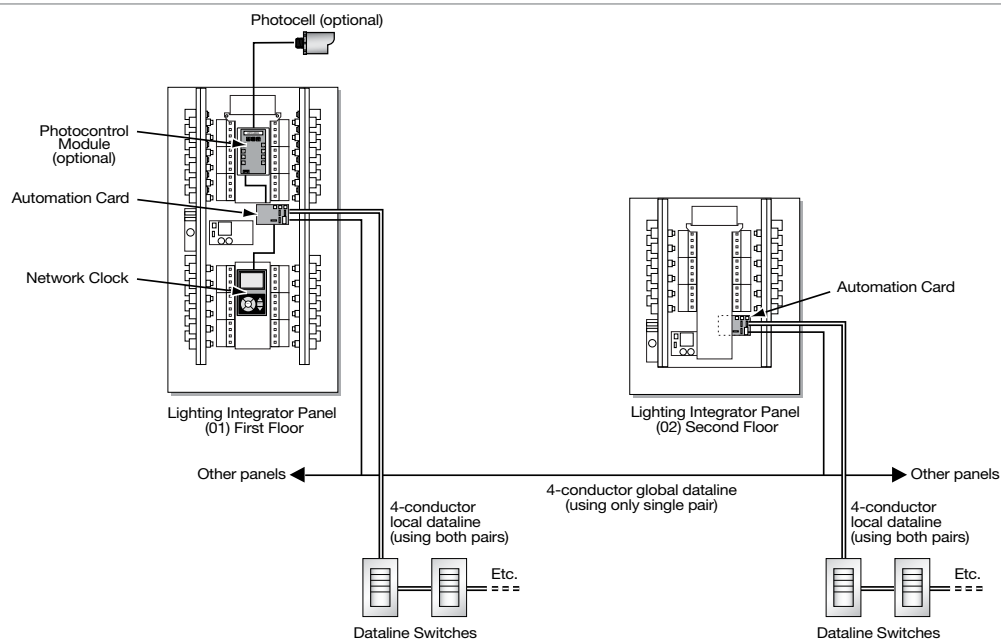
Network Clock Module Controls



Clock in Programming Mode



Lighting Integrator Application with Network Clock/Programmer



Group lighting loads in 1-8 channels and extend automation from a single Network Clock/Programmer to a network of panels, when each panel is a Lighting Integrator Automation panel.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> HCLK8SS	Network Clock/Programmer for LI Automation
Optional control module:	
<input type="checkbox"/> HPCP8SS	Photocontrol Package with Photosensor for LI Automation

BMS Interface Module for LI Automation Level

Automation module that interfaces with other building systems

Blink warnings and user-selectable time delays

Two-line graphical display with simple menu-driven data entry



Up to four common scenarios for interior and exterior lighting control

Controls up to eight different lighting groups

Easy plug-in connection in Lighting Integrator system panel

PROJECT
LOCATION/TYPE

Product Overview

Description

The Building Management System Interface Module (HBMS8SS), is an optional automation module for Lighting Integrator Automation (LIA) panels. It provides an alternative to the Network Clock when scheduling is to be provided by another building system, such as a building management system or a security system via dry contact closures.

Operation

The BMS Interface module mounts on the panel's DIN rail and connects to the panel interior via a factory-supplied communication cable. (Alternatively, the module may be installed in or near the BMS and connected to the LIA panel via a single run of 4-conductor dataline wire.) Each of the module's eight channels have a pair of connection terminals to accept a dry contact closure from an external device (e.g., BMS, HVAC, security system), as well as another pair of terminals that provide pilot status output for channel feedback. The user follows a simple, menu-driven sequence to select control scenarios for each channel. When a channel receives a signal via a contact closure, it then executes the appropriate pre-programmed scenario.

Control Scenarios

User-selectable control scenarios include Manual On/Scheduled Off and Scheduled On/Off, as well as the exterior lighting control scenarios available with the optional Photocontrol Package. Each scenario offers necessary functions such as blink warnings and user-selectable time delays. Structured around a business hours/after hours (occupied/unoccupied) approach, these scenarios can be initiated with a signal provided by a dry contact relay closure from another building system to each channel input.

Applications

Many small to mid-sized facilities employ centralized control of building systems. With the BMS Interface Module, an LIA system can take signals from building systems to initiate automated control scenarios. This can simplify building operation while accommodating individual occupant needs. The BMS Interface Module maintains the flexibility of the LIA control panel while providing the convenience of integration with other building systems.

Features

- Menu-driven scenario selection using business hours/after hours (occupied/unoccupied) approach simplifies operation
- Manual On/Scheduled Off and Scheduled On/Scheduled Off control scenarios for interior lighting provide occupant convenience and energy efficient control
- LED annunciation per channel of occupied/unoccupied status
- User-selectable blink warnings
- Dark On/Dark Off and Dark On/Scheduled Off control scenarios for exterior lighting (with optional Photocontrol Package)
- Isolated contacts for status feedback on each channel
- Selectable override time delay for all scenarios
- Qualifies for use in ARRA-funded projects

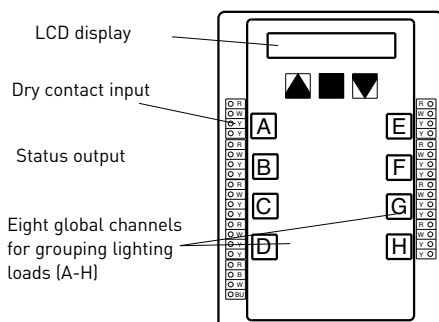


Specifications

- Power consumption 225 mA at 24 VAC
- DIN rail mounting in any LIA panel in the network; factory connection cable included
- Plugs into Lighting Integrator Automation panel
- Two-line, 16-character LCD display
- Accepts scheduling signal from external devices via dry contact relay closure for each channel input
- SRAM memory with 10-year internal battery backup
- Weight 1.0 lbs./0.45 kg.
- Environmental: Operating temperature range 32-139°F (0-60°C); 5-95% RH non-condensing, non-corrosive atmosphere
- 7.5" H x 4.5" W x 1.5" D (190 mm x 114 mm x 38 mm)
- One year warranty

Controls and Scheduling Information

BMS Interface Module Controls



Scenario Scheduling

Scenario for A
Man ON / Sch OFF

SAVE Channel A
Program Changes

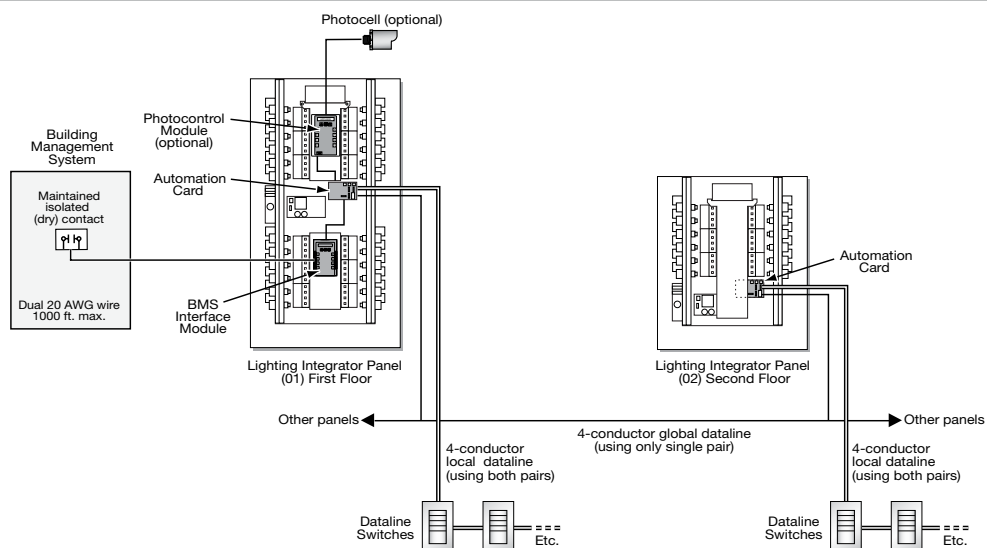
Selecting control scenarios for different channels is quick and easy with the menu-driven LCD display.

Scenario for D
Dark ON / Sch OFF

Photocontrol scenarios are added when the optional Photocontrol Package is used.

System Layout

System Layout with BMS module



LIA panel network with BMS Interface Module, optional Photocontrol Package, and Dataline Switches.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> HBMS8SS	BMS Interface Module for LI Automation
Optional control module:	
<input type="checkbox"/> HPCP8SS	Photocontrol Package with Photosensor for LI Automation
Wire:	
<input type="checkbox"/> HDLW4	4-conductor data communications wire

Photocontrol Package for LI Automation Level

Control module for exterior lighting control

Includes photocontrol module and external photocell

User-defined light level setpoints for eight channels



Automatic interface with either Network Clock or BMS Interface Module

Real time LCD display of exterior light level

Two pre-programmed exterior lighting control scenarios

PROJECT
LOCATION/TYPE

Product Overview

Description

An optional control module for Lighting Integrator Automation (LIA) panels, the Photocontrol Package provides a DIN mounted control module together with an external photocell for exterior lighting control. Compatible with either the Network Clock or BMS Interface Module, it provides automation scenarios for up to eight different lighting groups.

Operation

The photocontrol module compares outdoor light level data from the external photocell with user-defined setpoints programmed into the module. If it determines exterior lighting should be turned on or off, it transmits a control signal to either the Network Clock or BMS module, which implements the appropriate control scenario. One Photocontrol Package, together with either a Network Clock or a BMS Interface, can control a network of LIA panels.

Control Scenarios

The Photocontrol Package enables use of exterior lighting control scenarios preprogrammed in either a Network Clock or BMS Interface Module. These scenarios are Dark On/Off or Dark On/Scheduled Off. Users may select a control setpoint for each of the eight automation channels to trigger the control scenario for different lighting levels. For instance, On/Off setpoints for security and parking lighting typically range from 2-20 footcandles, while setpoints for signage lighting range from 20-200 footcandles.

Applications

The lighting control scenarios available for use with the Photocontrol Package are ideal for the most common exterior lighting control needs: security, parking, and signage. Typically, users will select Dark On/Dark Off for security lighting at settings between 2-20 footcandles. For non-security lighting such as parking lot lighting or signage, the Dark On/Scheduled Off scenario is more commonly used to turn lighting off during hours of vacancy.

Features

- Packaged photocontrol module and photocell
- Preprogrammed control scenarios for photo-sensitive control of exterior lighting
- Bi-color LED indicates dark/not dark status for each channel (red = light level is less than setpoint, green = light level is greater than setpoint, no color = no setpoint for that channel)
- Automatic deadband and five minute time delay prevents lamp cycling
- User-selectable Operate or Test mode
- Real time LCD display of exterior light level and user-selected setpoint
- Factory plug-in connector cable for easy installation
- Qualifies for use in ARRA-funded projects

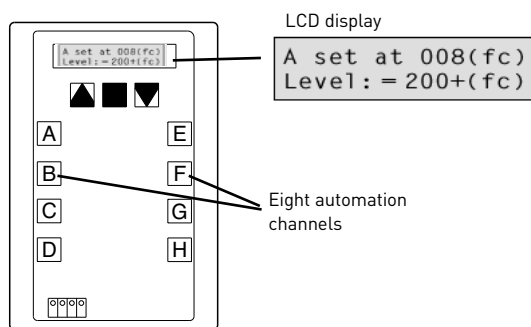


Specifications

- Power consumption: 24 VAC from panel, 125 mA
- Interacts with eight automation channels, providing up to eight independent light level setpoints
- Two line, 16 character display
- Memory backup, non-volatile
- Photocell footcandle range from 0 - 200 fc (0 - 2200 lux)
- DIN rail mounting in LIA panels or accessory panels; factory connection cable included
- Requires LIA panel and either Network Clock or BMS Interface module for operation
- Environmental: 32-131°F (0-55°C); 0-95% RH, non-condensing, non-corrosive atmosphere
- Weight: 1.0 lbs. (0.45 kg)
- 7.5" H x 4.5" W x 1.5" D (190 mm x 114 mm x 38 mm)
- One year warranty

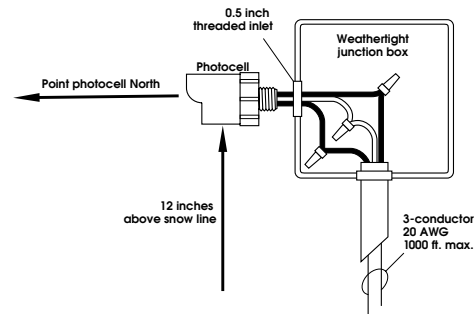
Controls and Installation

Photocontrol Module Keypad



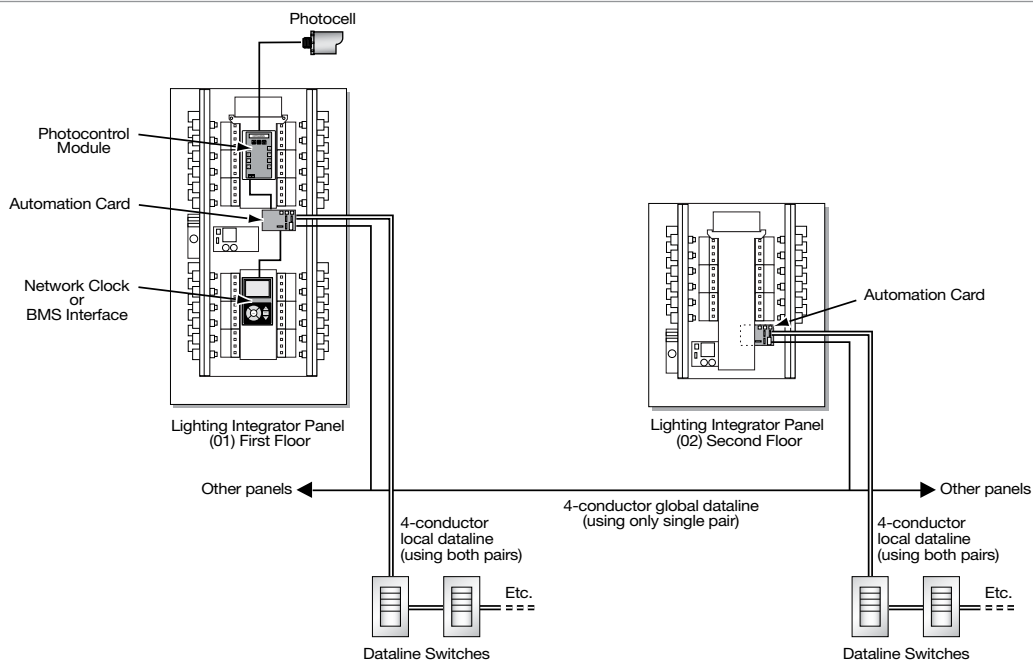
Users can control up to eight separate channels (A-H). The LCD displays user-selected light levels set for specific channels as well as real time photocell footcandle readings.

Mounting the Photocell



System Layout

LIA System with Photocontrol Package



Ordering Information

Catalog No.	Description
<input type="checkbox"/> HPCP8SS	Photocontrol Package with Photosensor for LI Automation
Network Clock or BMS Interface required for operation with Photocontrol Package:	
<input type="checkbox"/> HCLK8SS	Network Clock/Programmer for LI Automation
<input type="checkbox"/> HBMS8SS	BMS Interface Module for LI Automation

Universal Switch Interface Module (USM) for LI Automation

Dataline module enables any switch or contact closure to operate like Dataline Switch

Supports up to eight switching groups with bi-color status LEDs

On/Off or pattern group control



Simplifies wiring of standard switches

On/Off push button override for each group

Installs in any LIA panel or accessory enclosure with local dataline

PROJECT
LOCATION/TYPE

Product Overview

Description

The Universal Switch Interface Module (USM) is an optional device for use with standard switches and Lighting Integrator Automation (LIA) panels. The USM emulates an 8-button Dataline Switch, allowing any standard switch or other dry contact closure device to control relays in an LIA network.

Operation

With eight universal inputs to accept connections from external switches or devices, the USM emulates the function of an 8-button Dataline Switch. Users may wire any standard 2- or 3-wire momentary or maintained switch to these inputs so that each input terminal of the USM operates just like a Dataline Switch button. Similarly, users install, document, and smartwire the USM like a Dataline Switch in an LIA network.

Simplified Installation

The USM mounts on the LIA panel's DIN rail and can be installed in any LIA panel or accessory enclosure on the network. The USM can be easily programmed via smartwiring or by using the LIA Network Clock as a field programmer. When used in LICA panels, the USM can be programmed with WinControl software.

Applications

The USM enables virtually any type of switching device to control lighting groups. For instance, the USM can provide floor- or facility-wide control as well as visual status capabilities when used with pilot light push-button switches at a facility override station. Via the USM, an override station operator can control any relay, group of relays, or channel in any panel in an LIA system. Furthermore, standard switches can be "clustered" near a USM unit and wired to it, reducing the number of wiring conductor runs back to the panel.

Features

- Emulates the function of an 8-button Dataline Switch
- Choice of dataline connections including plug connector for factory cable or screw terminals for field connection
- Bi-color status LED for each group (red = All ON, green = mixed status, no color = All OFF)
- Enables integration of simple inputs from other building systems (i.e., HVAC or security) into LIA system
- Eliminates multiple home run wiring when standard switches are included in a network
- Isolated dry contact relays provide status feed back for other systems
- Easy reconfiguration of lighting groups using smartwiring, an innovation that connects occupant switches to individual relays via push-button programming rather than hardwiring
- Qualifies for use in ARRA-funded projects

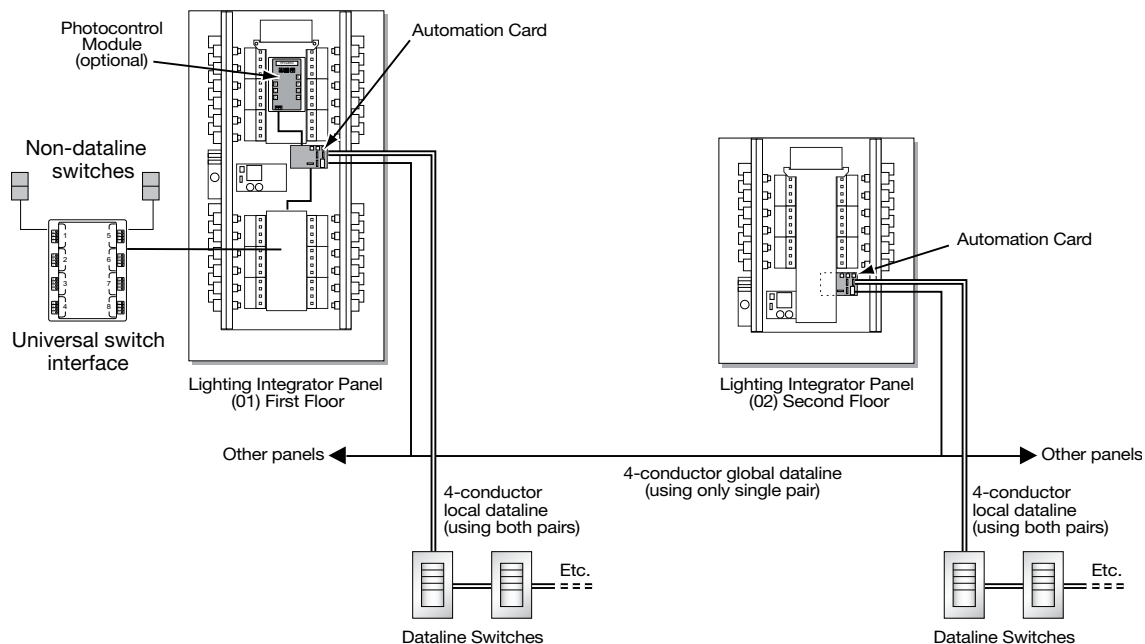


Specifications

- Power consumption from the lighting control panel 200 mA at 24 VAC
- Two-wire isolated dry contact status feedback (1 amp, 24 VAC/VDC) for each of eight switching groups
- Maximum of two modules per panel or accessory enclosure
- DIN rail mounting in LIA panels or accessory panels; factory connection cable included
- Eight inputs accepting any 2- or 3-wire switch input or contact closure (momentary or maintained)
- Dimensions: 7.5" H x 4.5" W x 1.5" D (190 mm x 114 mm x 38 mm)
- Weight: 1 lb./0.45 kg
- Environmental: Operating temperature range 32-139°F (0-60°C), 5-95% RH non-condensing
- One year warranty

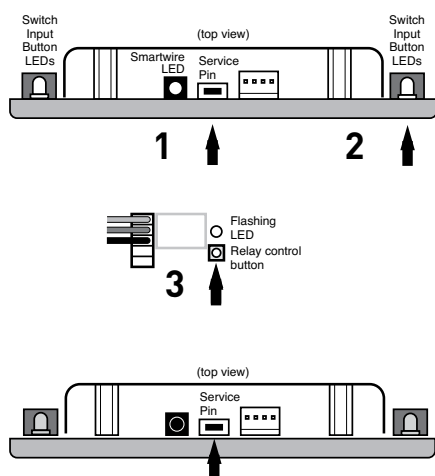
System Layout

Lighting Integrator System with USM



Programming

Smartwiring with a Universal Switch Module



- 1 Press Service Pin (smartwire LED flashes once, all switch input button LEDs begin flashing).
- 2 Press switch input button to be programmed. (Selected button LED continues to flash, other LEDs stop flashing.)
- 3 Press relay control button(s) to add or delete from group.
- 4 Press service pin again (all LEDs stop flashing).

Ordering Information

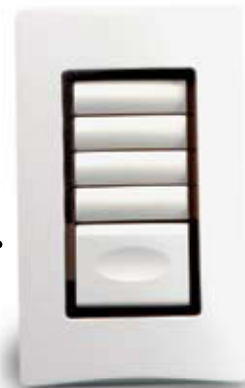
Catalog No.	Description
<input type="checkbox"/> HUSM8SS	Universal Switch Interface Module for LI Automation
Wire	
<input type="checkbox"/> HDLW4	4-conductor data communications wire
<input type="checkbox"/> HSSW3	Standard switch wire, 3-conductor, 20 AWG

Dataline Switch for LI Automation and Complete Control

Pushbutton control for single relays, groups of relays, and/or channels in Lighting Integrator panel systems

Screwless wallplate and removable lens caps for labeling

Pilot light LEDs for visual status feedback



1-, 2-, 4-, and 8-button configurations

Locator light bar for visibility when dark

Local dataline compatibility provides easy installation and operation

PROJECT
LOCATION/TYPE

Product Overview

Description

The Lighting Integrator (LI) Dataline Switch (HDLSxSS) is designed for use with LI Automation (LIA), LI Complete Control (LICA), and LI DMX (LIDA) panels and offers flexible and user-friendly lighting control of a single relay or a group of relays in one panel or a network of panels.

Operation

Dataline Switches install into standard wallboxes and connect to an LIA/LICA/LIDA panel via dual twisted pair digital bus wiring. Each switch unit contains one master button and up to eight individual switch buttons which can be individually programmed (smartwired) to control relays or groups of relays. Individual switch buttons are programmed directly from WinControl software on LICA systems or by lifting the switch covers to uncover the smartwiring buttons on LIA and LIDA systems. Pressing these buttons (see Switch Programming and Wiring) sends a unique digital code that identifies the buttons and switch to the panel. The buttons can then be assigned to a relay or a group of relays. The master button is programmed via DIP switches on the back of the switch with a choice of functions.

Control Capabilities

Dataline switches can be used with LIA, LICA, and LIDA systems. In LIA systems, buttons can be programmed to control either a group of relays in a single panel or a channel in one or more panels. In LICA systems, the buttons may also control system-wide group codes.

Applications

Multiple Dataline Switches connect together and to a panel via 4-conductor data communications wiring (also referred to as the local dataline). This reduces the wiring required by conventional switches, since up to 63 devices per panel can share the dataline. Dataline Switches are ideal for commercial office or other buildings where individual occupant lighting control needs are paramount. These switches are flexible enough to accommodate individual needs while facilitating efficient, area-wide automated lighting control. The "cleaning" scenario enables maintenance crews to control needed lighting without interfering with the needs of individuals working after hours.

Features

- Works with with LIA, LICA, and LIDA systems
- Bi-color pilot light status LEDs indicates relay states for each button (red = All On, green = mixed state, no color = All Off)
- Locator light bar for finding switch in the dark
- Optional key lock version for public locations
- Optional cleaning control scenario
- Optional On Only setting to prevent inadvertently turning lights off
- Master button with programmable configurations (Restore/All Off; All Off, All On/All Off, or Disabled)
- Available in white, ivory, almond, and gray
- Qualifies for use in ARRA-funded projects



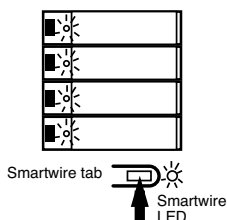
Specifications

- Standard wallbox mounting, non-gangable
- Removable switch button lens caps accommodate 3/8" (9mm) laminated tape
- Custom engraving available
- Environmental: Operating temperature range 32 to 139°F (0 to 60°C), 5-95% RH noncondensing
- Dimensions: 4.5" x 2.75" x 1.8" (69.8mm x 114.3mm x 46mm) HxWxD for 1-, 2-, and 4-button switch; 4.5" x 4.5" x 1.8" (114.3mm x 114.8mm x 46mm) HxWxD for 8-button switch
- One year warranty

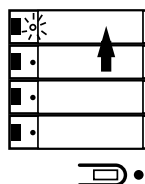
Switch Programming and Wiring

Smartwiring a Dataline Switch

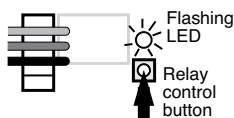
- 1** Remove wallplate and Press Smartwire tab once. Smartwire LED flashes once. All switch button LEDs begin flashing.



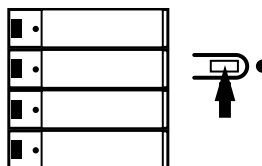
- 2** Press switch button to be programmed. Selected button LED continues to flash. Other LEDs stop flashing.



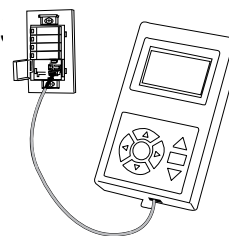
- 3** Press relay control button to add or delete from group.



- 4** Press Smartwire tab again. All LEDs stop flashing. Smartwiring is completed. Repeat for other buttons as needed.

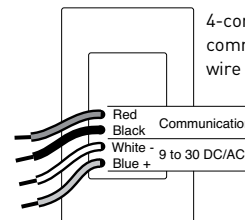


Switch Programming



Users can program Dataline Switches in the field with the Network Clock (if using WinControl, Network Clock is not required).

Dataline Switch Wiring



4-conductor data communications wire (HDLW4)

Ordering Information

Catalog No.	Color	Description	Catalog No.	Color	Description	Size	Power Consumption
<input type="checkbox"/> HDLS1SS-7	White	Single Dataline Switch	<input type="checkbox"/> HDLS1SSK-7	White	Keyed Single Dataline Switch	Single-gang	45 mA
<input type="checkbox"/> HDLS1SS-2	Ivory		<input type="checkbox"/> HDLS1SSK-2	Ivory			
<input type="checkbox"/> HDLS1SS-4	Light Almond		<input type="checkbox"/> HDLS1SSK-4	Light Almond			
<input type="checkbox"/> HDLS1SS-9	Gray		<input type="checkbox"/> HDLS1SSK-9	Gray			
<input type="checkbox"/> HDLS2SS-7	White	Dual Dataline Switch [2 individual buttons + Master button]	<input type="checkbox"/> HDLS2SSK-7	White	Keyed Dual Dataline Switch [2 individual buttons + Master button]	Single-gang	50 mA
<input type="checkbox"/> HDLS2SS-2	Ivory		<input type="checkbox"/> HDLS2SSK-2	Ivory			
<input type="checkbox"/> HDLS2SS-4	Light Almond		<input type="checkbox"/> HDLS2SSK-4	Light Almond			
<input type="checkbox"/> HDLS2SS-9	Gray		<input type="checkbox"/> HDLS2SSK-9	Gray			
<input type="checkbox"/> HDLS4SS-7	White	Quad Dataline Switch [4 individual buttons + Master button]	<input type="checkbox"/> HDLS4SSK-7	White	Keyed Quad Dataline Switch [4 individual buttons + Master button]	Single-gang	55 mA
<input type="checkbox"/> HDLS4SS-2	Ivory		<input type="checkbox"/> HDLS4SSK-2	Ivory			
<input type="checkbox"/> HDLS4SS-4	Light Almond		<input type="checkbox"/> HDLS4SSK-4	Light Almond			
<input type="checkbox"/> HDLS4SS-9	Gray		<input type="checkbox"/> HDLS4SSK-9	Gray			
<input type="checkbox"/> HDLS8SS-7	White	Octal Dataline Switch [8 individual buttons + Master button]	<input type="checkbox"/> HDLS8SSK-7	White	Keyed Octal Dataline Switch [8 individual buttons + Master button]	Double-gang	75 mA
<input type="checkbox"/> HDLS8SS-2	Ivory		<input type="checkbox"/> HDLS8SSK-2	Ivory			
<input type="checkbox"/> HDLS8SS-4	Light Almond		<input type="checkbox"/> HDLS8SSK-4	Light Almond			
<input type="checkbox"/> HDLS8SS-9	Gray		<input type="checkbox"/> HDLS8SSK-9	Gray			

Lighting Integrator Accessory Enclosure

Enclosure for Lighting Integrator accessory devices

Installs anywhere on Lighting Integrator network



Connections for global and local datalines and power supply

Connectors and terminals for easy installation of network devices

Hinged cover with locking latch

PROJECT
LOCATION/TYPE

Product Overview

Description

The HACCBX is a surface-mounted accessory enclosure for low voltage components. It is designed to simplify remote mounting of accessories used in WattStopper Lighting Integrator Automation (LIA) panels.

Features

- Enclosure and hinged "shoebox" cover with locking latch mechanism
- Compatible with LI power supply (HUPSM) for providing additional power
- Accessory plate with DIN rail
- Circuit board that provides dataline and power connections
- Qualifies for use in ARRA-funded projects

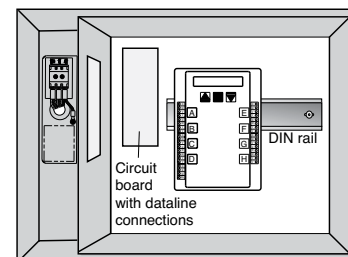
Specifications

- DIN rail, mounting plate, and frame for mounting dataline modules, non-DIN rail devices, and optional power supply
- Dimensions: 12.13" H x 17.5" W x 4.88" D (308mm x 444mm x 124mm)
- Shipping weight: 23 lbs. (10.43 kg.)
- One year warranty
- UL and cUL listed

Capacity & Controls

Users may install an accessory enclosure at any point on an LIA network, as long as twisted pair communications wiring (also referred to as a dataline) limitations are taken into consideration. The enclosure holds up to two system devices, such as a Network Clock, BMS Interface Module, Photocontrol Module, or Universal Switch Module. For convenience, the enclosure contains a circuit board with terminals for quickly connecting dataline devices to the system. Users can access two 4-pin connectors and two 4-wire terminals for connecting dataline devices requiring power, such as dataline switches. In addition, the enclosure contains separate 2-wire terminals for panel-to-panel data communications wiring.

Accessory Enclosure Interior



The Accessory Enclosure includes DIN rail mounting in the low voltage section, non-DIN rail mounting plate, and line voltage section.

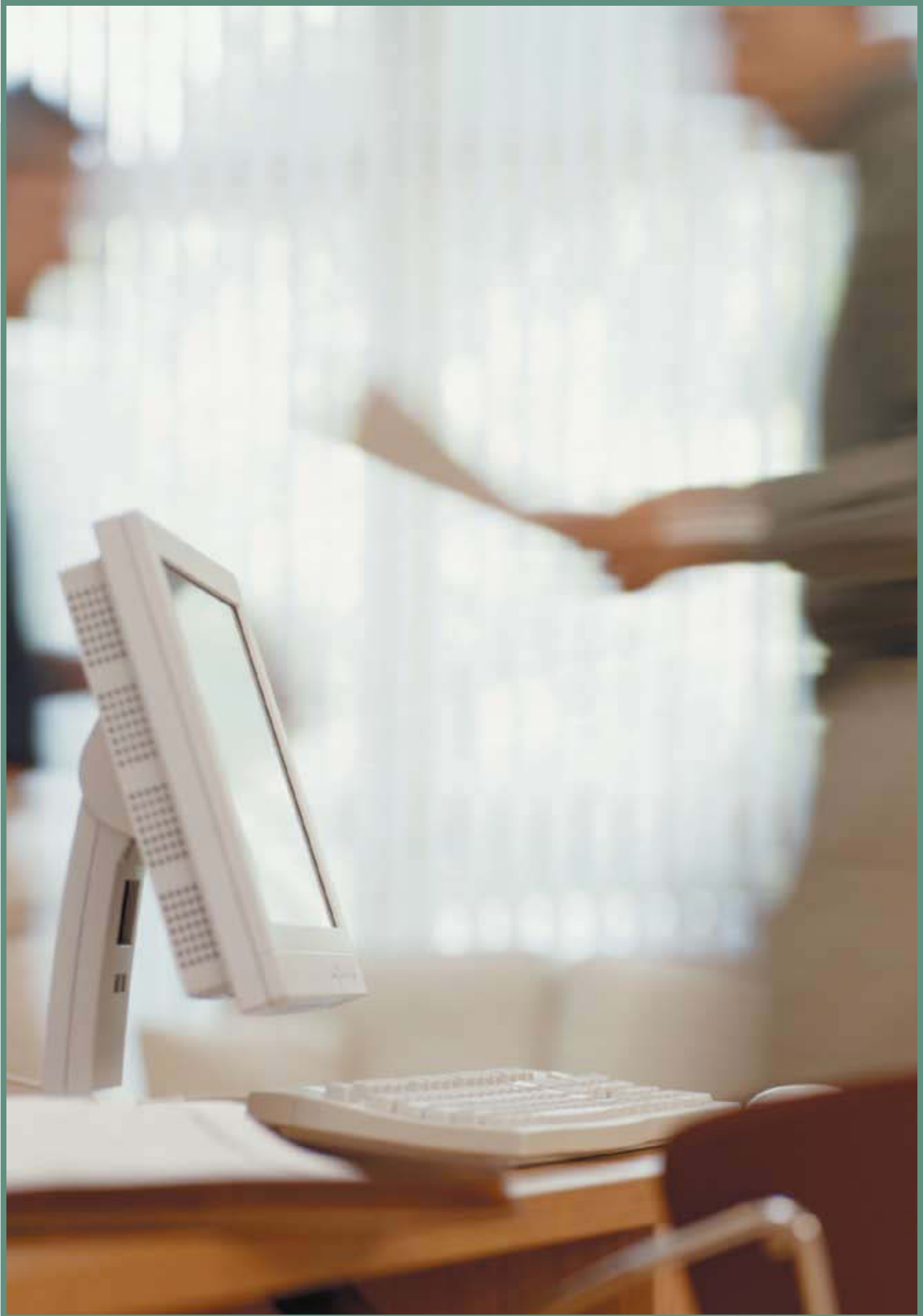
Catalog No.	Description
<input type="checkbox"/> HACCBX	Accessory Enclosure
Optional accessory:	
<input type="checkbox"/> HUPSM	Power Supply Module

Ordering Information

WattStopper
www.wattstopper.com
800.879.8585

Pub. No. 11706 rev 11/2009

A Group brand | **legrand**





上海音乐厅 为纪念贝多芬诞生二百周年



Lighting Integrator with DMX512 Interface Level

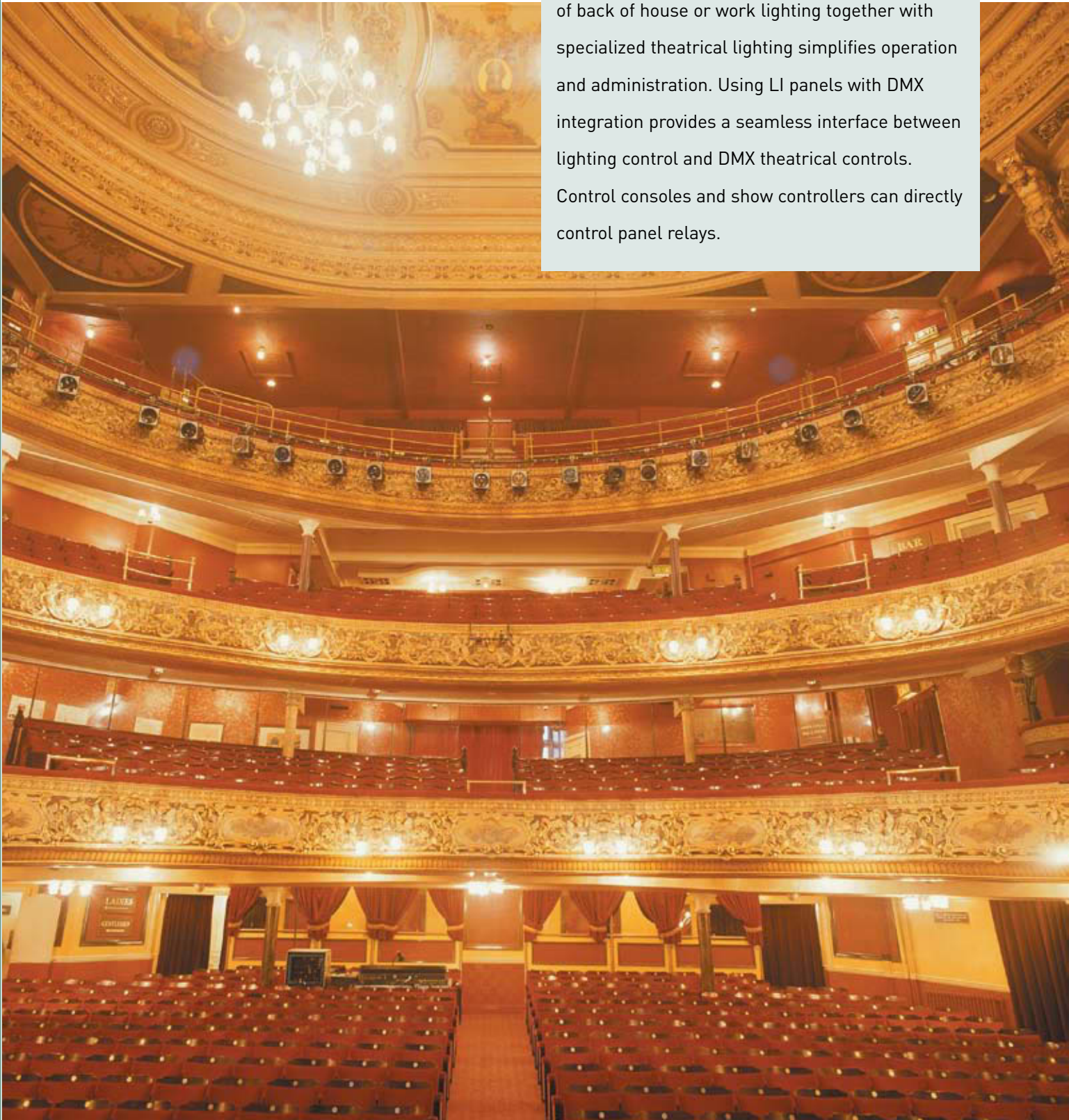
In theatrical applications, such as auditoriums and theaters, the convenience of controlling all lighting from a single system ensures that non-stage lighting is controlled along with theatrical lighting cues. LID panels enable this level of integration. The LIDA option provides DMX512 theatrical control as well as the additional functionality of LI Automation Level dataline switches.





Coordinate control of regular and theatrical lighting

In some venues, the ability to integrate control of back of house or work lighting together with specialized theatrical lighting simplifies operation and administration. Using LI panels with DMX integration provides a seamless interface between lighting control and DMX theatrical controls. Control consoles and show controllers can directly control panel relays.





Auditoriums, Ballrooms,
Themed entertainment venues,
Arenas, Houses of worship,
TV/film studios



- Coordinated control of back of house or work lighting with theatrical lighting
- DMX theatrical lighting consoles and controllers have direct control over LI relays
- System allows relays to be located on, locked on, locked off, or controlled locally



LID Highlights

- Optional group switch override setup with smartwired push-button programming
- Fail safe operation; relays do not change state if DMX signal lost
- Flexible switch override priority scheme allows switches to be enabled or disabled
- Compatibility with dataline switches affords additional override capability

LI DMX Level Interior (LID8, LID24, LID48, LIDA8, LIDA24, LIDA48)

Control relays from any DMX control device

Allows local switch overrides with priority



Supports one DMX512 universe

PROJECT

LOCATION/TYPE

Product Overview

Description

The Lighting Integrator DMX panel (LID) allows control of relays in Lighting Integrator (LID) panels from theatrical control devices (i.e., control consoles and show controllers).

Operation

Selected relays in an LID panel are each controlled by one DMX control channel. A channel level greater than 50% turns the relay on and a level below 50% turns the relay off. Local override is accommodated via wiring the low voltage switch terminals on the relay driver cards or group switch card. An optional group switch card(s) adds smartwiring capability for eight or 16 group switches (the latter requires two group cards in a 48 size panel). These switches can easily be configured to control groups of relays to match DMX channels containing more than one relay.

Optional local dataline capability (LIDA) offers additional override capability via dataline switches.

Features

- Control all or portion of panel relays via theatrical control system
- Optional group switch override setup with smartwired pushbutton programming
- Fail safe operation; relays do not change state if DMX signal lost

Override Priority

Relays are controlled by a variety of inputs to the panel, including direct wired override switches (LIDA only), direct wired group switches, dataline switches, and the DMX control signal. Relays that are controlled by both DMX and a switch respond based on the following override priority scheme:

DMX level >75%:	relay ON, accept switch override
DMX level <75% but >50%:	relay ON, ignore switch override
DMX level >25% but <50%:	relay OFF, ignore switch override
DMX level <25%:	relay OFF, accept switch override
DMX level 50:	DMX null, no operation performed, accept over-

Applications

Applications include auditoriums, ballrooms, themed entertainment venues, arenas, churches, and TV/film studios.

- Flexible switch override priority scheme
- Compatibility with optional dataline switches affords additional override capability
- Qualifies for use in ARRA-funded projects

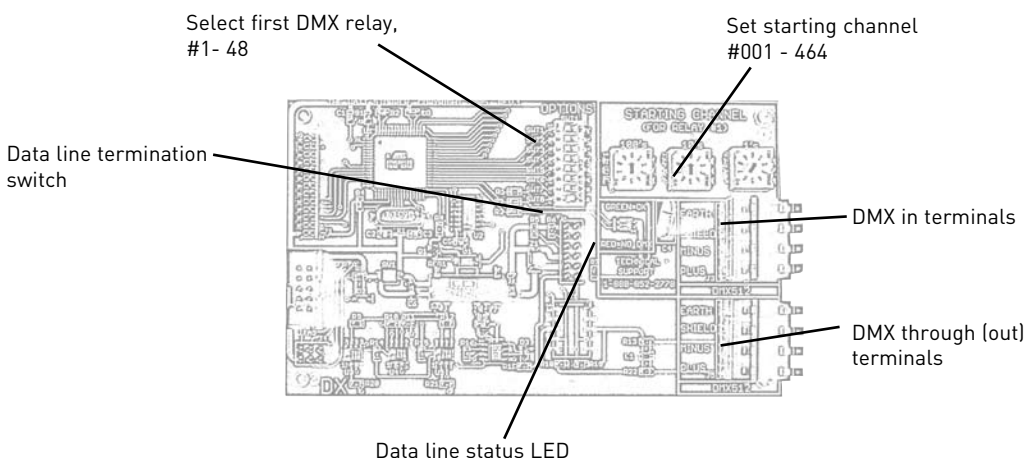


Specifications

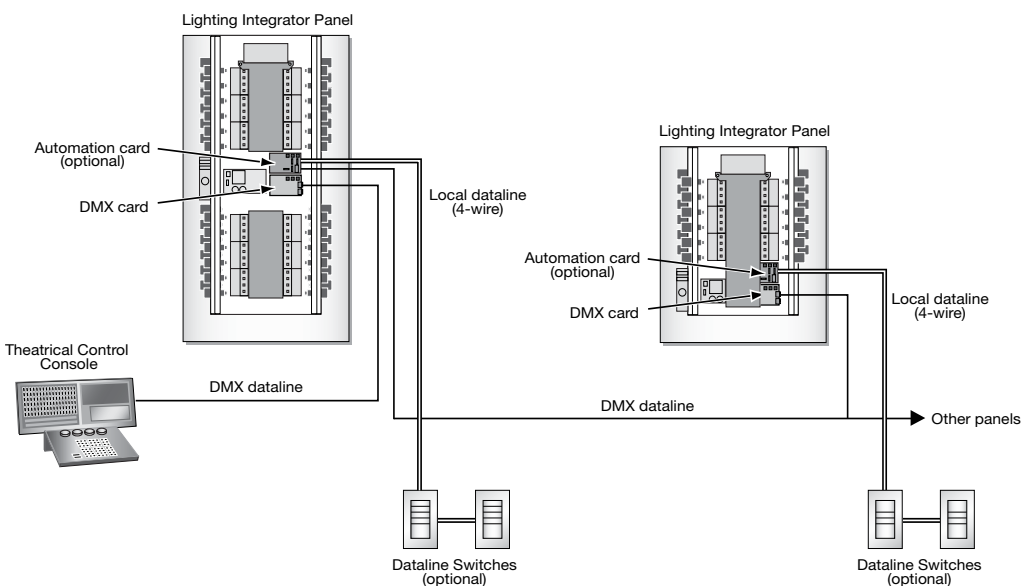
- Terminal connection for DMX in and DMX through (out)
- Starting channel number set via three rotary selector switches, max address is 464 (512 - 48)
- Select starting relay for DMX range of relays for control (#1- 48) using DIP switches #1 - 6
- LED status indicators (Red LED = power on, no DMX data, Green LED = DMX data true)
- RS485 com optically isolated with 500 volt minimum breakdown
- Integral end of line termination selected via DIP switch position 8
- One year warranty

System Layout & Wiring

LI DMX512 Card



LID Panel Network with DMX Interface





General LI Information

Description

WattStopper's Lighting Integrator (LI) is a low voltage, relay based lighting control panel. The LI interior is shipped as a separate assembly from the panel enclosure and cover to facilitate project rough-in requirements. Interiors are configured as 8, 24 or 48 relay capacity with the quantity of relays installed as called for on the order. The interior field mounts into an appropriate enclosure supplied separately.

Operation

LI relays are driven into a latched on or off state via a 24 volt DC pulse generated by the relay driver cards. A momentary pushbutton is provided for each relay driver circuit to manually force the relay to toggle its state with each button press. An isolated set of contacts in the relays provides a positive status feedback to the relay driver circuits that are annunciated by an LED associated with each relay. Removable terminal blocks allow connection of direct wired low voltage devices for remote control of relays.

- Interior provides complete isolation between line and low voltage when used with a compatible LENC series enclosure
- Individual plug-in, latching style single pole relays with isolated pilot/status contacts
- Integral push button override, status LED, and pilot light output per relay
- Two slots available for optional automation, networking and integration control cards

Operation (cont'd.)

Inputs can be wired to accommodate momentary three wire, momentary two wire (toggle) or maintained contact switches as well as occupancy sensors. The switch input circuits are auto sensing and will automatically configure appropriately when Watt Stopper occupancy sensors are connected.

Group Switching

Group switching provides the unique WattStopper Smartwired switching function. This simple button press interface allows any quantity of relays to be assigned quickly to each group switching channel for common on/off control or for pattern (scene) style control. Each of the eight channels is provided with an override pushbutton, LED status indicator and terminals for connection of wall switches and occupancy sensors. Eight and 24 size panels can be ordered with one group switch card (8 channels), 48 size panels can have two group switch cards for a total of 16 channels (8 controllable by scheduling, eight by switching only).

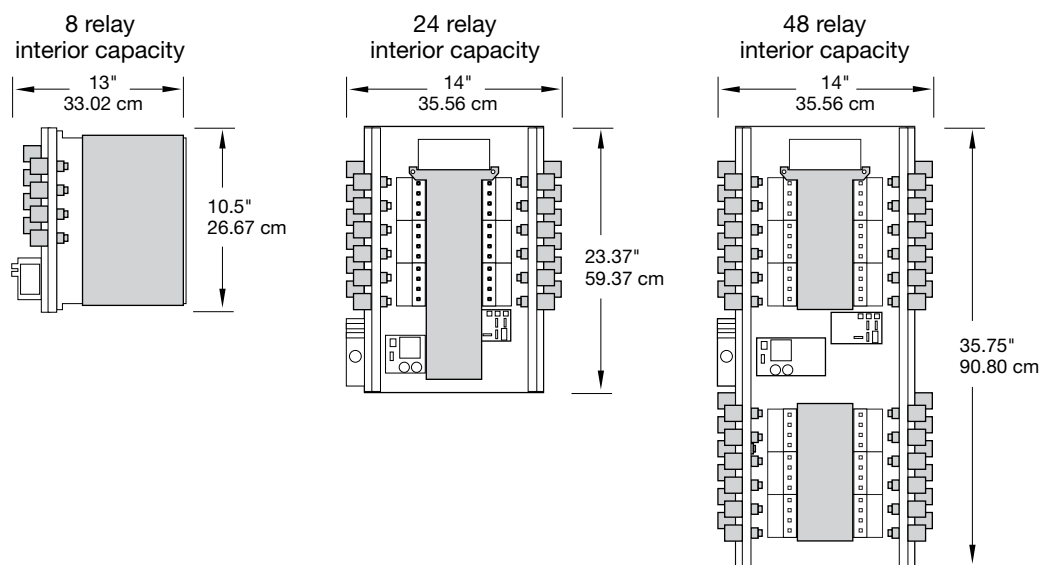
- Supports WattStopper occupancy sensor heads without need for separate sensor power packs
- Smartwire feature allows grouping of relays for common control
- DIN rail mounting provided within the Class 2 section for mounting of optional accessories
- Control multi-pole circuits with optional contactors and compatible LENC enclosure
- Optional configuration available for use on emergency lighting circuits



General LI Specifications

- Interior capacity:
 - 8 circuits, up to 8 SPST relays
 - 24 circuits, up to 24 SPST relays
 - 48 circuits, up to 48 SPST relays
- Input voltage options, 120/277V 60 Hz, 120/347V 60 Hz, 240V 50 Hz
- Group switching, eight channels per installed group switching card. One card max per LI8 and LI24. Two cards max LI48.
- Low voltage switch inputs, removable terminal blocks with screw-less connection, configurable for three wire momentary, two wire momentary (toggle), and two wire maintained dry contact switches or WattStopper occupancy sensors.
- Accessory power available
 - LI8: 1000 MA @24VAC or 800 MA @ 24VDC
 - LI24 and LI48: 1400 MA @ 24VAC or 800 MA @ 24VDC
- SCCR (short circuit current rating) 14,000 amps with HDR Heavy Duty Relay
- HDR SPST relays:
 - Coil voltage, 24 VDC, pulse ON and pulse OFF
 - Mechanically latched contacts
 - 1/2" K,O, mounting, LV plug-connection, individually replaceable
 - Contact ratings
 - 30 amps ballast @ 277V
 - 20 amps ballast @ 347V
 - 20 amps tungsten @ 120V
 - 30 amps resistive @ 347V
 - 1.5 HP @ 120V
 - Endurance: 300,000 mechanical cycles
- Pilot light output, 24 V rectified or 24VAC, other voltages configurable with external power supply
- One year warranty

Panel Interior Dimensions



Ordering Information

Interior Capacity	Installed Options				
	Voltage Options	Relay Count	Group Switch Card	Emergency Relays	Coil Voltage
<input type="checkbox"/> LID8	<input type="checkbox"/> 115/277	___ HDR relays	___ GS cards (max	___ EM relay count	<input type="checkbox"/> 115
<input type="checkbox"/> LID24	<input type="checkbox"/> 115/347	installed (max	1 in 8, 24, 2 in 48)	(Not available in 8-relay	<input type="checkbox"/> 240
<input type="checkbox"/> LID48	<input type="checkbox"/> 240	of interior		size panels; max. of 24 in	<input type="checkbox"/> 277
<input type="checkbox"/> LIDA8		capacity)		24-relay or 48-relay size	<input type="checkbox"/> 347
<input type="checkbox"/> LIDA24				interior)	
<input type="checkbox"/> LIDA48					

Lighting Integrator Panel Enclosures

16-gauge all steel tubs with galvaneal finish

Screw on, powder coated cover permits temporary hanging via key hole screw slots

Surface or flush mounting with back mounting holes, screw cover

Lockable door access to Class 2 panel section, meets NFPA 70

Studs provided for quick installation of panel interior section

UL and CUL listed; one year warranty



PROJECT
LOCATION/TYPE

Product Overview

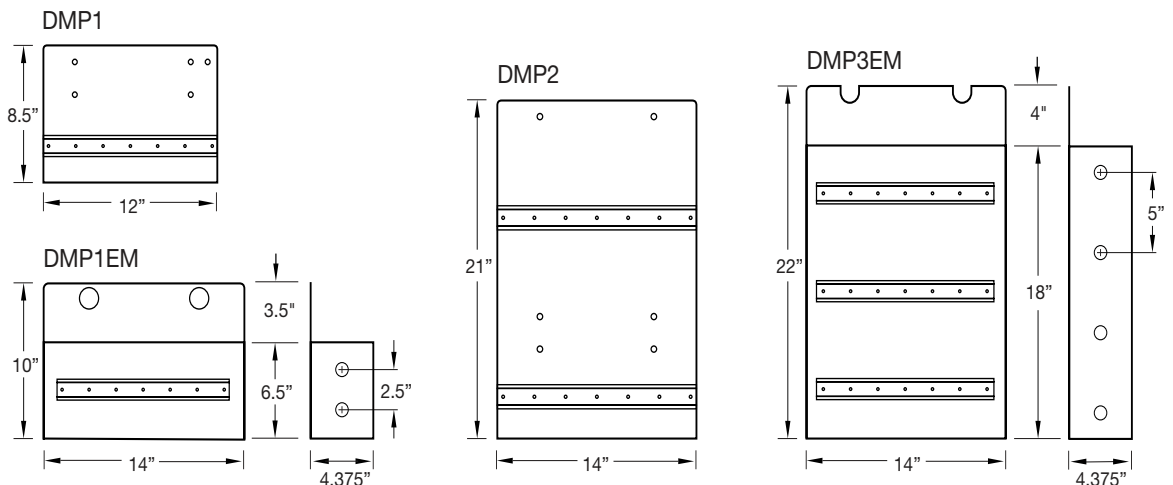
Description

Lighting Integrator panel enclosures are designed specifically to work with all configurations of LI panel interiors containing 8 to 48 relays. The enclosures are provided with integral mounting studs that are configured to accept the panel interior making the installation quick and easy. Covers are secured to the tubs with screws and have keyhole style mounting. This allows the cover to be temporarily hung on the tub during the construction phase of the project. All covers have hinged doors that expose only the low voltage (Class 2) section of the panel and are equipped with key locks and two keys each. All Lighting Integrator enclosures are NEMA 1 rated. Consult factory for other NEMA rated applications.

Configurations

Enclosures rated for 24 or 48 relay capacity have space provided at the bottom for optional mounting plates (DMP) to accept DIN rail mounted accessories such as multi-pole contactors and ELCU-100 Emergency Lighting Control Units. Standard LENC24 and LENC48 enclosures will accommodate up to six four pole contactors (requires DMP mounting plate) or four ELCU-100 units (requires DMP-1EM mounting plate). LENC8-24 and LENC24-48 enclosures have additional space provided and will accommodate up to twelve four pole contactors (requires DMP-2 mounting plate) or 12 ELCU-100 units (requires DMP-3EM mounting plate).

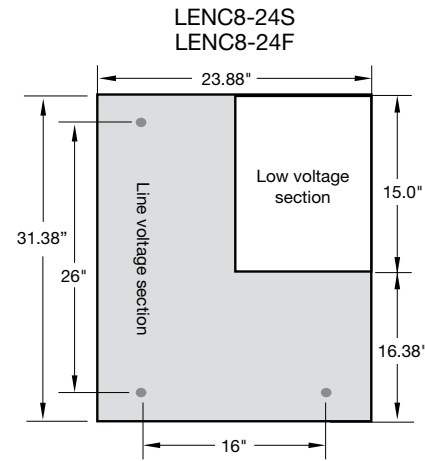
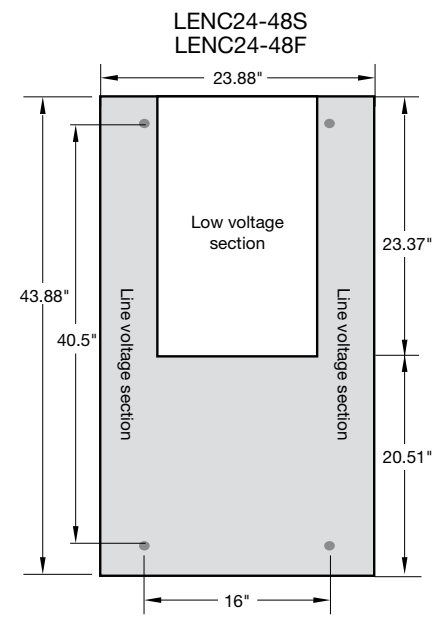
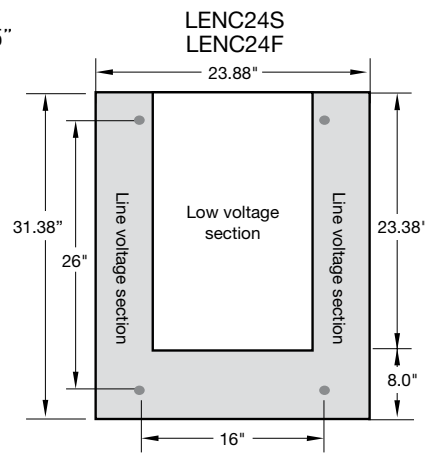
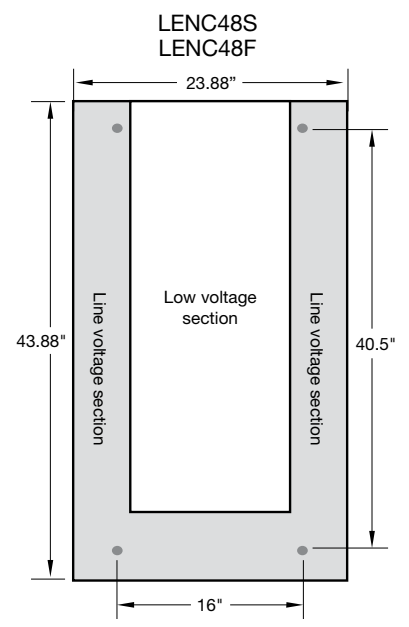
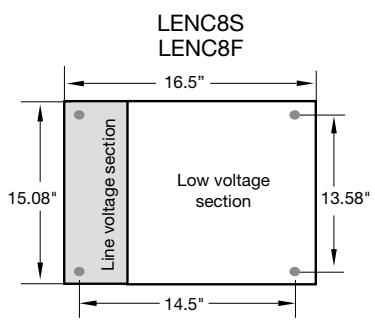
DIN Rail Mounting Options





Tub Dimensions

Note:
Tub depth 4.50"
Cover thickness .075"



Ordering Information

Catalog No.	Description	Overall Dimensions Including Cover (HxWxD)	Overall Weight
<input type="checkbox"/> LENC8S	8 relay capacity, surface mount	15.75" x 16.62" x 4.575"	18 lbs
<input type="checkbox"/> LENC8F	8 relay capacity, flush mount	17.10" x 18.48" x 4.575"	20 lbs
<input type="checkbox"/> LENC8-24S	8 relay capacity with 24 size tub, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC8-24F	8 relay capacity with 24 size tub, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24S	24 relay capacity, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC24F	24 relay capacity, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24-48S	24 relay capacity with 48 size tub, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC24-48F	24 relay capacity with 48 size tub, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> LENC48S	48 relay capacity, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC48F	48 relay capacity, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> DMP	mounting plate, one DIN rail for up to 6 contactors	8" x 12" x 4.625"	1.86 lbs
<input type="checkbox"/> DMP-2	mounting plate, two DIN rail for up to 12 contactors	21" x 14" x 4.625"	5.30 lbs.
<input type="checkbox"/> DMP-1EM	mounting plate, one DIN rail with barrier for up to 4 ELCU-100s	10" x 14" x 4.37"	3.64 lbs.
<input type="checkbox"/> DMP-3EM	mounting plate, three DIN rail with barrier for up to 12 ELCU-100s	22" x 14" x 4.37"	7.60 lbs.

Qualifies for use in ARRA-funded projects.

Lighting Integrator Emergency Relay Panel Option

UL924 listed for use on emergency circuits

Factory-assembled interior mounts in standard LI enclosure, ships completely wired

Meets NEC (NFPA70) UL 924 requirements for emergency lighting control



Allows normal control of emergency circuits via schedule, switch, photocell or other device

Guarantees that emergency lighting will turn on upon loss of normal power

PROJECT
LOCATION/TYPE

Product Overview

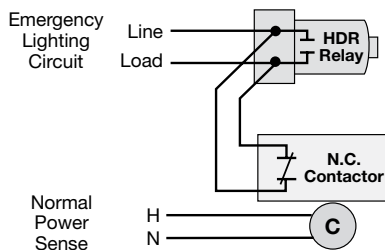
Description

The Lighting Integrator Emergency Relay Panel option provides certified fail-safe operation of lighting control circuits controlled by HDR relays in an LI lighting control panel. The option is available with any 24 or 48 size LI panel.

Operation

A dedicated normal power sense connection monitors the presence of normal power and allows the HDR relays to control the emergency lighting circuits based on ordinary control schedules and devices, such as switches, occupancy sensors, and daylighting control devices. When normal power is lost for any reason, all HDR relays controlling emergency circuits are each individually bypassed automatically by a set of normally closed contacts. The HDR relays do not change state during a power outage so lighting is restored when normal power is restored.

Wiring



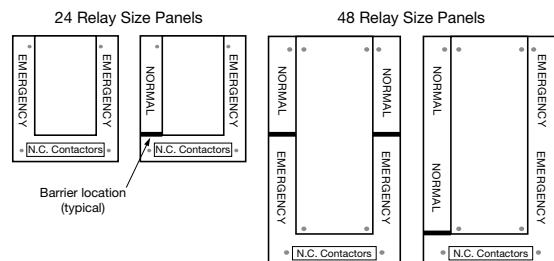
Applications

The Lighting Integrator emergency lighting control panel option is ideal for applications where always-hot emergency lighting circuits need to be controlled along with the normal lighting circuits. Because the lighting control panel with integrated yet dedicated emergency relays operates normally based on the type of intelligence card installed in the panel, this is suitable for virtually any type of application. These panels can be used reliably for fail safe emergency lighting operation in schools, office buildings, libraries, airports, industrial plants, warehouses, and auditoriums.

Specifications

- 30 Amp normally closed contactors used for shunt operation
- One to 24 emergency relays per panel, 24 or 48 size enclosure only
- Emergency relay rating: same as HDR
- Normal power sense input, 120, 277 or 347 volts, voltage specific
- UL listed for use on emergency circuits

Emergency Relay Panel Configurations



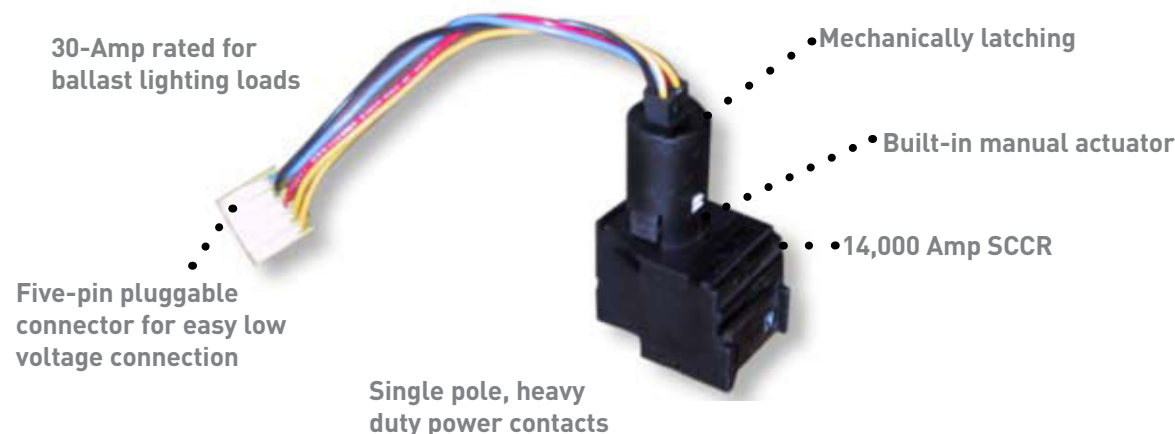
Description

Order LI Emergency Relay Panel option using the ordering section on the LI level panel cut sheet.

Ordering Information



HDR Low Voltage Relay



PROJECT
LOCATION/TYPE

Product Overview

Description

This low voltage relay is used for control of lighting circuits and other electrical loads in WattStopper's Lighting Integrator control panels. Momentary, low voltage pulses from the panel's control system switch the relays on or off. Mechanical latching operation results in lower power consumption. The relay will remain in the last switched state in the event of a power loss. A built-in manual actuator allows lights to be turned on in the event of a panel or relay failure. The relay mounts into a standard knockout and comes with a plug-in cable for easy panel connection. Typically, users specify the number of relays and the panel is assembled and shipped with this quantity.

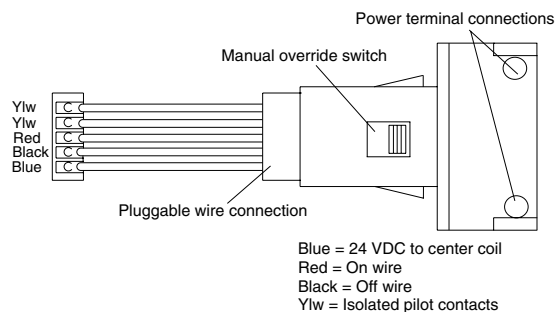
Specifications

- 1/2" knockout mounting
- Accepts wire gauge #10 - #14 AWG, copper wire, solid or stranded
- Operating voltage 24 VDC
- Isolated pilot relay contacts, .5 Amp @ 30 VAC/DC for status feedback
- Integral manual override
- Rated 14,000 amps Short Circuit Current Rating (SCCR)
- Suitable for use with all HID ballasted loads
- Expected service life is over 25 years at nominal load and cycle rate
- Dimensions: 3.2"x 1.3"x .85" (81.3 mm x 33.0 mm x 21.6 mm)
- UL listed, CSA certified; five year warranty

Ratings

- Ballast load 30 Amp @ 277 VAC (including HID) 20 Amp @ 347 VAC
- Tungsten load 20 Amp @ 120 VAC
- Resistive load 30 Amp @ 347 VAC
- Motor load 1½ HP @ 120 VAC

HDR Wiring



Ordering Information

Catalog No.	Description
<input type="checkbox"/> HDR5P	Mechanically Latching Relay (low voltage) with five-pin plug-in connector, pilot contacts, override switch

Qualifies for use in ARRA-funded projects.

Dataline Switch for LI Automation and Complete Control

Pushbutton control for single relays, groups of relays, and/or channels in Lighting Integrator panel systems

Screwless wallplate and removable lens caps for labeling

Pilot light LEDs for visual status feedback



1-, 2-, 4-, and 8-button configurations

Locator light bar for visibility when dark

Local dataline compatibility provides easy installation and operation

PROJECT
LOCATION/TYPE

Product Overview

Description

The Lighting Integrator (LI) Dataline Switch (HDLSxSS) is designed for use with LI Automation (LIA), LI Complete Control (LICA), and LI DMX (LIDA) panels and offers flexible and user-friendly lighting control of a single relay or a group of relays in one panel or a network of panels.

Operation

Dataline Switches install into standard wallboxes and connect to an LIA/LICA/LIDA panel via dual twisted pair digital bus wiring. Each switch unit contains one master button and up to eight individual switch buttons which can be individually programmed (smartwired) to control relays or groups of relays. Individual switch buttons are programmed directly from WinControl software on LICA systems or by lifting the switch covers to uncover the smartwiring buttons on LIA and LIDA systems. Pressing these buttons (see Switch Programming and Wiring) sends a unique digital code that identifies the buttons and switch to the panel. The buttons can then be assigned to a relay or a group of relays. The master button is programmed via DIP switches on the back of the switch with a choice of functions.

Control Capabilities

Dataline switches can be used with LIA, LICA, and LIDA systems. In LIA systems, buttons can be programmed to control either a group of relays in a single panel or a channel in one or more panels. In LICA systems, the buttons may also control system-wide group codes.

Applications

Multiple Dataline Switches connect together and to a panel via 4-conductor data communications wiring (also referred to as the local dataline). This reduces the wiring required by conventional switches, since up to 63 devices per panel can share the dataline. Dataline Switches are ideal for commercial office or other buildings where individual occupant lighting control needs are paramount. These switches are flexible enough to accommodate individual needs while facilitating efficient, area-wide automated lighting control. The "cleaning" scenario enables maintenance crews to control needed lighting without interfering with the needs of individuals working after hours.

Features

- Works with with LIA, LICA, and LIDA systems
- Bi-color pilot light status LEDs indicates relay states for each button (red = All On, green = mixed state, no color = All Off)
- Locator light bar for finding switch in the dark
- Optional key lock version for public locations
- Optional cleaning control scenario
- Optional On Only setting to prevent inadvertently turning lights off
- Master button with programmable configurations (Restore/All Off; All Off, All On/ All Off, or Disabled)
- Available in white, ivory, almond, and gray
- Qualifies for use in ARRA-funded projects



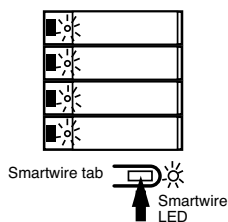
Specifications

- Standard wallbox mounting, non-gangable
- Removable switch button lens caps accommodate 3/8" (9mm) laminated tape
- Custom engraving available
- Environmental: Operating temperature range 32 to 139°F (0 to 60°C), 5-95% RH noncondensing
- Dimensions: 4.5" x 2.75" x 1.8" (69.8mm x 114.3mm x 46mm) HxWxD for 1-, 2-, and 4-button switch; 4.5" x 4.5" x 1.8" (114.3mm x 114.8mm x 46mm) HxWxD for 8-button switch
- One year warranty

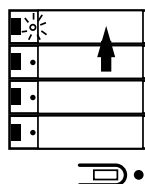
Switch Programming and Wiring

Smartwiring a Dataline Switch

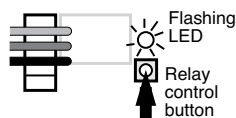
- 1** Remove wallplate and Press Smartwire tab once. Smartwire LED flashes once. All switch button LEDs begin flashing.



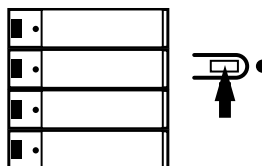
- 2** Press switch button to be programmed. Selected button LED continues to flash. Other LEDs stop flashing.



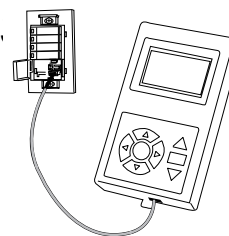
- 3** Press relay control button to add or delete from group.



- 4** Press Smartwire tab again. All LEDs stop flashing. Smartwiring is completed. Repeat for other buttons as needed.

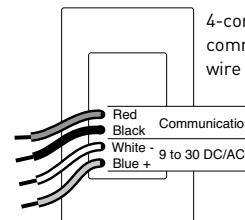


Switch Programming



Users can program Dataline Switches in the field with the Network Clock (if using WinControl, Network Clock is not required).

Dataline Switch Wiring



4-conductor data communications wire (HDLW4)

Ordering Information

Catalog No.	Color	Description	Catalog No.	Color	Description	Size	Power Consumption
<input type="checkbox"/> HDLS1SS-7	White	Single Dataline Switch	<input type="checkbox"/> HDLS1SSK-7	White	Keyed Single Dataline Switch	Single-gang	45 mA
<input type="checkbox"/> HDLS1SS-2	Ivory		<input type="checkbox"/> HDLS1SSK-2	Ivory			
<input type="checkbox"/> HDLS1SS-4	Light Almond		<input type="checkbox"/> HDLS1SSK-4	Light Almond			
<input type="checkbox"/> HDLS1SS-9	Gray		<input type="checkbox"/> HDLS1SSK-9	Gray			
<input type="checkbox"/> HDLS2SS-7	White	Dual Dataline Switch (2 individual buttons + Master button)	<input type="checkbox"/> HDLS2SSK-7	White	Keyed Dual Dataline Switch (2 individual buttons + Master button)	Single-gang	50 mA
<input type="checkbox"/> HDLS2SS-2	Ivory		<input type="checkbox"/> HDLS2SSK-2	Ivory			
<input type="checkbox"/> HDLS2SS-4	Light Almond		<input type="checkbox"/> HDLS2SSK-4	Light Almond			
<input type="checkbox"/> HDLS2SS-9	Gray		<input type="checkbox"/> HDLS2SSK-9	Gray			
<input type="checkbox"/> HDLS4SS-7	White	Quad Dataline Switch (4 individual buttons + Master button)	<input type="checkbox"/> HDLS4SSK-7	White	Keyed Quad Dataline Switch (4 individual buttons + Master button)	Single-gang	55 mA
<input type="checkbox"/> HDLS4SS-2	Ivory		<input type="checkbox"/> HDLS4SSK-2	Ivory			
<input type="checkbox"/> HDLS4SS-4	Light Almond		<input type="checkbox"/> HDLS4SSK-4	Light Almond			
<input type="checkbox"/> HDLS4SS-9	Gray		<input type="checkbox"/> HDLS4SSK-9	Gray			
<input type="checkbox"/> HDLS8SS-7	White	Octal Dataline Switch (8 individual buttons + Master button)	<input type="checkbox"/> HDLS8SSK-7	White	Keyed Octal Dataline Switch (8 individual buttons + Master button)	Double-gang	75 mA
<input type="checkbox"/> HDLS8SS-2	Ivory		<input type="checkbox"/> HDLS8SSK-2	Ivory			
<input type="checkbox"/> HDLS8SS-4	Light Almond		<input type="checkbox"/> HDLS8SSK-4	Light Almond			
<input type="checkbox"/> HDLS8SS-9	Gray		<input type="checkbox"/> HDLS8SSK-9	Gray			





Lighting Integrator with Native BACnet Level

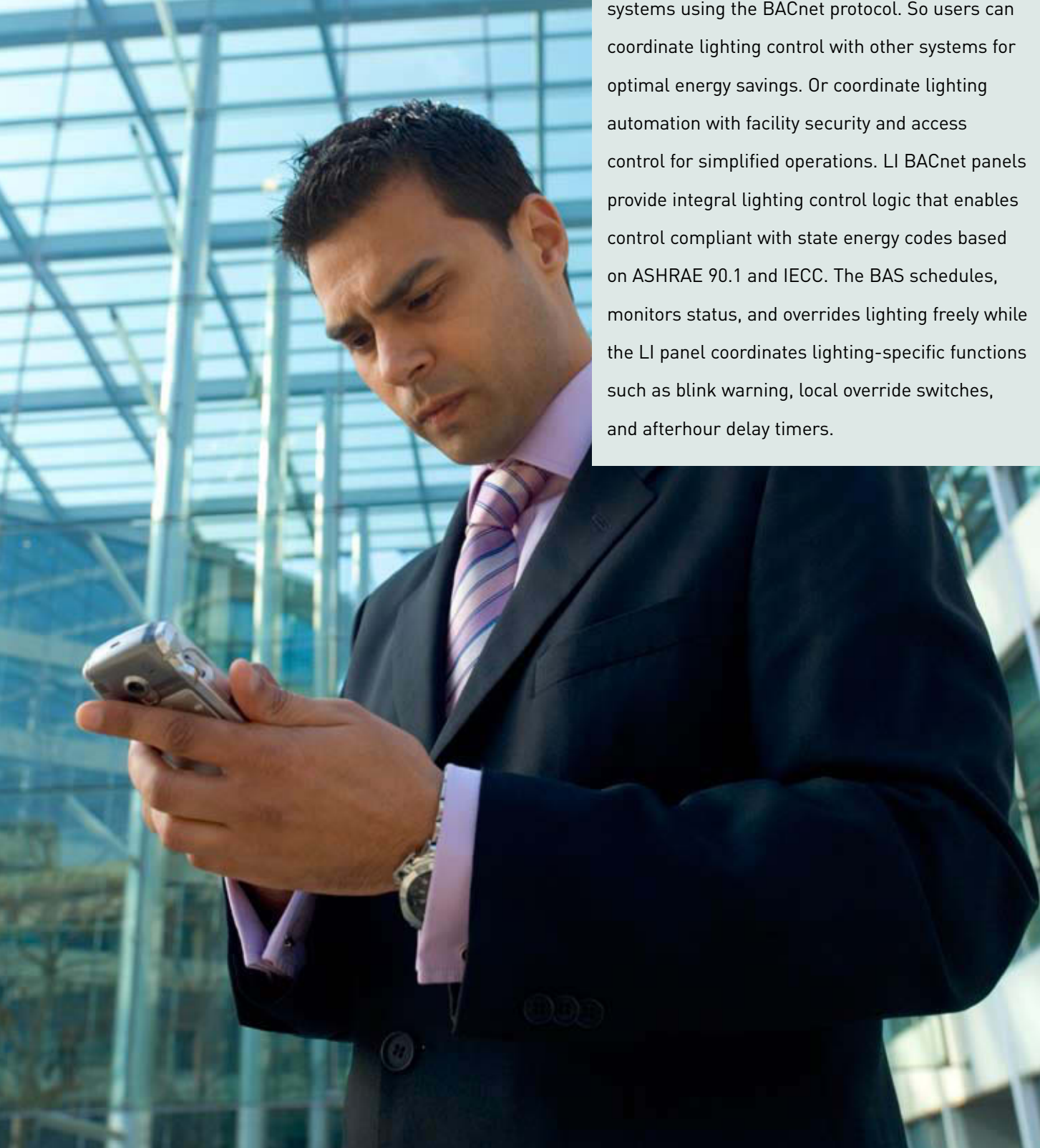
In applications where owners prefer to coordinate control of building lighting systems directly from a building automation system, LI BACnet panels (LIB) enable easy integration of lighting controls with industry standard MS/TP BACnet based systems.



BACnet is a registered trademark of ASHRAE



Integrate lighting control with building automation



LI integrates seamlessly with building automation systems using the BACnet protocol. So users can coordinate lighting control with other systems for optimal energy savings. Or coordinate lighting automation with facility security and access control for simplified operations. LI BACnet panels provide integral lighting control logic that enables control compliant with state energy codes based on ASHRAE 90.1 and IECC. The BAS schedules, monitors status, and overrides lighting freely while the LI panel coordinates lighting-specific functions such as blink warning, local override switches, and afterhour delay timers.



Commercial
office buildings,
public buildings,
universities



Typical operational sequences involve:

- BAS schedule sends Occupied signal to appropriate lighting zones at onset of work day and associated lighting turns on. Wall switch time delays associated with respective zones are disabled by the LIB panel to prevent unwanted timing out during regular hours.
- At end of scheduled work day, BAS scheduler sends Unoccupied signal to appropriate zones. Appropriate lighting blinks off and on to warn occupants of impending shutoff. Occupants may activate an override by pressing wall switches. After five minutes, all zone lighting that has not been overridden by local occupants turns off.
- When afterhour time delays expire, the remaining lighting again blinks to warn occupants. If no occupants remain in the building and no additional overrides are activated, after five minutes all lighting turns off.
- All additional occupant overrides initiated during afterhour periods will be subject to afterhour time delays set for each respective channel. This ensures that lighting turns off without requiring intervention by the BAS.

LIB Highlights

- Easy installation and verification of lighting circuits by electrical contractor without requiring services of BAS installation professional
- Industry standard MS/TP twisted pair networking allows LI panels to “piggyback” on BAS network or be configured on a separate network segment
- Easy grouping of relays via either smartwiring (pushbutton programming) or from BACnet workstation using standard BACnet objects and properties
- BAS required only for scheduled parameters (Occupied/Unoccupied); all other lighting control functions (e.g., blink warn, wall switch override, afterhour time delay) managed by LIB panel

LI Native BACnet Level Interior (LIB8, LIB24, LIB48)

Native level integration between lighting control panel and BAS via BACnet

Configure and control LI panel with any BACnet workstation

No proprietary configuration tools or software needed for commissioning



Industry standard MS/TP communication

Integral blink warnings and override time delays handled by LI panel automatically

PROJECT
LOCATION/TYPE

Product Overview

Description

The Lighting Integrator Native BACnet panel (LIB) enables native level integration of lighting control between the LIB panel and any building automation system that supports the ANSI/ASHRAE BACnet communication protocol. The LIB allows the BAS to schedule, monitor status, and override lighting freely without the need to support lighting-specific functions (e.g., blink warning, local override switches, and delay timers).

Operation

With the LIB panel system, panel relays and channels are automatically exposed to the BAS as standard BACnet objects. Relays can be individually commanded and monitored for their actual/on/off status, or be combined into channels and commanded and monitored as a group. This permits a building to be conveniently divided into lighting control zones, greatly reducing the number of individual objects a BAS must administer. LIB panels perform all typical lighting control sequence of operations without continuous supervision by the BAS.

Lighting Control Specific Functions

The LIB panel provides integral automation capabilities that enable lighting control compliant with state energy codes based on ASHRAE 90.1 and IECC. Its distributed processing also ensures operation of primary lighting control functions, such as wall switch overrides, blink warnings, and afterhours time out of overrides.

Applications

In most applications, a BAS will set lighting zones to occupied/unoccupied status through a schedule or a workstation command. The LIB panel then coordinates local switch overrides, time delays and blink warnings based on this status.

Features

- Integral automation enables BAS to easily provide code compliant lighting control
- Distributed processing ensures operation of primary lighting control functions
- Compatible with WattStopper occupancy sensors 2nd standard low voltage switch
- Supports Auto On, or energy saving Manual On function for lighting in areas scheduled as occupied
- Supports AS-100 Automatic Control Switch sweep off function
- Qualifies for use in ARRA-funded projects



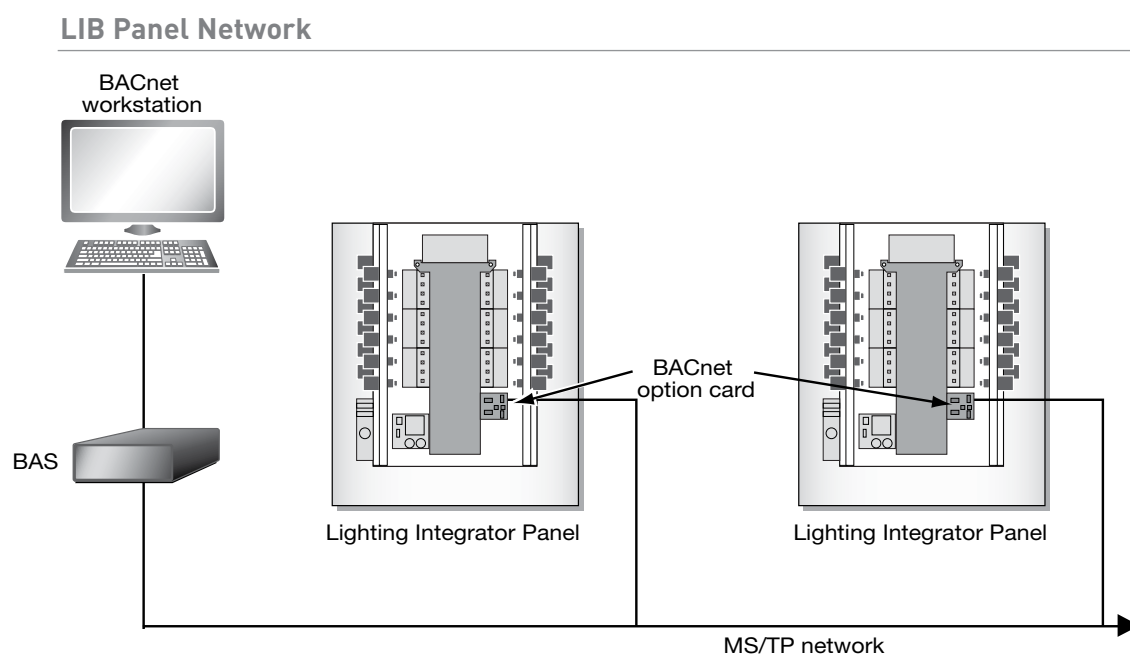
Specifications

- MS/TP communications port with removable 120 ohm "end of line" termination jumper
- 9600/19200/38400/76800 baud rates, selectable
- MS/TP MAC address selectable, 0 - 127
- Device ID selectable, 0 - 999 or 86000 - 86999
- Compatible with direct wired low voltage switches for relay override; not compatible with HDLS series dataline switches
- Description property writable for all objects
- One year warranty

BACnet Objects Supported

- Binary Output, Instance range 01-48 (1 per relay), monitor and control relays ON (1), OFF (NULL)
- Binary Value, Instance range 01-08 (1 per channel), command channels to occupied (1) or unoccupied (0) status
- Multi State Value, Instance range 01-08 (1 per channel), read channel relays' status as ALL ON, ALL OFF, BLINK, or MIXED state
- Binary Value, Instance range 101-108 (1 per channel), sets channel relays to manual-ON (1) or auto-ON (0)
- Analog Value, Instance range 101-108 (1 per channel), sets blink warning time for channel relays as five minutes (5) or no blink (0), or AS-100 switch (250)
- Analog Value, Instance range 201-208 (1 per channel), sets time delay for each channel relay (1-240 minutes) or no time delay (0)
- Analog Value, Instance range 01-48 (one per relay), sets relay to follow channel A-H (1-8)

Native BACnet Card and System Layout





General LI Information

Description

WattStopper's Lighting Integrator (LI) is a low voltage, relay based lighting control panel. The LI interior is shipped as a separate assembly from the panel enclosure and cover to facilitate project rough-in requirements. Interiors are configured as 8, 24 or 48 relay capacity with the quantity of relays installed as called for on the order. The interior field mounts into an appropriate enclosure supplied separately.

Operation

LI relays are driven into a latched on or off state via a 24 volt DC pulse generated by the relay driver cards. A momentary pushbutton is provided for each relay driver circuit to manually force the relay to toggle its state with each button press. An isolated set of contacts in the relays provides a positive status feedback to the relay driver circuits that are annunciated by an LED associated with each relay. Removable terminal blocks allow connection of direct wired low voltage devices for remote control of relays.

- Interior provides complete isolation between line and low voltage when used with a compatible LENC series enclosure
- Individual plug-in, latching style single pole relays with isolated pilot/status contacts
- Integral push button override, status LED, and pilot light output per relay
- Two slots available for optional automation, networking and integration control cards

Operation (cont'd.)

Inputs can be wired to accommodate momentary three wire, momentary two wire (toggle) or maintained contact switches as well as occupancy sensors. The switch input circuits are auto sensing and will automatically configure appropriately when Watt Stopper occupancy sensors are connected.

Group Switching

Group switching provides the unique WattStopper Smartwired switching function. This simple button press interface allows any quantity of relays to be assigned quickly to each group switching channel for common on/off control or for pattern (scene) style control. Each of the eight channels is provided with an override pushbutton, LED status indicator and terminals for connection of wall switches and occupancy sensors. Eight and 24 size panels can be ordered with one group switch card (8 channels), 48 size panels can have two group switch cards for a total of 16 channels (8 controllable by scheduling, eight by switching only).

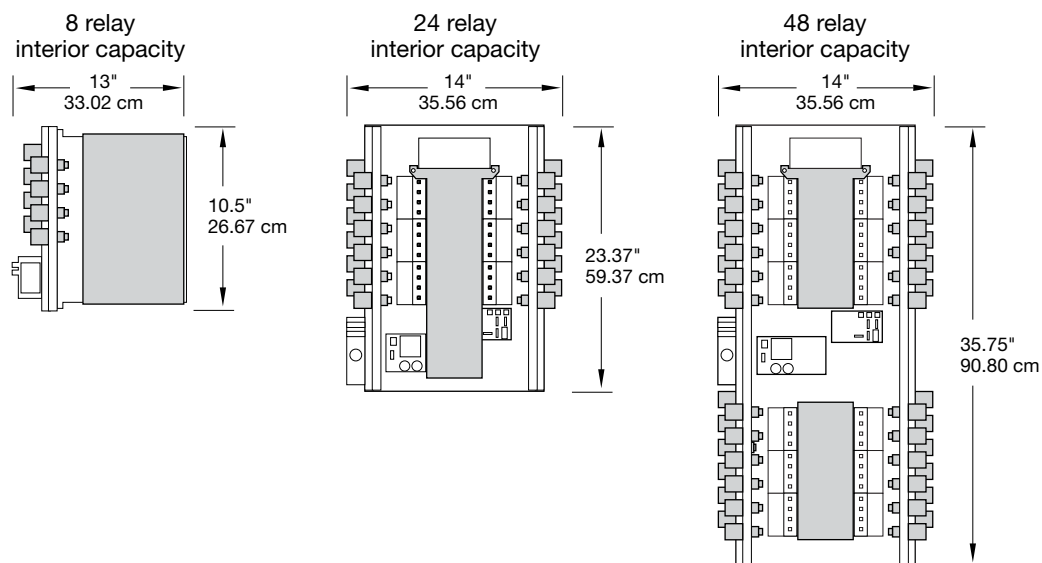
- Supports WattStopper occupancy sensor heads without need for separate sensor power packs
- Smartwire feature allows grouping of relays for common control
- DIN rail mounting provided within the Class 2 section for mounting of optional accessories
- Control multi-pole circuits with optional contactors and compatible LENC enclosure
- Optional configuration available for use on emergency lighting circuits



General LI Specifications

- Interior capacity:
 - 8 circuits, up to 8 SPST relays
 - 24 circuits, up to 24 SPST relays
 - 48 circuits, up to 48 SPST relays
- Input voltage options, 120/277V 60 Hz, 120/347V 60 Hz, 240V 50 Hz
- Group switching, eight channels per installed group switching card. One card max per LI8 and LI24. Two cards max LI48.
- Low voltage switch inputs, removable terminal blocks with screw-less connection, configurable for three wire momentary, two wire momentary (toggle), and two wire maintained dry contact switches or WattStopper occupancy sensors.
- Accessory power available
 - LI8: 1000 MA @24VAC or 800 MA @ 24VDC
 - LI24 and LI48: 1400 MA @ 24VAC or 800 MA @ 24VDC
- SCCR (short circuit current rating) 14,000 amps with HDR Heavy Duty Relay
- HDR relays:
 - Coil voltage, 24 VDC, pulse ON and pulse OFF
 - Mechanically latched contacts
 - ½" K,O, mounting, LV plug-connection, individually replaceable
 - Contact ratings
 - 30 amps ballast @ 277V
 - 20 amps ballast @ 347V
 - 20 amps tungsten @ 120V
 - 30 amps resistive @ 347V
 - 1.5 HP @ 120V
 - Endurance: 300,000 mechanical cycles
- Pilot light output, 24 V rectified or 24VAC, other voltages configurable with external power supply
- One year warranty

Panel Interior Dimensions



Ordering Information

Interior Capacity	Installed Options				
	Voltage Options	Relay Count	Group Switch Card	Emergency Relays	Coil Voltage
<input type="checkbox"/> LIB8	<input type="checkbox"/> 115/277	___ HDR relays	___ GS cards (max		<input type="checkbox"/> 115
<input type="checkbox"/> LIB24	<input type="checkbox"/> 115/347	installed (max	1 in 8, 24, 2 in 48)		<input type="checkbox"/> 240
<input type="checkbox"/> LIB48	<input type="checkbox"/> 240	of interior capacity]			<input type="checkbox"/> 277
					<input type="checkbox"/> 347

Lighting Integrator Panel Enclosures

16-gauge all steel tubs with galvaneal finish

Screw on, powder coated cover permits temporary hanging via key hole screw slots

Surface or flush mounting with back mounting holes, screw cover

Lockable door access to Class 2 panel section, meets NFPA 70

Studs provided for quick installation of panel interior section

UL and CUL listed; one year warranty



PROJECT
LOCATION/TYPE

Product Overview

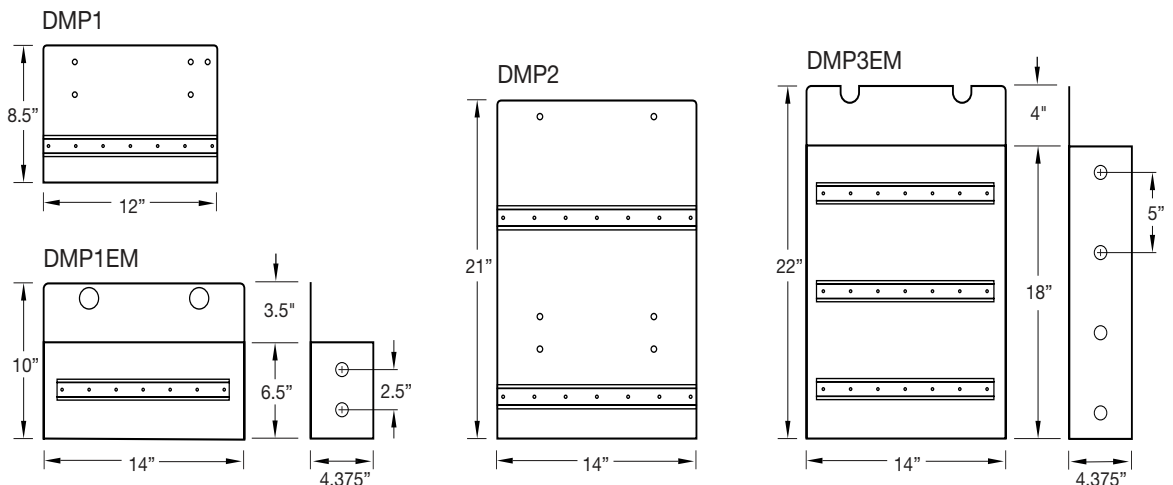
Description

Lighting Integrator panel enclosures are designed specifically to work with all configurations of LI panel interiors containing 8 to 48 relays. The enclosures are provided with integral mounting studs that are configured to accept the panel interior making the installation quick and easy. Covers are secured to the tubs with screws and have keyhole style mounting. This allows the cover to be temporarily hung on the tub during the construction phase of the project. All covers have hinged doors that expose only the low voltage (Class 2) section of the panel and are equipped with key locks and two keys each. All Lighting Integrator enclosures are NEMA 1 rated. Consult factory for other NEMA rated applications.

Configurations

Enclosures rated for 24 or 48 relay capacity have space provided at the bottom for optional mounting plates (DMP) to accept DIN rail mounted accessories such as multi-pole contactors and ELCU-100 Emergency Lighting Control Units. Standard LENC24 and LENC48 enclosures will accommodate up to six four pole contactors (requires DMP mounting plate) or four ELCU-100 units (requires DMP-1EM mounting plate). LENC8-24 and LENC24-48 enclosures have additional space provided and will accommodate up to twelve four pole contactors (requires DMP-2 mounting plate) or 12 ELCU-100 units (requires DMP-3EM mounting plate).

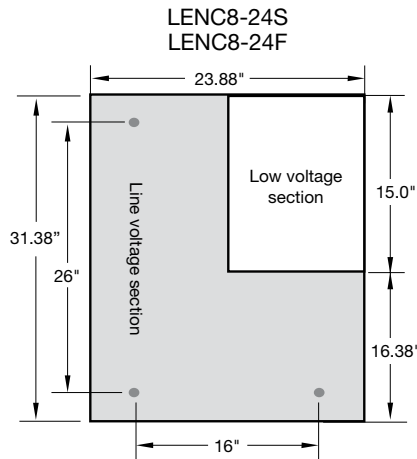
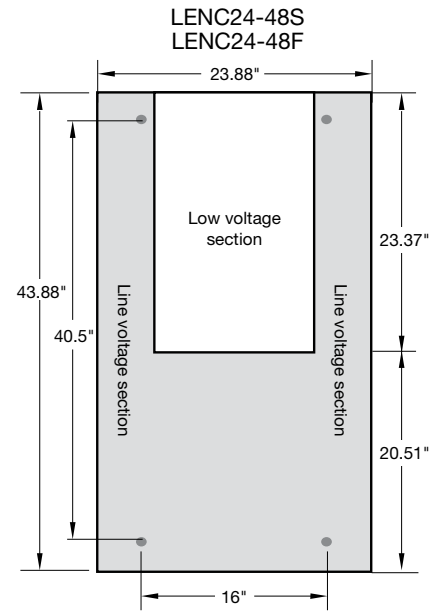
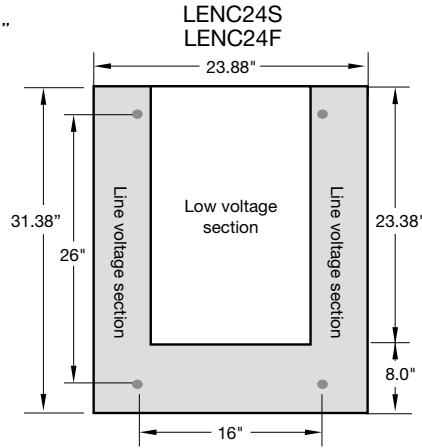
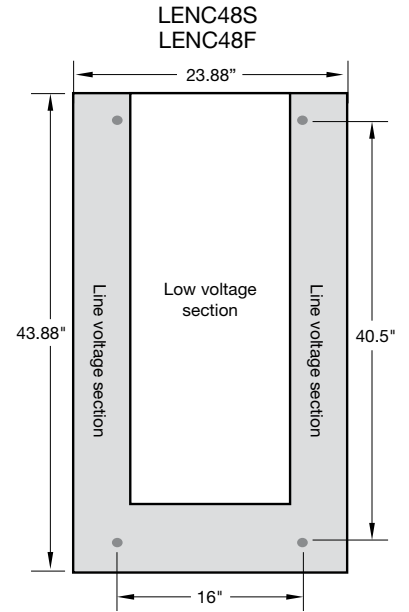
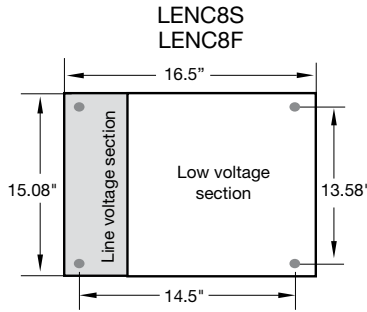
DIN Rail Mounting Options





Tub Dimensions

Note:
Tub depth 4.50"
Cover thickness .075"



Ordering Information

Catalog No.	Description	Overall Dimensions Including Cover (HxWxD)	Overall Weight
<input type="checkbox"/> LENC8S	8 relay capacity, surface mount	15.75" x 16.62" x 4.575"	18 lbs
<input type="checkbox"/> LENC8F	8 relay capacity, flush mount	17.10" x 18.48" x 4.575"	20 lbs
<input type="checkbox"/> LENC8-24S	8 relay capacity with 24 size tub, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC8-24F	8 relay capacity with 24 size tub, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24S	24 relay capacity, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC24F	24 relay capacity, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24-48S	24 relay capacity with 48 size tub, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC24-48F	24 relay capacity with 48 size tub, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> LENC48S	48 relay capacity, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC48F	48 relay capacity, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> DMP	mounting plate, one DIN rail for up to 6 contactors	8" x 12" x 4.625"	1.86 lbs
<input type="checkbox"/> DMP-2	mounting plate, two DIN rail for up to 12 contactors	21" x 14" x 4.625"	5.30 lbs.
<input type="checkbox"/> DMP-1EM	mounting plate, one DIN rail with barrier for up to 4 ELCU-100s	10" x 14" x 4.37"	3.64 lbs.
<input type="checkbox"/> DMP-3EM	mounting plate, three DIN rail with barrier for up to 12 ELCU-100s	22" x 14" x 4.37"	7.60 lbs.

Qualifies for use in ARRA-funded projects.

A Group brand Legrand

Lighting Integrator Emergency Relay Panel Option

UL924 listed for use on emergency circuits

Factory-assembled interior mounts in standard LI enclosure, ships completely wired

Meets NEC (NFPA70) UL 924 requirements for emergency lighting control



Allows normal control of emergency circuits via schedule, switch, photocell or other device

Guarantees that emergency lighting will turn on upon loss of normal power

PROJECT
LOCATION/TYPE

Product Overview

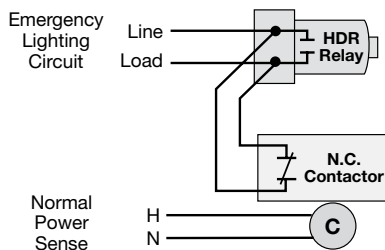
Description

The Lighting Integrator Emergency Relay Panel option provides certified fail-safe operation of lighting control circuits controlled by HDR relays in an LI lighting control panel. The option is available with any 24 or 48 size LI panel.

Operation

A dedicated normal power sense connection monitors the presence of normal power and allows the HDR relays to control the emergency lighting circuits based on ordinary control schedules and devices, such as switches, occupancy sensors, and daylighting control devices. When normal power is lost for any reason, all HDR relays controlling emergency circuits are each individually bypassed automatically by a set of normally closed contacts. The HDR relays do not change state during a power outage so lighting is restored when normal power is restored.

Wiring



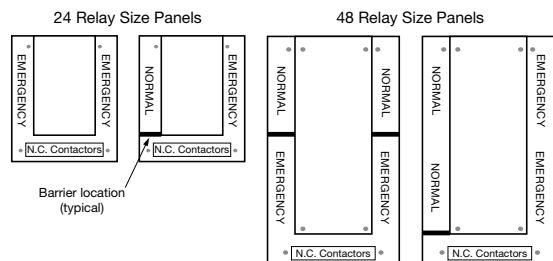
Applications

The Lighting Integrator emergency lighting control panel option is ideal for applications where always-hot emergency lighting circuits need to be controlled along with the normal lighting circuits. Because the lighting control panel with integrated yet dedicated emergency relays operates normally based on the type of intelligence card installed in the panel, this is suitable for virtually any type of application. These panels can be used reliably for fail safe emergency lighting operation in schools, office buildings, libraries, airports, industrial plants, warehouses, and auditoriums.

Specifications

- 30 Amp normally closed contactors used for shunt operation
- One to 24 emergency relays per panel, 24 or 48 size enclosure only
- Emergency relay rating: same as HDR
- Normal power sense input, 120, 277 or 347 volts, voltage specific
- UL listed for use on emergency circuits

Emergency Relay Panel Configurations

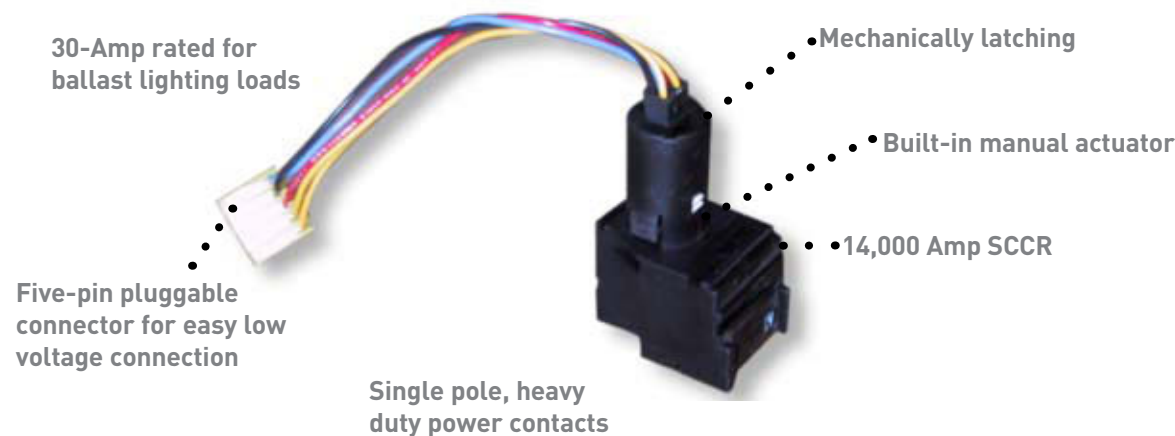


Description

Order LI Emergency Relay Panel option using the ordering section on the LI level panel cut sheet.



HDR Low Voltage Relay



PROJECT

LOCATION/TYPE

Product Overview

Description

This low voltage relay is used for control of lighting circuits and other electrical loads in WattStopper's Lighting Integrator control panels. Momentary, low voltage pulses from the panel's control system switch the relays on or off. Mechanical latching operation results in lower power consumption. The relay will remain in the last switched state in the event of a power loss. A built-in manual actuator allows lights to be turned on in the event of a panel or relay failure. The relay mounts into a standard knockout and comes with a plug-in cable for easy panel connection. Typically, users specify the number of relays and the panel is assembled and shipped with this quantity.

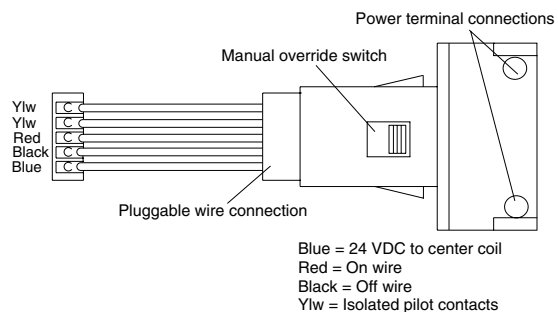
Specifications

- 1/2" knockout mounting
- Accepts wire gauge #10 - #14 AWG, copper wire, solid or stranded
- Operating voltage 24 VDC
- Isolated pilot relay contacts, .5 Amp @ 30 VAC/DC for status feedback
- Integral manual override
- Rated 14,000 amps Short Circuit Current Rating (SCCR)
- Suitable for use with all HID ballasted loads
- Expected service life is over 25 years at nominal load and cycle rate
- Dimensions: 3.2"x 1.3"x .85" (81.3 mm x 33.0 mm x 21.6 mm)
- UL listed, CSA certified; five year warranty

Ratings

- Ballast load 30 Amp @ 277 VAC (including HID) 20 Amp @ 347 VAC
- Tungsten load 20 Amp @ 120 VAC
- Resistive load 30 Amp @ 347 VAC
- Motor load 1½ HP @ 120 VAC

HDR Wiring



Ordering Information

Catalog No.	Description
<input type="checkbox"/> HDR5P	Mechanically Latching Relay (low voltage) with five-pin plug-in connector, pilot contacts, override switch

Qualifies for use in ARRA-funded projects.





Lighting Integrator Low Voltage Switching Panel

When the application demands simple remote control of lighting circuits, a basic LI panel offers robust control paired with flexibility. Exclusive HDR heavy duty relays ensure reliable performance while compatibility with a wide range of low voltage switches, occupancy sensors and daylighting sensors offers control flexibility.





LI provides robust, low-voltage switching control

The basic LI low voltage switching panel system provides flexible remote control of lighting circuits, utilizing the exclusive HDR heavy duty relay (see page B104). The system is compatible with a wide range of low voltage switches, as well as other control devices such as occupancy sensors and daylighting controls.

Smartwiring, a capability unique to LI, enables users to quickly group relays into control channels for common control of multiple circuits.





Industrial Plant

- remote switching of large number of circuits where automatic control is not practical or safe and code requirements for automated shutoff are not relevant



Correctional Facility

- remote lighting control via low voltage switches for secure areas
- facilitate lighting control from touch bolt devices or other security switches

Basic LI Highlights

- Industry-exclusive heavy duty relay (HDR) for robust switching control
- Smartwired switching for pushbutton programming of relays into groups for common control
- Compatible with all standard low voltage switch types
- Compatible with Watt Stopper low voltage occupancy sensors
- Option for contactors for multi-phase load control

Lighting Integrator Lighting Control Interior(LI8, LI24,LI48)

Models for 8, 24 or 48 circuits of control

Industry-exclusive heavy duty relay



Compatible with wide range of low voltage control devices (e.g., switches, occupancy sensors and daylight sensors)

Smartwiring enables easy grouping of relays into channels for common control

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's Lighting Integrator (LI) is a low voltage, relay based lighting control panel. Panel interiors are configured as 8, 24 or 48 relay capacity with the quantity of relays installed as called for on the order. The interior mounts into the appropriate enclosure. The LI panel enclosure and cover are shipped separately from the panel interior to facilitate project rough-in requirements.

Operation

LI relays are driven to a latched on or off position via a 24 volt DC pulse generated by the relay driver cards. A momentary pushbutton is provided for each relay to manually toggle the relay's state with each button press. An isolated contact in the relays provides positive status feedback to the relay driver circuits, which are annunciated by an LED associated with each relay. Removable color-coded terminal blocks allow connection of direct wired low voltage devices for remote control of relays.

Operation (cont'd.)

Inputs can be wired to accommodate maintained or momentary three wire or two wire inputs. The switch input circuits are auto sensing and will automatically configure appropriately when Watt Stopper occupancy sensors are connected.

Smartwiring

A unique WattStopper switching function, this simple button press interface allows any quantity of relays to be assigned quickly to each group switching channel for common on/off control or for pattern (scene) control. Each of the eight channels is provided with an override pushbutton, LED status indicator and terminals for connection of wall switches and occupancy sensors. An eight or 24 size panel can be ordered with one group switch card (8 channels), 48 size panels can have two group switch cards for a total of 16 channels.

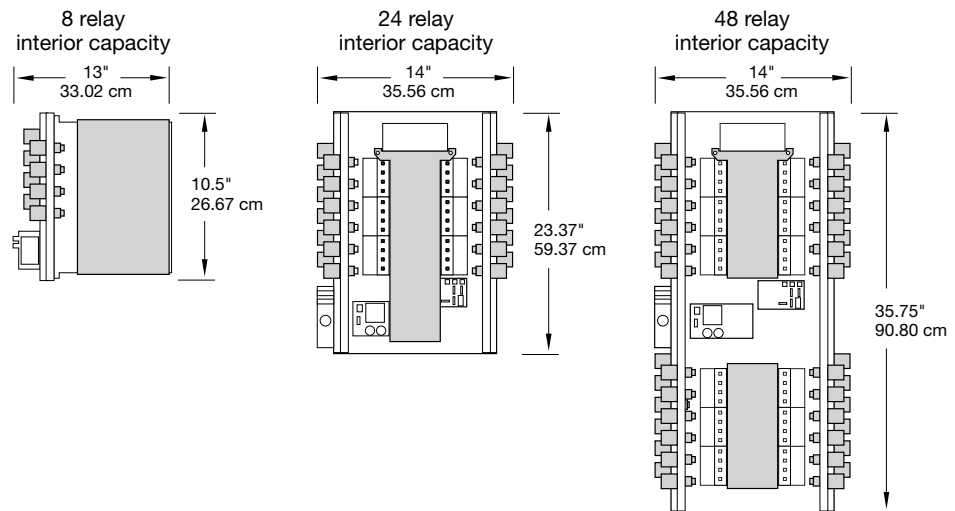
Features

- Interior provides complete isolation between line and low voltage when used with a compatible LENC series enclosure
- Individual plug-in, latching style single pole relays with isolated pilot/status contacts
- Integral push button override, status LED, and pilot light output per relay
- Two slots available for optional automation, networking and integration control cards
- Supports WattStopper low voltage occupancy sensors without need for separate sensor power packs
- Smartwiring feature allows grouping of relays for common control
- DIN rail mounting provided within the Class 2 section for mounting of optional accessories
- Control multi-pole circuits with optional contactors and compatible LENC enclosure
- Optional configuration available for use on emergency lighting circuits
- Qualifies for use in ARRA-funded projects

Specifications

- Interior capacity:
 - 8 circuits, up to 8 SPST relays
 - 24 circuits, up to 24 SPST relays
 - 48 circuits, up to 48 SPST relays
- Input voltage options, 120/277V 60 Hz, 120/347V 60 Hz, 240V 50 Hz
- SCCR (short circuit current rating) 14,000 amps with HDR Heavy Duty Relay
- Low voltage switch inputs, removable terminal blocks with tool-less connection, configurable for three wire momentary, two wire momentary (toggle), and two wire maintained dry contact switches or WattStopper occupancy sensors.
- Accessory power available
 - LI8: 1000 MA @24VAC or 800 MA @ 24VDC
 - LI24 and LI48: 1400 MA @ 24VAC or 800 MA @ 24VDC
- Pilot light output, 24 V rectified or 24VAC, other voltages configurable with external power supply
- Group switching, eight channels per installed group switching card. One card max per LI8 and LI24. Two cards max LI48.
- HDR SPST relays:
 - Coil voltage, 24 VDC, pulse ON and pulse OFF
 - Mechanically latched contacts
 - ½" K,O, mounting, LV plug-connection, individually replaceable
 - Contact ratings
 - 30 amps ballast @ 277V
 - 20 amps ballast @ 347V
 - 20 amps tungsten @ 120V
 - 30 amps resistive @ 347V
 - 1.5 HP @ 120V
 - Endurance: 300,000 mechanical cycles
- One year warranty

Panel Interior Dimensions



Ordering Information

Interior Capacity	Installed Options				
	Voltage Options	Relay Count	Group Switch Card	Emergency Relays	Coil Voltage
<input type="checkbox"/> LI8 <input type="checkbox"/> LI24 <input type="checkbox"/> LI48	<input type="checkbox"/> 115/277 <input type="checkbox"/> 115/347 <input type="checkbox"/> 240	___ HDR relays installed (max of interior capacity)	___ GS cards (max 1 in 8, 24, 2 in 48)	___ EM relay count (Not available in 8-relay size panels; max. of 24 in 24-relay or 48-relay size interior)	<input type="checkbox"/> 115 <input type="checkbox"/> 240 <input type="checkbox"/> 277 <input type="checkbox"/> 347

Lighting Integrator Panel Enclosures

16-gauge all steel tubs with galvaneal finish

Screw on, powder coated cover permits temporary hanging via key hole screw slots

Surface or flush mounting with back mounting holes, screw cover

Lockable door access to Class 2 panel section, meets NFPA 70

Studs provided for quick installation of panel interior section

UL and CUL listed; one year warranty



PROJECT
LOCATION/TYPE

Product Overview

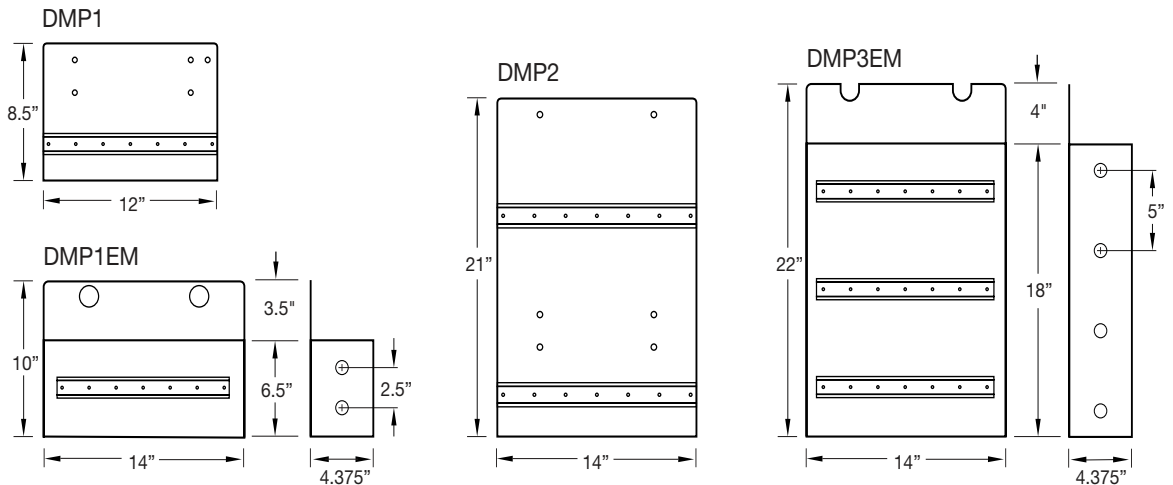
Description

Lighting Integrator panel enclosures are designed specifically to work with all configurations of LI panel interiors containing 8 to 48 relays. The enclosures are provided with integral mounting studs that are configured to accept the panel interior making the installation quick and easy. Covers are secured to the tubs with screws and have keyhole style mounting. This allows the cover to be temporarily hung on the tub during the construction phase of the project. All covers have hinged doors that expose only the low voltage (Class 2) section of the panel and are equipped with key locks and two keys each. All Lighting Integrator enclosures are NEMA 1 rated. Consult factory for other NEMA rated applications.

Configurations

Enclosures rated for 24 or 48 relay capacity have space provided at the bottom for optional mounting plates (DMP) to accept DIN rail mounted accessories such as multi-pole contactors and ELCU-100 Emergency Lighting Control Units. Standard LENC24 and LENC48 enclosures will accommodate up to six four pole contactors (requires DMP mounting plate) or four ELCU-100 units (requires DMP-1EM mounting plate). LENC8-24 and LENC24-48 enclosures have additional space provided and will accommodate up to twelve four pole contactors (requires DMP-2 mounting plate) or 12 ELCU-100 units (requires DMP-3EM mounting plate).

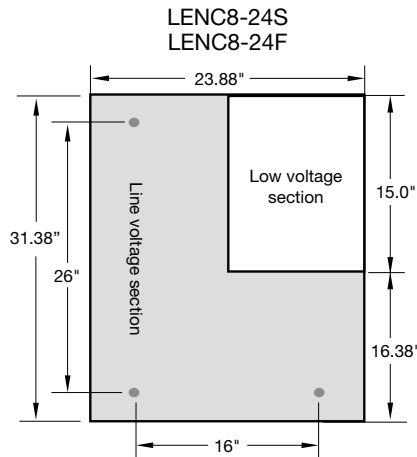
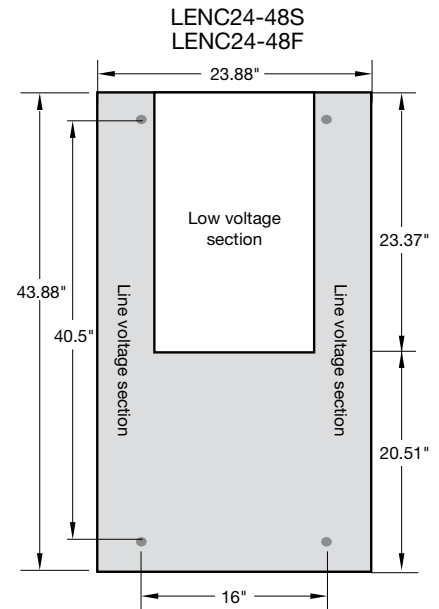
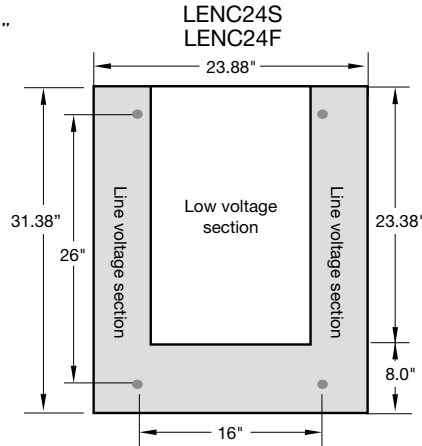
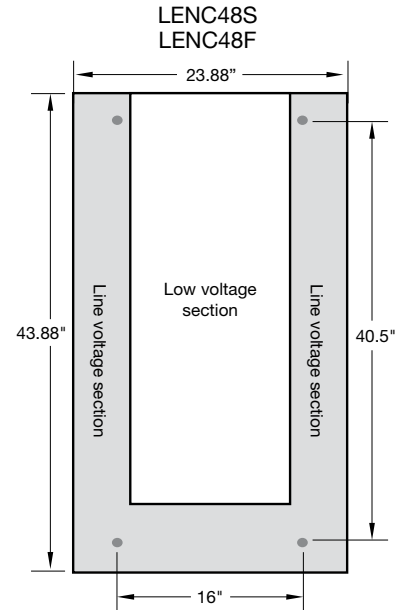
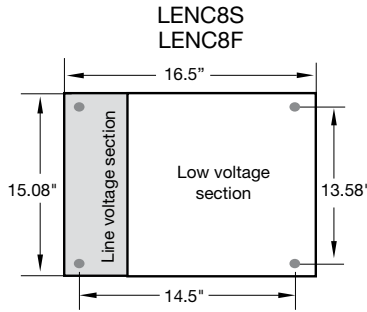
DIN Rail Mounting Options





Tub Dimensions

Note:
Tub depth 4.50"
Cover thickness .075"



Ordering Information

Catalog No.	Description	Overall Dimensions Including Cover (HxWxD)	Overall Weight
<input type="checkbox"/> LENC8S	8 relay capacity, surface mount	15.75" x 16.62" x 4.575"	18 lbs
<input type="checkbox"/> LENC8F	8 relay capacity, flush mount	17.10" x 18.48" x 4.575"	20 lbs
<input type="checkbox"/> LENC8-24S	8 relay capacity with 24 size tub, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC8-24F	8 relay capacity with 24 size tub, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24S	24 relay capacity, surface mount	32.00" x 24.00" x 4.575"	45 lbs
<input type="checkbox"/> LENC24F	24 relay capacity, flush mount	33.35" x 25.85" x 4.575"	50 lbs
<input type="checkbox"/> LENC24-48S	24 relay capacity with 48 size tub, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC24-48F	24 relay capacity with 48 size tub, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> LENC48S	48 relay capacity, surface mount	44.50" x 24.00" x 4.575"	62 lbs
<input type="checkbox"/> LENC48F	48 relay capacity, flush mount	45.85" x 25.85" x 4.575"	66 lbs
<input type="checkbox"/> DMP	mounting plate, one DIN rail for up to 6 contactors	8" x 12" x 4.625"	1.86 lbs
<input type="checkbox"/> DMP-2	mounting plate, two DIN rail for up to 12 contactors	21" x 14" x 4.625"	5.30 lbs.
<input type="checkbox"/> DMP-1EM	mounting plate, one DIN rail with barrier for up to 4 ELCU-100s	10" x 14" x 4.37"	3.64 lbs.
<input type="checkbox"/> DMP-3EM	mounting plate, three DIN rail with barrier for up to 12 ELCU-100s	22" x 14" x 4.37"	7.60 lbs.

Qualifies for use in ARRA-funded projects.

A Group brand Legrand

Lighting Integrator Emergency Relay Panel Option

UL924 listed for use on emergency circuits

Factory-assembled interior mounts in standard LI enclosure, ships completely wired

Meets NEC (NFPA70) UL 924 requirements for emergency lighting control



Allows normal control of emergency circuits via schedule, switch, photocell or other device

Guarantees that emergency lighting will turn on upon loss of normal power

PROJECT
LOCATION/TYPE

Product Overview

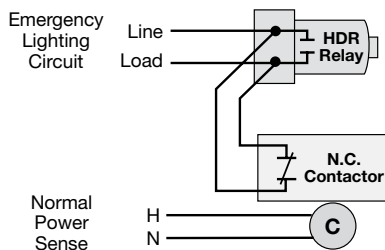
Description

The Lighting Integrator Emergency Relay Panel option provides certified fail-safe operation of lighting control circuits controlled by HDR relays in an LI lighting control panel. The option is available with any 24 or 48 size LI panel.

Operation

A dedicated normal power sense connection monitors the presence of normal power and allows the HDR relays to control the emergency lighting circuits based on ordinary control schedules and devices, such as switches, occupancy sensors, and daylighting control devices. When normal power is lost for any reason, all HDR relays controlling emergency circuits are each individually bypassed automatically by a set of normally closed contacts. The HDR relays do not change state during a power outage so lighting is restored when normal power is restored.

Wiring



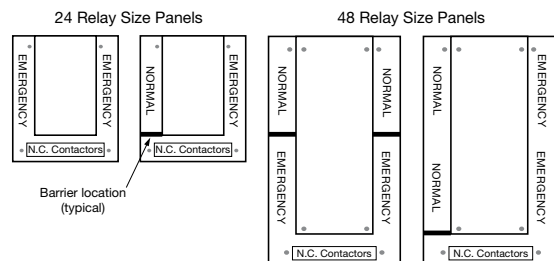
Applications

The Lighting Integrator emergency lighting control panel option is ideal for applications where always-hot emergency lighting circuits need to be controlled along with the normal lighting circuits. Because the lighting control panel with integrated yet dedicated emergency relays operates normally based on the type of intelligence card installed in the panel, this is suitable for virtually any type of application. These panels can be used reliably for fail safe emergency lighting operation in schools, office buildings, libraries, airports, industrial plants, warehouses, and auditoriums.

Specifications

- 30 Amp normally closed contactors used for shunt operation
- One to 24 emergency relays per panel, 24 or 48 size enclosure only
- Emergency relay rating: same as HDR
- Normal power sense input, 120, 277 or 347 volts, voltage specific
- UL listed for use on emergency circuits

Emergency Relay Panel Configurations



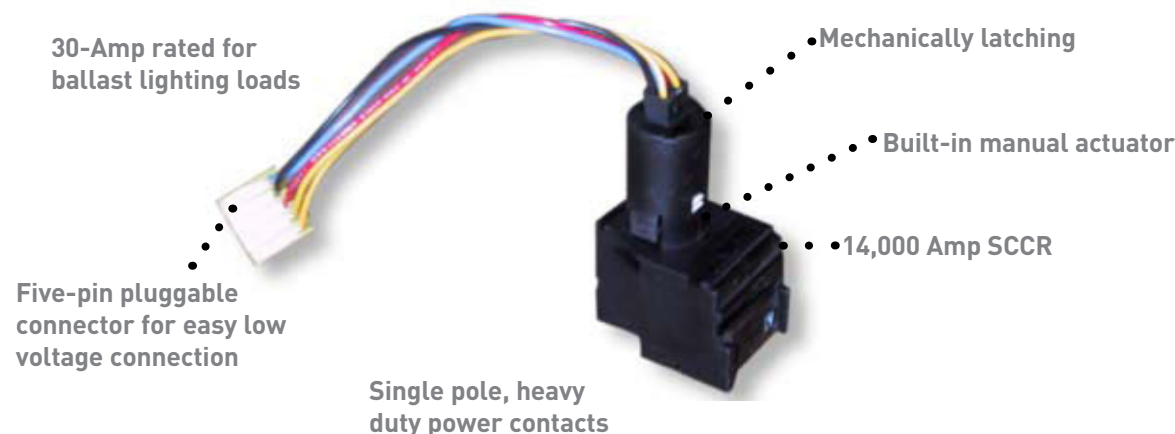
Description

Order LI Emergency Relay Panel option using the ordering section on the LI level panel cut sheet.

Ordering Information



HDR Low Voltage Relay



PROJECT

LOCATION/TYPE

Product Overview

Description

This low voltage relay is used for control of lighting circuits and other electrical loads in WattStopper's Lighting Integrator control panels. Momentary, low voltage pulses from the panel's control system switch the relays on or off. Mechanical latching operation results in lower power consumption. The relay will remain in the last switched state in the event of a power loss. A built-in manual actuator allows lights to be turned on in the event of a panel or relay failure. The relay mounts into a standard knockout and comes with a plug-in cable for easy panel connection. Typically, users specify the number of relays and the panel is assembled and shipped with this quantity.

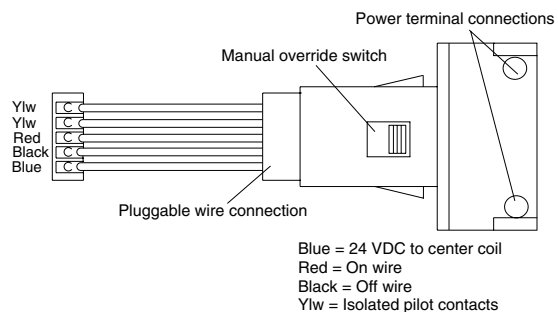
Specifications

- 1/2" knockout mounting
- Accepts wire gauge #10 - #14 AWG, copper wire, solid or stranded
- Operating voltage 24 VDC
- Isolated pilot relay contacts, .5 Amp @ 30 VAC/DC for status feedback
- Integral manual override
- Rated 14,000 amps Short Circuit Current Rating (SCCR)
- Suitable for use with all HID ballasted loads
- Expected service life is over 25 years at nominal load and cycle rate
- Dimensions: 3.2"x 1.3"x .85" (81.3 mm x 33.0 mm x 21.6 mm)
- UL listed, CSA certified; five year warranty

Ratings

- Ballast load 30 Amp @ 277 VAC (including HID) 20 Amp @ 347 VAC
- Tungsten load 20 Amp @ 120 VAC
- Resistive load 30 Amp @ 347 VAC
- Motor load 1½ HP @ 120 VAC

HDR Wiring



Catalog No. Description

<input type="checkbox"/>	HDR5P	Mechanically Latching Relay (low voltage) with five-pin plug-in connector, pilot contacts, override switch
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Qualifies for use in ARRA-funded projects.

Ordering Information





Lighting Integrator Accessories

Every LI control configuration is compatible with a full range of low voltage switches and control devices to extend automation functionality. Additional accessories, such as contactors and photocells, provide additional control options. Comprehensive services ensure optimal system performance.

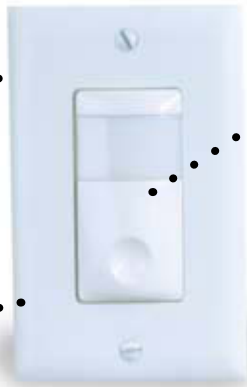


AS-100 Automatic Control Switch

Automatic or manual switching options

Simple retrofit installation and operation; no neutral needed

Shutoff warning with optional audible beep during grace period



Pushbutton overrides the shutoff event

Multiway operation for 3- and 4-way switching

Terminal style back-wiring

PROJECT

LOCATION/TYPE

Product Overview

Description

The IntelliSwitch® AS-100 Automatic Control Switch operates as both a manual and automatic control device. Manually, it allows users to control loads on/off. Automatically, it receives signals to turn lighting on or off from lighting control panels or other lighting control systems.

Operation

The AS-100 replaces a standard wall switch. Occupants turn the lights on and off manually by its pushbutton. However, when a timed power interrupt signal is received from a lighting control panel, the AS-100 is automatically commanded to turn on, turn off or delay off. The duration of the power interrupt signal determines how the AS-100 will operate (see Power Interruption Signals section).

Used with a lighting control panel, the AS-100 allows users to manually turn lighting on in private offices, while lighting in common areas turns on

Operation (continued)

automatically. After hours, if lights were not shut off by users, a signal from the control panel would command the switch to delay off. Lighting “blink” warns users that lights will turn off in five minutes. The locator LED on the AS-100 blinks and an audible beep sounds (if enabled). If the button is pushed during this five minutes, the shutoff will be cancelled and the switch will remain on until the next commanded shutoff signal.

Applications

Since signaling is accomplished through power interruption, the AS-100 does not require additional signal wiring from a lighting control system or panel. It is designed for easy retrofit of lighting shutoff control in buildings. This greatly reduces installation labor and costs, making it an economical and effective lighting control strategy.

Features

- Settings are selected with the front pushbutton using configuration LEDs; face plate does not need to be removed for setup
- Users can select automatic-on operation, and an audible beep warning
- Selectable beep warning sounds every minute during last five minutes, and every five seconds during last minute
- Five minute delay-off time with user ability to cancel impending shutoff
- Self-adjusting zero crossing switching for consistent, reliable operation of high inrush loads
- Can be used in 3-way, 4-way and multiway switching applications
- Compatible with all electronic ballasts and motor loads
- Microcontroller enhances reliability
- Command off without delay off time
- Qualifies for use in ARRA-funded projects



Specifications

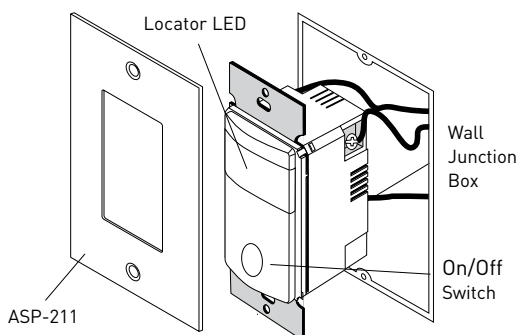
- Dual voltage 120/277 VAC, 60 Hz
- No minimum load requirements
- Power interruption signal resolution ± 0.1 seconds
- Dimensions: 2.69" x 1.75" x 1.81" (68.0mm x 45.0mm x 46.0mm) LxWxD
- UL and CUL listed; five-year warranty

Power Interruption Signals

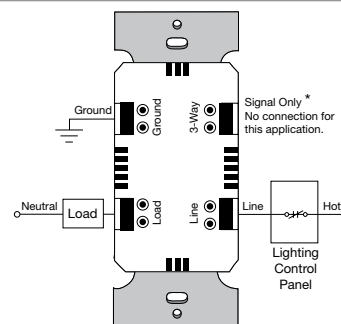
Duration	Operation	Operation description
Normal Operating Mode		
1-2 sec	Delay off	Power interruption "blinks" lights and initiates 5-minute delay before shutting load off. Locator light flashes and audible beep sounds (if enabled). Pushing the button cancels shut off from occurring.
3 sec	Turn on	Turns load on if automatic on feature is enabled
5 sec	Turn off	Turns load off

Installation & Wiring

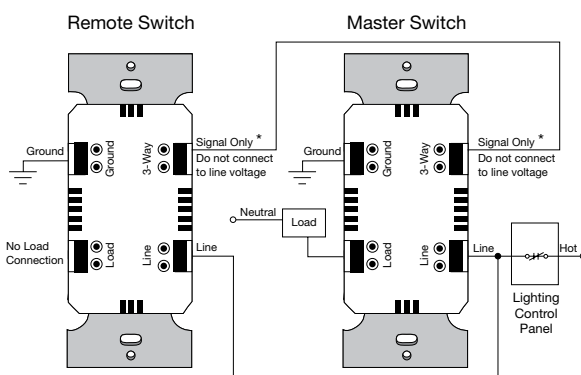
Installation



Single Switch Wiring with Panel



Multiway Switch Wiring with Panel

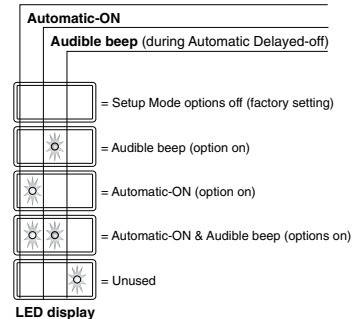


Each switch wired for multiway operation has the ability to turn on, turn off or override a shutoff signal.

Setup Mode Options

Setup Mode Options:

(Option is on when LED flashes in display ☀)



Ordering Information

Catalog No.	Color	Description	Load Requirement
<input type="checkbox"/> AS-100-W	White	120 VAC, 60 Hz or 277 VAC, 60 Hz	0-1300W @ 120 V Watt Ballast & Tungsten or 0-3000W @ 277 V Watt Ballast
<input type="checkbox"/> AS-100-A	Lt. Almond		
<input type="checkbox"/> AS-100-I	Ivory		

One ASP-211 Single-gang Decorator Cover Plate included. Order ASP-422 for Two-gang Decorator Cover Plate with Blank Option, or ASP-432 for Two-gang Decorator Cover Plate with Toggle Switch Option (specify color).

Multi-Button Low Voltage Switch

Architectural Lexan plate,
screwless cover

Pilot light indication • • • • •



Simple to label with protective
plastic cover

1, 3, 5 or 9 button
models available

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's multi-button low voltage switches offer flexible and user-friendly lighting control via 1, 3, 5, or 9 button models.

Operation

The multi-button switches toggle lighting on and off by signaling WattStopper lighting control panels or occupancy sensors (with manual control capability). If lights are off, pressing the button turns lights on. If lights are on, pressing the button turns them off.

Adjacent to each standard button is a red pilot light indicating the status of controlled lighting when connected to a pilot light output from a lighting control panel. This is particularly useful when switches are placed in a location where the controlled lighting cannot be seen. Terminals on the back of the switch provide easy wiring without additional connectors.

Multiple Push Buttons

The multi-button switches provide control of multiple lighting groups or zones from a single location. Depending on the configuration of the lighting control panel, the single larger button on the 3, 5 and 9 button switches can be used for specialized control functions such as all on, all off, or cleaning operation. The switch's multiple push buttons and compact design replace multiple gang switch locations with a single or double gang wall switch.

Applications

From single room, single switch, to central, multiple switch station locations, the multi-button switches keep a consistent and pleasing look. Consistency in appearance is maintained with WattStopper dataline switches or other architecturally designed switches. The multi-button switches are particularly well suited for demanding switch locations such as reception desk areas, nursing stations, guard stations and administration areas.

Features

- 1, 3, 5, or 9 button models available
- Pilot light next to each standard button for remote indication of the lighting status
- Locator light bar helps users find the switch easily in the dark
- Mounts in a single or double gang box; no special plates or large gang boxes are required
- Lens caps are removable for easy labeling of standard buttons
- Terminal back screws simplify wiring
- Screwless cover plate enhances switch aesthetics
- Low voltage switch wiring simplifies installation making it easy to add switches anywhere needed and to accommodate multiple switching locations
- Architectural design matches WattStopper dataline and other switches
- Qualifies for use in ARRA-funded projects

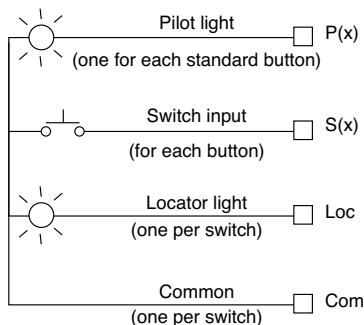


Specifications

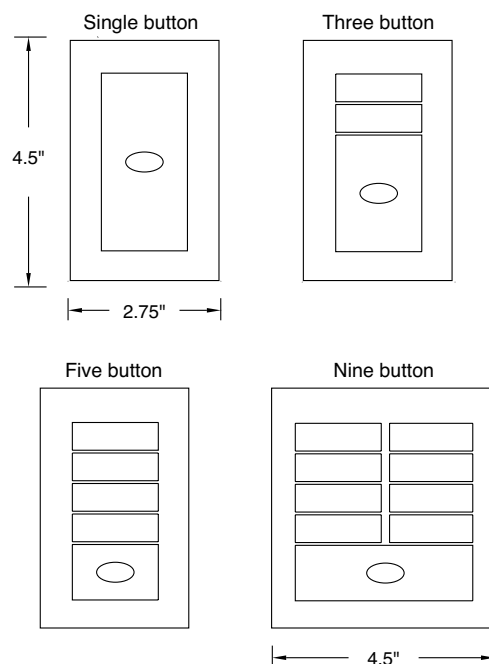
- Compatible with: WattStopper Lighting Integrator and legacy panel programmable inputs; occupancy sensors with manual control capability; LC-100 intelligent power pack
- Removable lens caps for labeling each standard button with 3/8" (9mm) laminated tape; larger button does not have labeling capability
- Pilot and location light LED, 18-30 VAC rectified or DC; each LED draws 5 mA @ 24 V
- Custom engraving available
- Available in white, ivory, almond, or gray
- Dimensions: 2.75" W x 4.5" H x .94" D (69.8mm x 114.3mm x 23.9mm) for 1, 3, and 5 button switch; 4.5" W x 4.5" H x .94" D (114.3mm x 114.3mm x 23.9mm) for 9 button switch
- One year warranty

Wiring & Dimensions

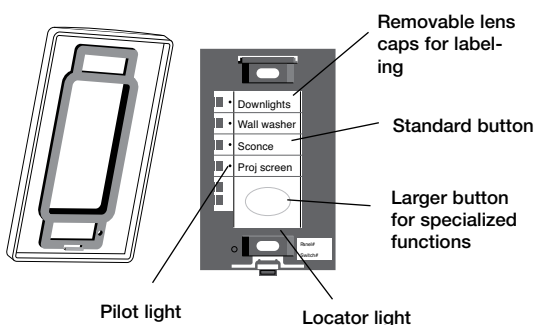
Wire Connections



Switch Configurations



Product Features



Ordering Information

Catalog No.	Color	Description	Standard Button	Larger Button	Size	Max Pilot Load
<input type="checkbox"/> L1S-7	White	Single button switch	0	1*	Single-gang	10 mA
<input type="checkbox"/> L1S-2	Ivory					
<input type="checkbox"/> L1S-4	Light Almond					
<input type="checkbox"/> L1S-9	Gray					
<input type="checkbox"/> L3S-7	White	Three button switch	2*	1	Single-gang	15 mA
<input type="checkbox"/> L3S-2	Ivory					
<input type="checkbox"/> L3S-4	Light Almond					
<input type="checkbox"/> L3S-9	Gray					
<input type="checkbox"/> L5S-7	White	Five button switch	4*	1	Single-gang	25 mA
<input type="checkbox"/> L5S-2	Ivory					
<input type="checkbox"/> L5S-4	Light Almond					
<input type="checkbox"/> L5S-9	Gray					
<input type="checkbox"/> L9S-7	White	Nine button switch	8*	1	Double-gang	45 mA
<input type="checkbox"/> L9S-2	Ivory					
<input type="checkbox"/> L9S-4	Light Almond					
<input type="checkbox"/> L9S-9	Gray					

* with pilot light

Decorator Seven-button Low Voltage Momentary Switch



PROJECT
LOCATION/TYPE

Product Overview

Description

The Decorator Seven-button Low Voltage Momentary Switch (DCC7) features a raise/lower paddle and five buttons to control any device that requires multiple contact closures. It is available in four colors, and is compatible with other Decorator style products, including the DCC2 Low Voltage Momentary Decorator Switch with LED.

Operation

The DCC7 controls up to seven contact points when each of its contacts are connected to the desired I/O board position. For example, when used in conjunction with compatible LED systems, specific buttons may be used to control specific colors, while the paddle may be used to cycle from one color to the next or serve as a master on/off. Since the DCC7 is typically wired to custom I/O boards, its setup is flexible.

Ideal for Color-changing LED Systems

The DCC7's combination of economical control with maximum flexibility make it ideal for controlling multiple-color LED systems.

Applications

The DCC7 controls any device that requires multiple contact closures, such as WattStopper Lighting Integrator control panels, color-changing LED systems, electronically controlled shades, and devices that interface with DALI, DMX or RS485 products via dry contact closures. Additionally, its simple contact closure design provides a momentary on/off signal to many other devices, allowing it to initiate actions for other manufacturers' devices (e.g. LED or RGB lighting).

The DCC7 can also be used as a momentary switch for manual-on applications with WattStopper sensors and power packs.

Features

- Five buttons and two-position paddle provide seven contact closure inputs
- Available in four colors, and is compatible with Decorator styling
- Each of the DCC7's nine 22 AWG wires are labeled for easy reference
- Long-life LED can function as either an indicator or pilot light
- Works with interface devices that use a variety of protocols, including DALI, DMX or RS485 via its two-wire momentary dry contact closures

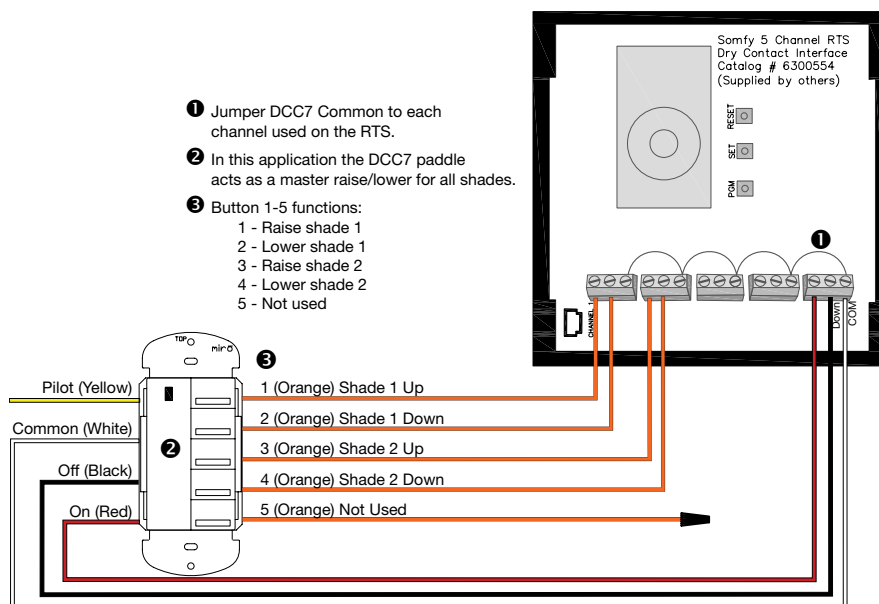


Specifications

- 12VAC/VDC, 24V Rectified, 24VAC/VDC
- 50mA Max. Internal Contact rating
- 500mΩ resistance when closed
- Operating Conditions:
Temperature: 32-104°F (0-40° C)
Humidity: 0-80%, noncondensing
- Fits conventional decorator switch openings
- Dimensions: 2.64" x 1.75" x 1.98" (67.1mm x 44.5mm x 50.3 mm) L x W x D; depth in wall 1.65" (41.9mm)
- Five-year warranty

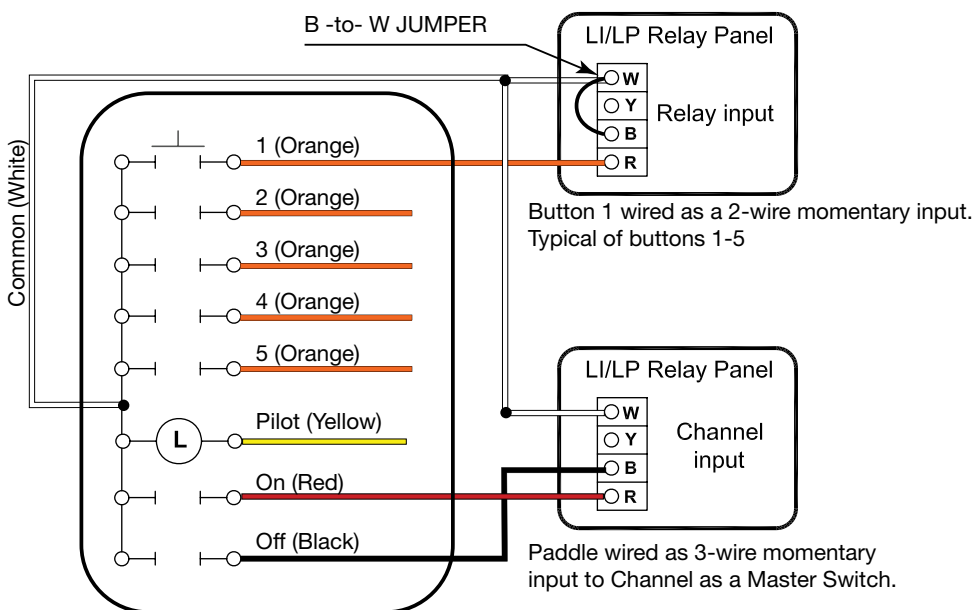
Wiring Diagrams

DCC7 Wired for Shade Control



NOTE:
The DCC7 can be wired with shades from other manufacturers. Please contact your local district manager or representative for more information.

DCC7 with LP Peanut or LI Panel



Ordering Information

Catalog No.	Color	Product Description	Voltage/Power
<input type="checkbox"/> DCC7-A	Lt. Almond	Decorator Seven-button Low Voltage Momentary Switch	12VAC/VDC, 24V Rectified, 24VAC/VDC
<input type="checkbox"/> DCC7-B	Black		
<input type="checkbox"/> DCC7-I	Ivory		
<input type="checkbox"/> DCC7-W	White		

Decorator Low Voltage Momentary Switch

Decorator styling compatible with screwless or standard wall plates

Quiet operation

Multiway switching



• Long-life LED locator or pilot light

Available in four colors

• Three-wire momentary on/off contact operation

PROJECT
LOCATION/TYPE

Product Overview

Description

The Decorator Low Voltage Momentary Switch (DCC2) has a clean appearance and provides significant benefits over other three-wire momentary devices. It is intended for use with WattStopper lighting control panels and other applications requiring a momentary contact switch that provides on/off signals. Available in four colors, it complements other decorator devices and matches the full line of Wireless Lighting Control Decorator products.

Operation

When the top of the switch is pressed down, the DCC2 makes an internal contact between an on and common terminal. When the bottom of the switch is pressed, it makes an internal contact between an off and common terminal. This allows the switch to provide an on/off signal to a relay panel or other device.

Three- and four-way switching is easily accomplished by parallel wiring a DCC2 to any number of other DCC2 switches. And by field wiring a jumper between the on and off terminals, the DCC2 can provide a two-wire momentary output to allow its use with WattStopper occupancy sensors or the manual-on BZ-150 Universal Voltage Power Pack.

Locator or Pilot Light

The DCC2 includes an internal green LED which can function as either a locator or pilot light, depending upon the application and how the switch is wired. By incorporating an LED inside the switch instead of another light source, the end-user is assured of both a long lamp life and very low power consumption.

Applications

The DCC2 can operate a wide array of WattStopper products, including lighting control panels, occupancy sensors and power packs. Additionally, its simple contact closure interface can provide a momentary on and off signal to many other devices, allowing it to initiate actions for other manufacturer's devices (e.g., those that output DMX512 or RS485 signals that can control LEDs or other lighting systems).

Features

- Long-life LED locator/pilot light
- Three-way, four-way and multiway switching
- Unlimited number of switches may be connected
- Decorator styling
- Available in light almond, black, ivory and white

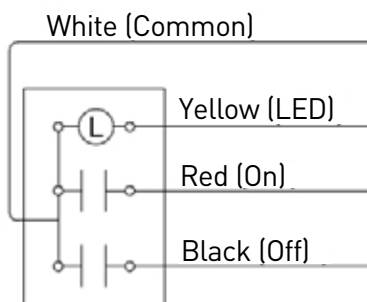


Specifications

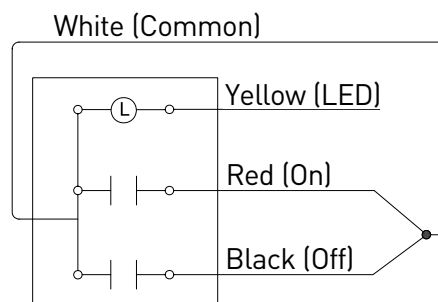
- 12VAC/VDC, 24V Rectified, 24VAC/VDC
- 50mA Max. Internal Contact rating
- 500mΩ resistance when closed
- Single pole, double throw with center position rest
- Fits conventional decorator switch openings
- Dimensions: 2.64" x 1.75" x 1.98" (67.1mm x 44.5mm x 50.3 mm) L x W x D; depth in wall 1.65" (41.9mm)
- Five-year warranty

Wiring

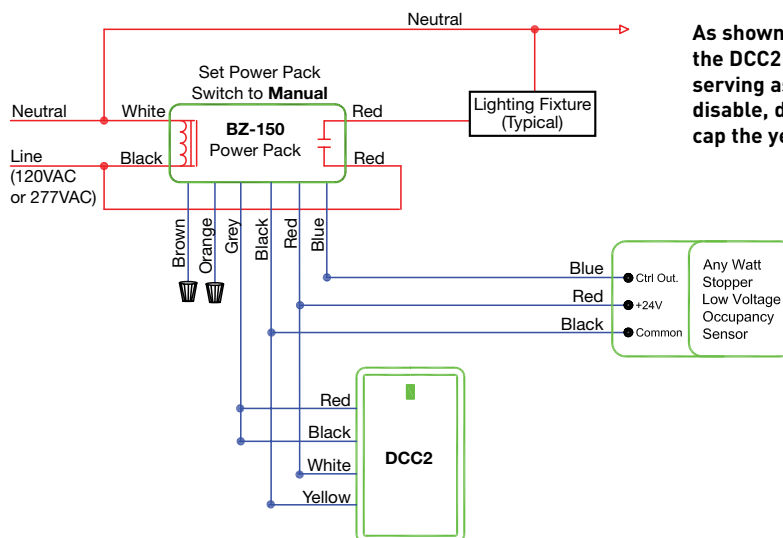
As a Three-wire Momentary



As a Two-wire Momentary

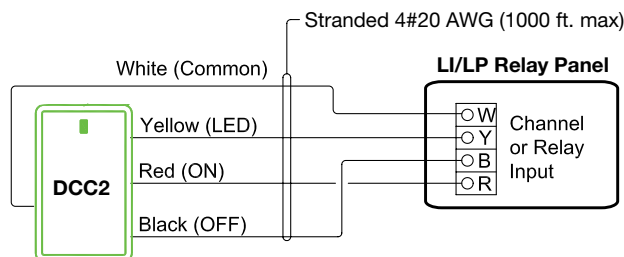


As an Input to a BZ-150 Power Pack for Manual-on Operation



As shown, the LED on the DCC2 is always on, serving as a locator. To disable, disconnect and cap the yellow wire.

As an Input to a Relay Panel



As shown at the left, the DCC2 LED is a Pilot Light. To use the LED as a locator, connect the yellow wire to the panel's 24V supply.

Ordering Information

Catalog No.	Color	Product Description	Voltage/Power
<input type="checkbox"/> DCC2-A	Light Almond	Decorator Low Voltage Momentary Switch	12VAC/VDC, 24V Rectified, 24VAC/VDC
<input type="checkbox"/> DCC2-B	Black		
<input type="checkbox"/> DCC2-I	Ivory		
<input type="checkbox"/> DCC2-W	White		

Momentary Toggle Switches



PROJECT
LOCATION/TYPE

Product Overview

Description

The LVS-1 is a low voltage momentary contact switch used with WattStopper lighting control panels. Its appearance matches conventional toggle switches and it fits standard switch plate openings.

Operation

The LVS-1 features a quiet, single-pole, double-throw momentary operation. When toggled up or down, the switch momentarily makes a contact closure, sending an on or off signal to the control panel. At rest, the switch sits in the center position, making no contact closure. This switch is recommended for most low voltage switching applications because 3-way, 4-way and multi-way switching can be accomplished easily by parallel wiring the LVS-1 to any other LVS-1. Any number of switches can be connected together to fit a specific application need.

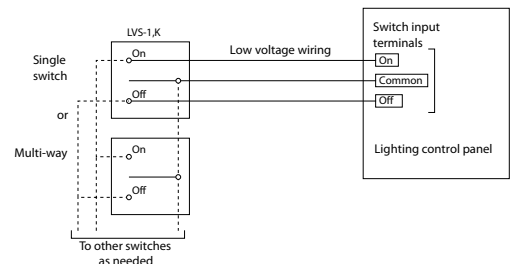
Features

Made specifically for low voltage control use, the LVS-1 uses side wire screw terminals for easy, reliable connection to switch wiring. The switch is available in either ivory, white or gray. A key operated model is also available for use in areas where security or vandalism is a concern.

Specifications

- 3 Amp, 24 VAC/VDC
- Single-pole, double-throw with center position rest
- Fits conventional toggle switch openings
- Size: 2.19" x 1.06" x 1.31" (55.6mm x 26.9mm x 33.3mm)
- 3 year warranty

Wiring



Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> LVS-1-W	White	Standard momentary toggle switch
<input type="checkbox"/> LVS-1-I	Ivory	
<input type="checkbox"/> LVS-1-G	Gray	
<input type="checkbox"/> LVS-1K-G	Gray	Key operated toggle in gray (key supplied with switch)

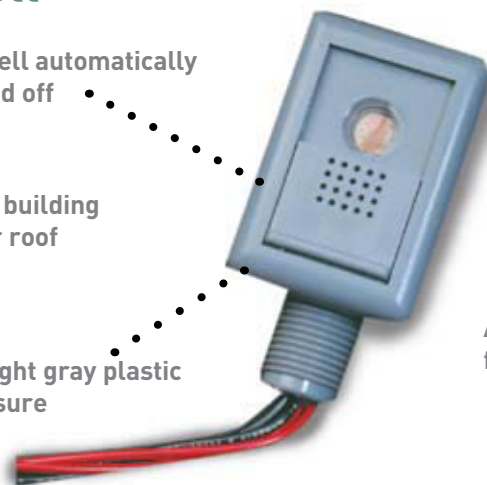


EM Photocell

Low voltage photocell automatically turns lighting on and off

Mounts on building exterior or roof

Raintight gray plastic enclosure



Compatible with all Watt Stopper lighting control panels and power packs

Simple to wire and install

Adjustable aperture window for varying ON setpoint

PROJECT

LOCATION/TYPE

Product Overview

Description

The EM is a low voltage photocell used for controlling exterior lighting. It works with Watt Stopper power packs and lighting control panels (Lighting Integrator and LP series panels) by signalling a change in light levels to the panel.

Operation

Typically mounted so the light level window faces the northern sky, the EM photocell provides an ON signal when the ambient light level drops below a preset "dark" setpoint. It then provides a signal OFF as the ambient light level rises above the preset "light" setpoint. The setpoint can be changed for specific applications by opening and closing the photocell's aperture window. Normally, a lighting control panel or a power pack supplies power to the photocell. The photocell's relay contact red wires are connected to the panel or to a low voltage controlled load.

Specifications

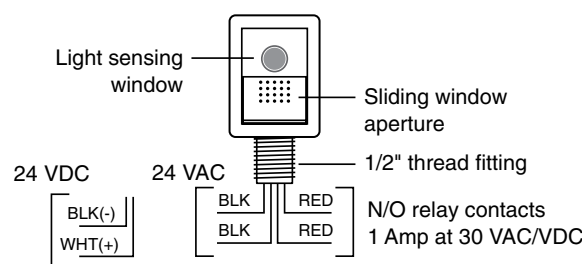
- 1 - 15 footcandle range (10.8 - 161.5 lux)
- Isolated relay contacts 1 amp @ 30 VAC/VDC
- Power input: 24 VAC, 1 VA or 24 VDC, 1 VA
- Dimensions: 2.64" x 1.57" x 1.89" (67.1mm x 39.9mm x 48.0mm)
- One year warranty

Catalog No.	Description	Voltage
<input type="checkbox"/> EM-24A2	Exterior photocell	24 VAC
<input type="checkbox"/> EM-24D2	Exterior photocell	24 VDC

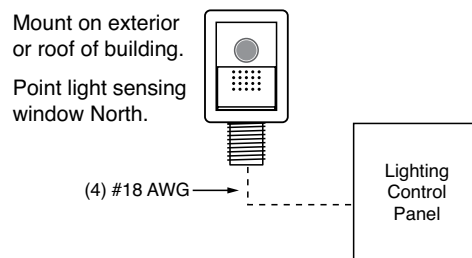
Features

- One set of normally open, isolated relay contacts; contacts are closed when sensed light level is below dark setpoint, open when light level is above light setpoint
- 8-second time delay and built-in setpoint dead-band prevent cycling
- 1/2" threaded male conduit base for easy mounting on conduit fittings or junction boxes.

Accessory Enclosure Interior



Accessory Enclosure Interior



Ordering Information

WattStopper
www.wattstopper.com
800.879.8585

Multi-pole Contactor

Multi-pole design enables control of multiple single-phase or multi-phase loads

Compatible with all HID and electronic ballast loads

Four pole, SPST power contacts

Normally closed or normally open contacts

Silver cadmium oxide contacts for long life

Accepts wire gauge #10 - #14 AWG



PROJECT
LOCATION/TYPE

Product Overview

Description

The Multi-pole Contactor is a compact, electrically held lighting contactor used for controlling lighting and other electrical loads in Watt Stopper Lighting Integrator (LI) lighting control panels.

Operation & Features

The contactor is compatible with all HID and electronic ballast loads. All line and load wiring is feed-through style, and screw terminals accept both standard blade and phillips head screw drivers. Contactors may be added to any 24- or 48-relay size Lighting Integrator panel. Contactors may be ordered with LI panels (by specifying them in the LI panel catalog number) or they may be ordered separately. They may also be easily added to existing lighting control panels with DIN rail mounting capability, providing a simple way to expand the number of circuits controlled.

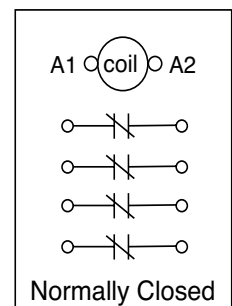
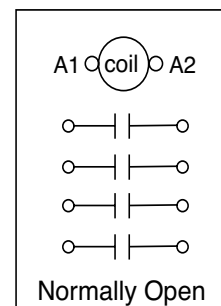
Specifications

- Electrically held
- Screw compression terminals
- Coil holding power consumption 10VA
- Compact DIN rail mounting
- Dimensions: 2.9" x 1.75" x 2.95" (73.7mm x 44.5mm x 74.9mm); weight 11.3 oz.
- UL 508 listed, CSA certified; one year warranty

Ratings

- Ballast load 30 Amp @ 600 V (magnetic, electronic, HID ballasts)
- Tungsten load 20 Amp @ 277 V
- Resistive load 30 Amp @ 480 V
- Motor load 5 HP @ 460 V, 3 phase

Contactor Diagram



Ordering Information

Catalog No.	Description	Voltage
<input type="checkbox"/> C115NC	4-pole normally closed	115V coil
<input type="checkbox"/> C277NC	4-pole normally closed	277V coil
<input type="checkbox"/> C115NO	4-pole normally open	115V coil
<input type="checkbox"/> C277NO	4-pole normally open	277V coil
<input type="checkbox"/> C347NC	4-pole normally closed	347V coil
<input type="checkbox"/> C347NO	4-pole normally open	347V coil

Lighting Control System Services



Technical services related to design and installation of WattStopper control products

Free telephone technical support for purchased product(s) lifetime

Extended warranties available



PROJECT
LOCATION/TYPE

Product Overview

Description

Comprehensive services includes design, startup, onsite training and troubleshooting as necessary.

Documentation

Documentation services (SDRAWxxx) include factory assembled submittals that include: system one-line diagram (or reflected ceiling plan when applicable) showing system components and quantities, such as Lighting Integrator panels, relays, low voltage switches and sensors, dataline and network components, and computer; drawings for each panel showing hardware configuration and numbering; panel wiring schedules showing circuit/relay/load relationships and any direct overrides; typical wiring diagrams for each component; and installation instructions and testing procedures for each component.

Programming

Services (SPROGSYS) include electronic wiring documentation, defining switch codes and group switches, setting up telephone overrides, entering operating schedules, and other custom configurations.

Startup

Startup services (SCOM) include a WattStopper factory-trained technician who verifies that all Watt Stopper system hardware on the bill of material (including standalone occupancy sensors) is installed in accordance with product documentation; tests and verifies systems are operating as intended; inputs data into programmable system to reflect the owners' intended sequences of operation; and provides training and review of all system hardware, software, and adjustments.

Startup services (SCOMEXSEN) provide a WattStopper factory-trained technician to verify all WattStopper system hardware **except** standalone occupancy sensors.

Training

Additional training services (STRAIN) include a WattStopper factory-trained technician to provide additional and separate site visits to conduct system training to review all system hardware, software, and adjustments.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> SDRAWDAY	Daylighting sensor locations on reflected ceiling plans
<input type="checkbox"/> SDRAWSEN	Occupancy sensor locations on reflected ceiling plans
<input type="checkbox"/> SDRAWSYS	Documentation Package of Control System
<input type="checkbox"/> SPROGSYS	Factory programming and lifetime technical support
<input type="checkbox"/> SCOM	Onsite startup/training for all WattStopper products
<input type="checkbox"/> SCOMEXSEN	Onsite startup/training excluding occupancy sensors
<input type="checkbox"/> STRAIN	Day(s) Onsite training for WattStopper control products
<input type="checkbox"/> SWARRANTY	Year(s) extended warranty for hardware

Lighting Integrator Wire

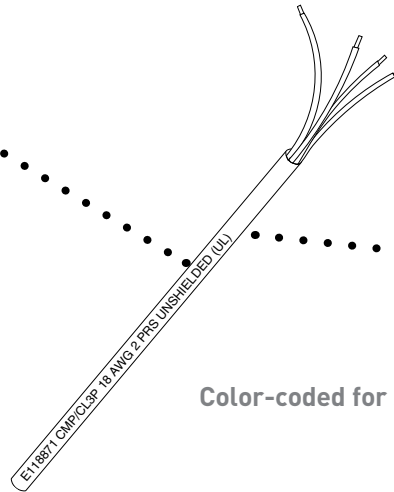
Data communications wire provides communications between panels and signaling devices

Low voltage component wire connects switches, sensors, and other low voltage devices to panels

Custom cut to specified lengths

Distance markings in foot increments

Color-coded for streamlined installation



PROJECT
LOCATION/TYPE

Product Overview

Description

The proper wire must be installed for connecting devices to Lighting Integrator (LI) panels, and for networking panels. Types include low voltage component wire, and data communications wire.

Low Voltage Wire

This type of wire connects low voltage devices (i.e., switches, occupancy sensors, photocells) to panels. It is #20 AWG wire that meets UL and NEC standards for Class 2 applications. Plenum rated wire meets plenum and riser requirements. Several types of multi-conductor low voltage wires are available for standard, pilot, locator, and multilevel switching or for connecting photocells to the LI control panels. This wire can also be used to wire relays remotely.

Data Communications Wire

Data communications wire (also referred to as dataline wire) is used between LI panels and digital devices. To ensure error-free communications in networked LI panel systems, users **must use** the right communications wire. Communications quality is critical for reliable operation of a lighting control system. Using the proper wire and following recommended installation practices ensures trouble-free start-up and operation of an LI system.

4-Conductor Data Communications Wire

HDLW4 4-conductor data communications wire is unshielded dual twisted pair wire. It connects LIA panels to LIA panels. This panel-to-panel connection (i.e., "global" dataline) requires only one of the twisted pairs (red and black). Up to 12 panels may be connected in a single network whose maximum length does not exceed 1500 feet. If longer distances are needed or more devices are required, users should contact the factory. This wire is also used for the panel-to-Dataline Switch connection; up to 63 devices (i.e., Dataline Switch, Universal Switch module) may be connected to an LIA panel. In LICA and LIDA systems, this wire provides the local dataline for connecting panels to dataline switches. This panel-to-device connection (i.e., "local" dataline) requires the use of both twisted pairs, one pair for supplying power to the Dataline Switches, and the other pair for data communications.

2-Conductor Data Communications Wire

HDLW2 2-conductor data communications wire is shielded single twisted pair wire. It connects LIC panels. This panel-to-panel connection (i.e., "global" dataline) supports up to 500 panels in a single network whose maximum length does not exceed 4000 feet. If longer distances are needed or more devices are required, users can add dataline repeaters.



Specifications

Low Voltage Component Wire

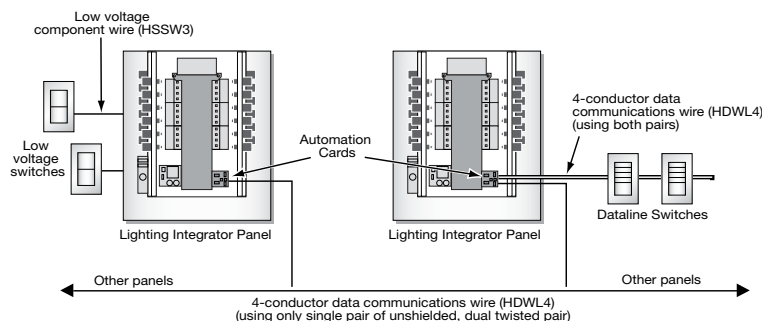
- Color-coded wires to match relay and switch terminations
- Component wire includes switch wire (for standard, pilot, locator, or multi-button switches), sensor wire, and remote relay wire
- Conductors are #20 AWG, stranded and jacketed
- Operating temperature range: -4 - 302°F (-20°- 150°C)
- UL and CUL listed

Data Communications Wire

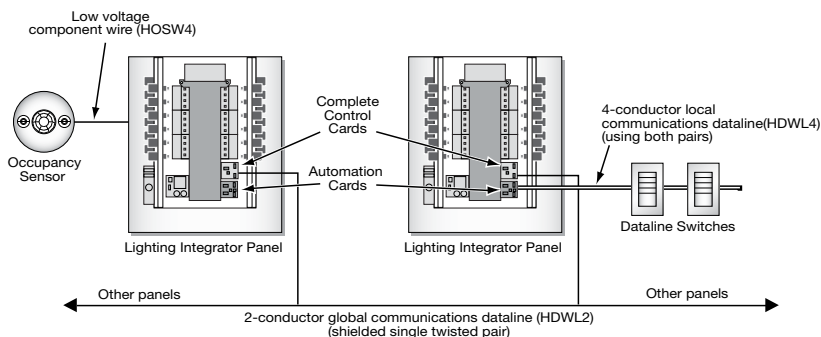
- HDLW4 is 18 AWG (7 strands x 26 AWG), 2 independent twisted pairs, unshielded copper conductors. Capacitance is 30 pF/foot max.
- HDLW4 supports up to 12 panels and 1500 feet per network without repeater
- HDLW2 is 18/2 AWG twisted pair with shield
- HDLW2 supports up to 500 panels and 4000 feet per network without repeater
- Color-coded wires to match power and data terminations
- Operating temperature range: -4 - 302°F (-20°- 150°C)
- UL and CUL listed

Application Examples

Wiring Requirements for Networks of LIA Panels



Wiring Requirements for Networks of LIC Panels with optional automation cards



Ordering Information

Catalog No.	Description	Conductors	Color Code	Diameter
<input type="checkbox"/> HSSW3	Standard switch wire	3	Red/Black/White	0.210"
<input type="checkbox"/> HSSW3P	Standard switch plenum rated wire	3	Red/Black/White	0.150"
<input type="checkbox"/> HPSW4	Pilot switch wire	4	Red/Black/White/Yellow	0.230"
<input type="checkbox"/> HPSW4P	Pilot switch plenum rated wire	4	Red/Black/White/Yellow	0.275"
<input type="checkbox"/> HDLW2	Global Complete Control Dataline. Shielded single twisted pair data communications wire	2+ shield	Red/Black/Shield	0.185"
<input type="checkbox"/> HDLW2P	Global Complete Control Dataline. Shielded single twisted pair data communications plenum rated wire.	2+ shield	Red/Black/Shield	0.185"
<input type="checkbox"/> HDLW4	Global Automation Dataline and/or Local Dataline Switch Dataline. Unshielded dual twisted pair data communications wire.	4	Black/Red [data] Blue/White [power]	0.230"
<input type="checkbox"/> HDLW4P	Global Automation Dataline and/or Local Dataline Switch Dataline. Unshielded dual twisted pair data communications plenum rated wire.	4	Black/Red [data] Blue/White [power]	0.230"
<input type="checkbox"/> LM-MSTP	Digital Lighting Management segment network plenum rated wire	2 + shield	white/black	0.185"

LP8 Peanut Lighting Control Panels

Simple and effective interior and exterior lighting control

Controls up to eight single-pole lighting circuits

Easy user interface with on-screen help



Compatible with AS-100 Automatic Control Switches for local override control

System clock provides time scheduled or astronomic control

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's LP8 Peanut Lighting Control Panels provide simple, effective zone-based control of exterior and interior lighting in small applications. Panels control up to eight channels or zones of lighting. Zones respond to control signals from the system clock (or other signalling device) to turn lighting on and off. LP8 Panels ship pre-assembled in easy-to-install compact packages available for surface and flush mounting. They consist of relays, a system clock, panel intelligence, power supply, tub and cover. The standard enclosure is NEMA 1-rated.

Operation

For exterior applications, the system clock provides astronomic control (based on sunrise and sunset), or an optional EM Photocell can be added for light-level control. For interior applications, AS-100 Automatic Control Switches or low voltage switches can automate after-hours lighting shutoff while providing manual override control.

System Clock

The LP8 system clock provides automation and features a seven-day format with holiday scheduling. Set-up and programming is simple with an easy-to-navigate keypad, backlit LCD and user-friendly help menus. Preprogrammed control scenarios include: scheduled-on/off and manual-on/scheduled-off. Manual-on/sweep-off is available with an AS-100 switch. Astronomic or photocell on/off, and astronomic or photocell with schedule on/off available by adding an EM Photocell.

Applications

LP8 Panels save energy by turning lights off when not needed, while providing a secure illuminated space when occupants are present. They are ideal for areas with less than eight loads and a small amount of zones in both interior (i.e., small offices or retail facilities and elevator lobbies) and exterior (i.e., small parking lots, courtyards and driveways) applications. LP8 Panels integrate with a wide range of control devices, such as switches and occupancy sensors to create a flexible lighting shutoff strategy.

Features

- Preprogrammed control scenarios; seven-day format with holiday scheduling, astronomic control and automatic daylight savings
- Time retained during power outage; nonvolatile program memory
- Eight universal switch inputs for low voltage switches, occupancy sensors, photocells or other devices to directly control each relay
- Pushbuttons for manual override of each relay
- Uses individually replaceable HDR5P Mechanically Latching Relay with integral manual override
- Optional group of eight switch inputs for pushbutton grouping of relays (Smartwiring™)
- LED for visual indication of relay status
- Accepts most types of switch inputs
- Separate high voltage and low voltage sections for user protection

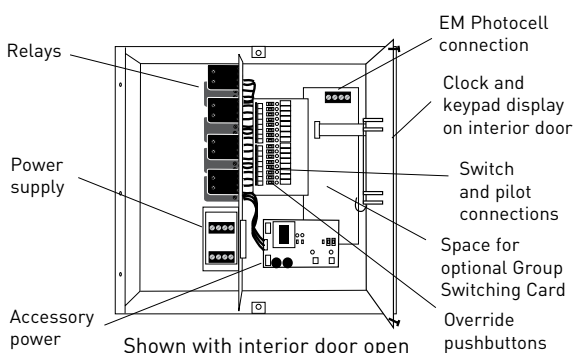


Specifications

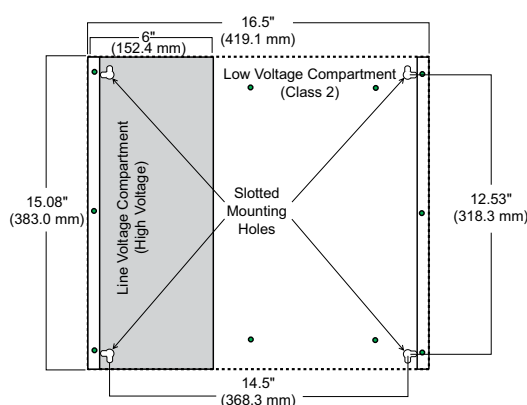
- Multiple power supplies available: 115/277 VAC, 220-240 VAC, 115/347 VAC; 50/60 Hz
- Relay: Mechanically latching
Integral manual override
Individually replaceable
Ratings: 20 Amp tungsten @ 120 VAC
30 Amp ballast @ 277 VAC
20 Amp ballast @ 347 VAC
30 Amp resistive @ 347 VAC
1.5 hp @ 120 VAC
- Accessory power 800 mA at 24 VDC/VAC/VACR
- Eight universal switch inputs; compatible with 3-wire momentary or maintained, 2-wire momentary or maintained, or 24 VDC input
- Eight universal group switch inputs that allow pushbutton grouping of relays (optional)
- Ambient temperature 32-139°F (0-60°C); 5-95% RH noncondensing
- Dimensions: 15.08" x 16.5" x 4.62" (383.0mm x 419.1mm x 117.3mm) L x W x D
- UL and CUL listed; one-year warranty

Wiring & Installation

LP8 Panel Layout



LP8 Dimensions



Ordering Information

Catalog No.	Description	Door Mounting	# Relays	Group Switching Card	Voltage
<input type="checkbox"/> LP8S-8-115	LP8 Peanut Lighting Control Panel	Surface	8 Relays	none	115/277 VAC
<input type="checkbox"/> LP8S-8-G-115	LP8 Peanut Lighting Control Panel	Surface	8 Relays	included	115/277 VAC
<input type="checkbox"/> LP8F-8-115	LP8 Peanut Lighting Control Panel	Flush	8 Relays	none	115/277 VAC
<input type="checkbox"/> LP8F-8-G-115	LP8 Peanut Lighting Control Panel	Flush	8 Relays	included	115/277 VAC
<input type="checkbox"/> LP8S-4-115	LP8 Peanut Lighting Control Panel	Surface	4 Relays	none	115/277 VAC
<input type="checkbox"/> LP8F-4-115	LP8 Peanut Lighting Control Panel	Flush	4 Relays	none	115/277 VAC
<input type="checkbox"/> LP8S-8-347	LP8 Peanut Lighting Control Panel	Surface	8 Relays	none	115/347 VAC
<input type="checkbox"/> LP8S-8-G-347	LP8 Peanut Lighting Control Panel	Surface	8 Relays	included	115/347 VAC
<input type="checkbox"/> LP8F-8-347	LP8 Peanut Lighting Control Panel	Flush	8 Relays	none	115/347 VAC
<input type="checkbox"/> LP8F-8-G-347	LP8 Peanut Lighting Control Panel	Flush	8 Relays	included	115/347 VAC
<input type="checkbox"/> LP8S-8-240	LP8 Peanut Lighting Control Panel	Surface	8 Relays	none	240 VAC
<input type="checkbox"/> LP8S-8-G-240	LP8 Peanut Lighting Control Panel	Surface	8 Relays	included	240 VAC
<input type="checkbox"/> LP8F-8-240	LP8 Peanut Lighting Control Panel	Flush	8 Relays	none	240 VAC
<input type="checkbox"/> LP8F-8-G-240	LP8 Peanut Lighting Control Panel	Flush	8 Relays	included	240 VAC
Optional system enhancements:					
<input type="checkbox"/> EM-24A2	Exterior Photocell, low voltage				24VAC
<input type="checkbox"/> AS-100-W	Automatic Control Switch, White				120/277 VAC, 50/60 Hz
<input type="checkbox"/> AS-100-A	Automatic Control Switch, Light Almond				120/277 VAC, 50/60 Hz
<input type="checkbox"/> AS-100-I	Automatic Control Switch, Ivory				120/277 VAC, 50/60 Hz

LP24 Peanut Plus Lighting Control Panels

Simple and effective interior and exterior lighting control

Controls up to eight zones

System clock provides time scheduled or astronomic control



Compatible with AS-100 Automatic Control Switches for local override control

DIN rail accommodates up to 12 four-pole contactors

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's LP24 Peanut Plus Lighting Control Panels provide simple, effective zone-based control of exterior and interior lighting in small applications. Panels control up to eight channels or zones of lighting. Zones respond to control signals from the system clock (or other signalling device) to turn lighting on and off. LP24 Panels ship pre-assembled in easy-to-install packages. They consist of relays, a system clock, panel intelligence, power supply, large tub with DIN rails for mounting up to twelve contactors (shipped separately) and cover.

Operation

For exterior applications, the system clock provides astronomic control (based on sunrise and sunset), or an optional EM Photocell can be added for light-level control. For interior applications, AS-100 Automatic Control Switches or other low voltage switches can automate after-hours lighting shutoff while providing manual override control.

System Clock

The LP24 system clock provides automation and features a seven-day format with holiday scheduling. Set-up and programming is simple with an easy-to-navigate keypad, backlit LCD and user-friendly help menus. Preprogrammed control scenarios include: scheduled-on/off and manual-on/scheduled-off. Manual-on/sweep-off is available with an AS-100 switch. Astronomic or photocell on/off, and astronomic or photocell with schedule on/off available by adding an EM Photocell.

Applications

LP24 Panels save energy by turning lights off when not needed, while providing a secure illuminated space when occupants are present. They are ideal for areas with two-pole loads and a small amount of zones in both interior (i.e., gymnasiums, elevator lobbies, commercial warehouses and parking garages) and exterior (i.e., parking lots, courtyards, sports fields and driveways) applications. LP24 Panels integrate with a wide range of control devices such as switches and occupancy sensors to create a flexible lighting shutoff strategy.

Features

- Preprogrammed control scenarios; seven-day scheduling with holiday, astronomic control and automatic daylight savings
- Time retained during power outage; nonvolatile program memory
- Eight universal switch inputs for low voltage switches, occupancy sensors, photocells or other devices to directly control each relay
- Uses individually replaceable HDR5P Mechanically Latching Relay with integral manual override
- Controls single and multiphase loads
- Optional group of eight universal switch inputs for pushbutton grouping of relays (Smartwiring™)
- Pushbuttons for manual override of each relay
- LED for visual indication of relay status
- Accepts most types of switch inputs
- Separate high and low voltage sectors for user protection
- DIN rail accepts up to 12 four-pole contactors

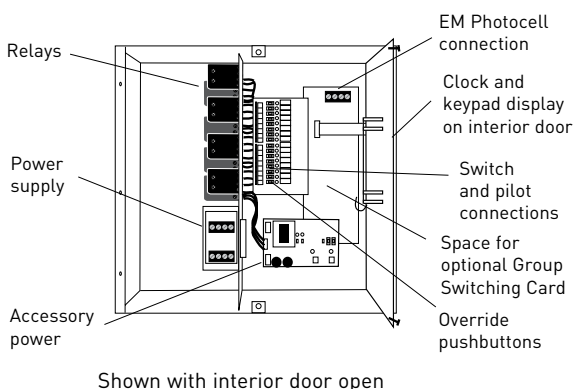


Specifications

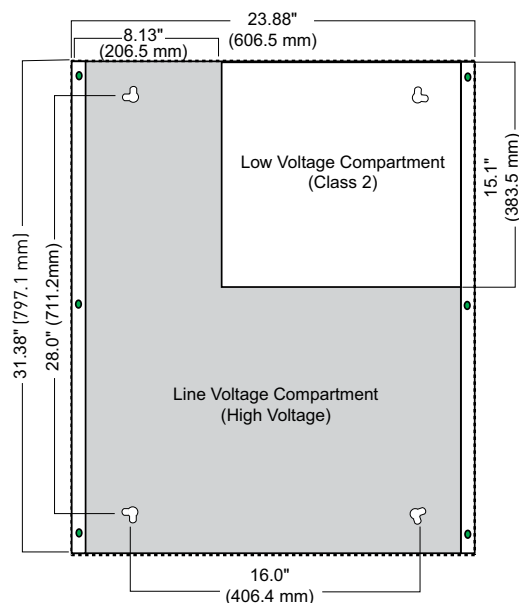
- Multiple power supplies available: 115/277 VAC, 220-240 VAC, 115/347 VAC; 50/60 Hz
- Relay: Mechanically latching
Integral manual override
Individually replaceable
Ratings: 20 Amp tungsten @ 120 VAC
30 Amp ballast @ 277 VAC
20 Amp ballast @ 347 VAC
30 Amp resistive @ 347 VAC
1.5 hp @ 120 VAC
- Eight universal switch inputs; compatible with 3-wire momentary or maintained, 2-wire momentary or maintained, or 24 VDC input
- Contactor Ratings for LP24: Ballast load 30Amp @ 600 V (magnetic, electronic, HID ballasts); Tungsten load 20 Amp @ 277 V; Resistive load 30 Amp @ 480 V; Motor load 5 hp @ 460 V, 3 phase
- Accessory power 800 mA at 24 VDC/VAC/VACR
- Four universal group switch inputs; allows pushbutton grouping of relays
- Ambient temperature 32-139°F (0-60°C); 5-95% RH noncondensing
- Dimensions: 31.38" x 23.88" x 4.62" (797.1mm x 605.5mm x 117.3mm) L x W x D
- UL and CUL listed; one-year warranty

Wiring & Installation

LP24 Panel Layout



LP24 Dimensions



Ordering Information

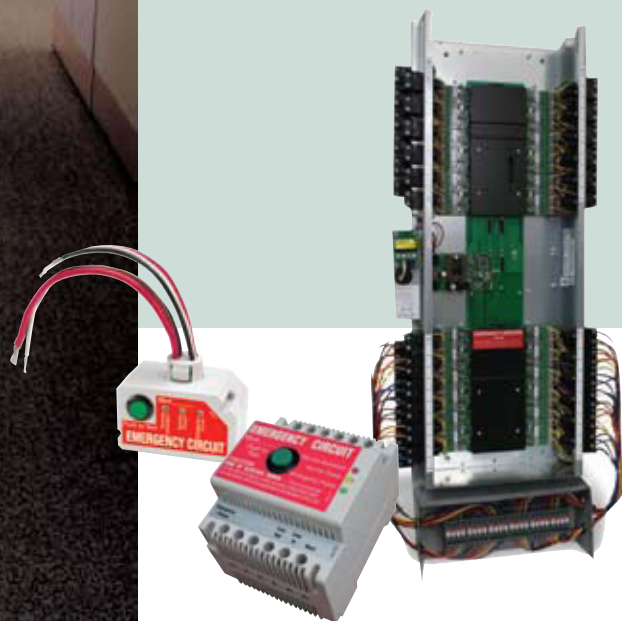
Catalog No.	Description	Door Mounting	# Relays	Group Switching Card	Voltage
<input type="checkbox"/> LP24S-8-115	LP24 Peanut Plus Lighting Control Panel	Surface	8 Relays	none	115/277 VAC
<input type="checkbox"/> LP24S-8-G-115	LP24 Peanut Plus Lighting Control Panel	Surface	8 Relays	included	115/277 VAC
<input type="checkbox"/> LP24S-8-347	LP24 Peanut Plus Lighting Control Panel	Surface	8 Relays	none	347 VAC
<input type="checkbox"/> LP24S-8-G-347	LP24 Peanut Plus Lighting Control Panel	Surface	4 Relays	included	347 VAC
<input type="checkbox"/> LP24F-8-115	LP24 Peanut Plus Lighting Control Panel	Flush	4 Relays	none	115/277 VAC
<input type="checkbox"/> LP24F-8-G-115	LP24 Peanut Plus Lighting Control Panel	Flush	8 Relays	included	115/277 VAC
<input type="checkbox"/> LP24F-8-347	LP24 Peanut Plus Lighting Control Panel	Flush	8 Relays	none	347 VAC
<input type="checkbox"/> LP24F-8-G-347	LP24 Peanut Plus Lighting Control Panel	Flush	8 Relays	included	347 VAC
<input type="checkbox"/> LP24S-4-115	LP24 Peanut Plus Lighting Control Panel	Surface	4 Relays	none	115/277 VAC
<input type="checkbox"/> LP24S-4-347	LP24 Peanut Plus Lighting Control Panel	Surface	4 Relays	none	347 VAC
<input type="checkbox"/> LP24F-4-115	LP24 Peanut Plus Lighting Control Panel	Flush	4 Relays	none	115/277 VAC
<input type="checkbox"/> LP24F-4-347	LP24 Peanut Plus Lighting Control Panel	Flush	4 Relays	none	347 VAC
Optional system enhancements:					
<input type="checkbox"/> EM-24A2	Exterior Photocell, low voltage				24VAC
<input type="checkbox"/> AS-100	Automatic Control Switch				120/277VAC
<input type="checkbox"/> DCC2	Decorator Low Voltage Momentary Switch				12 VAC/VDC, 24 V Rectified, 24 VAC/VDC





Emergency Lighting Controls

Controlling emergency lighting in a coordinated way with normal lighting provides additional opportunities for energy savings. WattStopper offers a range of emergency lighting controls, from integrated, panel-based control to standalone control devices that work with occupancy sensors and other control devices.





Designing with Lighting Control Panels

Add emergency lighting control to your lighting designs to maximize energy savings

Offering energy savings through efficient lighting control is what WattStopper is all about. But when it comes to emergency lighting, users want complete reliability and security. We also understand you want the most flexibility in your control options. That's why we've developed a range of emergency lighting control options, including the LI emergency relay panel option

Complete Reliability and Security

as well as standalone ELCU units. Coordinating control of emergency and ordinary lighting does the following:

- Eliminates energy waste caused by always on emergency lighting
- Allows your choice of control device to switch emergency lighting in conjunction with normal lighting
- Compatible with WattStopper occupancy sensors, lighting control panels, daylighting controls and dimmers
- UL 924 listed for use in emergency circuits
- Test features facilitate code compliance
- Status LEDs enhance safety of personnel
- Can also control supplemental standby lighting

Why control emergency lighting?

Energy savings

Most facilities operate emergency lighting 24/7. This represents a significant energy usage that is not necessary. Now, with coordinated emergency lighting control, building owners and managers reduce lighting operation and increase energy savings. And by operating the lighting for fewer hours, they will also realize savings from longer maintenance intervals for emergency lamp replacement.

Emergency lighting typically consumes .15 to .25 watts per square foot, or 12 to 21 percent of an



average building's lighting load. Over half of this power usage can be eliminated by turning these lights off along with normal lighting, after hours and on weekends.



Integrating Emergency Lighting Control into Your Lighting Designs

Any LI panel in the 24 or 48 relay size can include the emergency relay option, and can include up to 24 emergency relays. This option is ideal for applications where full circuits of emergency lighting can be controlled together. It is also well suited to warehouses, manufacturing facilities, convention centers, airports, or other large scale applications that use generator backed up lighting.



An **ELCU-100** is used for applications where the normal control device is centrally, such as a panel. It mounts on a DIN rail. Suitable applications include lobbies, corridors and some open offices.



An **ELCU-200**, which mounts to a junction box, is used for applications where the normal control device is located in the space being controlled. Examples include classrooms, conference rooms and open offices with occupancy sensors.



Designing with Lighting Control Panels

Schools

Large room used for multiple purposes on a complex schedule subject to change.

Control needs:

Occupancy sensors in conjunction with an LI panel are used to satisfy code provisions mandating sensors in the space.

Solution:

The LI panel provides baseline automatic on and off of general lighting throughout the school. Within the classroom, the sensor controls the branch circuits. An ELCU-200 is installed on the emergency circuit and is mounted near the occupancy sensor. The ELCU turns the emergency lights on or off along with the selected normal lighting. If normal power is lost for any reason, the emergency lights will turn on.



Additionally, the ELCU is connected to the fire alarm system and emergency lights will come on whenever the fire alarm is activated regardless of the state of the switches or the utility power.

Control with:



Occupancy Sensor



Lighting Control Panel



Emergency Lighting Controller



Open office

Large open space with multiple users throughout the day.

Control needs:

Scheduled lighting control to ensure that lights are on during periods of use and to switch lights off overnight and during weekends and holidays to meet energy code requirements.

Solution:

Overall switching is handled by a Lighting Integrator panel. An ELCU-100 is installed on the emergency circuit and connected to the relay serving the area. The ELCU turns off the emergency lights when the relay for



the area is turned off. If normal power to this relay is lost for any reason, the emergency lights will turn on.

A remote test switch is installed in the maintenance room for the floor for convenience.

Control with:



Lighting Control Panel



Remote Test Switch



Emergency Lighting Controller

ELCU-100 Emergency Lighting Control Unit

Guarantees emergency lighting remains ON or is turned on when power to the control device is lost

“Watchdog” feature allows emergency loads to be controlled in tandem with normal power loads

Interfaces with fire alarm panel or security system



Integrated push-to-test button

UL listed for use in emergency circuits

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's Emergency Lighting Control Unit (ELCU) is a self-contained, emergency lighting control device. The ELCU provides all required functionality to allow any standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building.

Operation

The ELCU monitors a single circuit that provides normal lighting to an area. As long as normal power is present, the ELCU permits lighting control devices (i.e., occupancy sensors, panels, dimmers, or wall switches) to control the emergency lighting fixtures as well as the general lighting. If power is lost for any reason, including the tripping of a single branch circuit breaker, the ELCU will force the emergency fixtures for that area on. The ELCU can be wired either as a control device, so that emergency lighting follows the control of normal lighting, or as a bypass device to shunt emergency power around a control device when normal power fails.

Features

- Eliminates energy waste caused by “always ON” emergency lighting
- Integral push-to-test button activates emergency mode for a true test condition
- Connects to remote test switch or other input to activate emergency ON from a remote location
- Operates as a control device or as a shunt
- Senses local single circuit power failure
- Zero cross switching technology for reliability and increased product life
- Compatible with WattStopper occupancy sensors, daylighting controls, lighting control panels, and dimmers
- LED indication for emergency and normal power
- Half-second delayed ON positively identifies emergency fixtures for required maintenance
- Provides absolute fail-to-on emergency lighting
- UL924 listed, meets NEC, OSHA and NFPA safety codes

Mounting

The ELCU is equipped with an integral DIN rail mounting groove and retaining clip mechanism. It can be installed on the DIN rail track provided within a WattStopper enclosure (i.e., LS-E8, LS-E12), or in a WattStopper lighting control panel.

Applications

The ELCU is designed to control lighting in areas where emergency lighting fixtures are connected on dedicated emergency lighting circuits that are typically on 24 hours per day. The ELCU allows normal control of emergency lighting for energy savings and/or task related reasons while strictly adhering to National Electric Code requirements. It is suitable for any application where enhanced energy saving is desired.

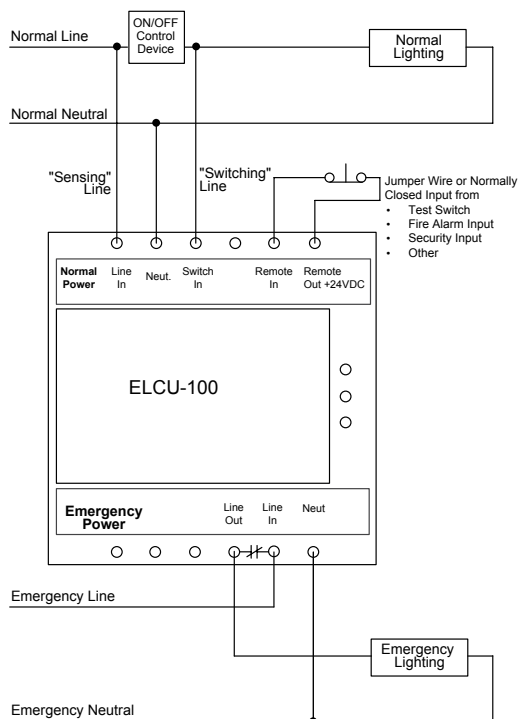


Specifications

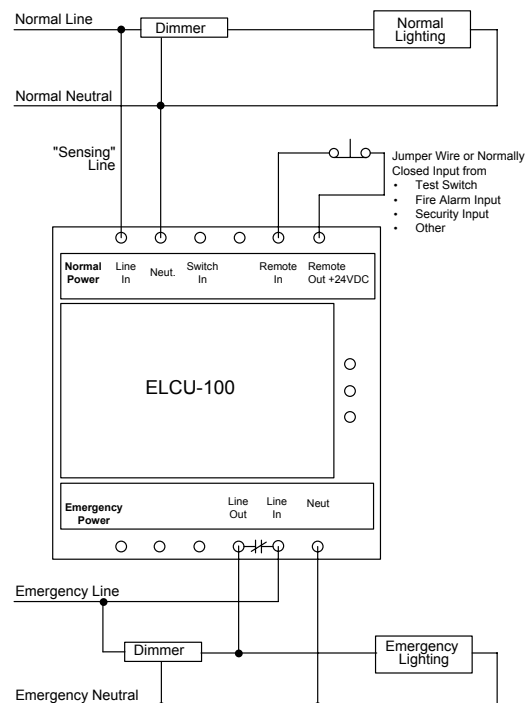
- 120/277 VAC; 60Hz
- Maximum load:
 - Ballast 20A @ 120/277 VAC
 - Incandescent 10A @ 120/277 VAC
 - Motor 1HP @ 120 VAC
- Remote activation: supplies 24 VDC source for dry contact closure
- Integral control: push-to-test button on unit
- Housing: fire rated V-0, 176°F (80°C)
- Terminal torque: 4/428 inch pound-force (0.5Nm)
- Dimensions: 2.78" x 3.44" x 2.63" (71mm x 87mm x 67mm) L x W x D
- UL, cUL listed Emergency Lighting and Power Equipment; five year warranty

System Wiring

ELCU Wiring Diagrams



When wired as a control device, the ELCU receives a switching signal from the output of the control device (relay, switch, power pack, etc.)



When wired as a shunt, the switching line is not used.

Note: Use with Watt Stopper universal dimmers or contact dimmer manufacturer to determine the suitability of the specified dimmer for shunt operation.

Ordering Information

Catalog No.	Description	Voltage
<input type="checkbox"/> ELCU-100	Emergency Lighting Control Unit	120/277 VAC; 60Hz
<input type="checkbox"/> EMTS-100	Remote test switch on single gang plate	24VDC, normally closed contact
<input type="checkbox"/> LS-E8	Surface Mount Enclosure for 1 or 2 ELCU units*	N/A
<input type="checkbox"/> LS-E12	Surface Mount Enclosure for up to 6 ELCU units*	N/A

*LS-E8 and LS-E12 enclosures include screw cover and DIN rail

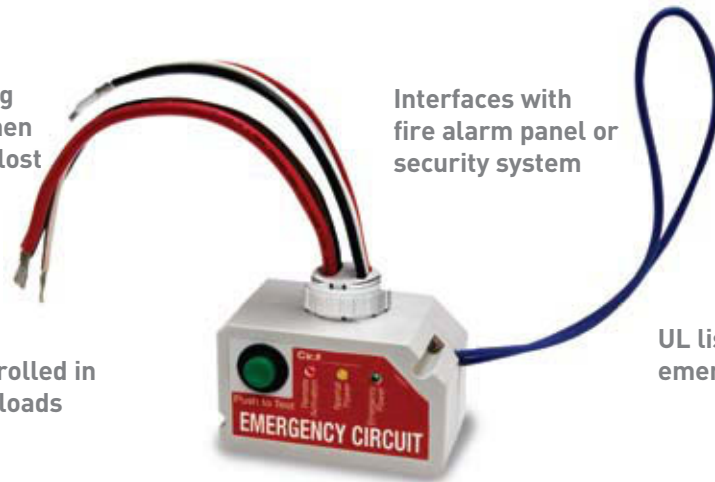
ELCU-200 Emergency Lighting Control Unit

Guarantees emergency lighting remains ON or is turned on when power to the control device is lost

Interfaces with fire alarm panel or security system

“Watchdog” feature allows emergency loads to be controlled in tandem with normal power loads

UL listed for use in emergency circuits



Integrated push-to-test button

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's ELCU-200 Emergency Lighting Control Unit is a self-contained device that allows any standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building.

Operation

The ELCU-200 monitors a single circuit that provides normal lighting to an area. As long as normal power is present, the ELCU-200 permits lighting control devices (e.g., occupancy sensors, panels, dimmers, or wall switches) to control the emergency lighting fixtures as well as the general lighting. If power is lost for any reason, including the tripping of a single branch circuit breaker, the ELCU-200 will force on the emergency fixtures for that area. The ELCU-200 can be wired either as a control device, so that emergency lighting follows the control of normal lighting, or as a bypass device to shunt emergency power around a control device (e.g., a dimmer) when normal power fails.

Mounting

The ELCU-200 mounts directly to a junction box or electrical enclosure that has a standard 1/2" knockout. It is compatible with all WattStopper occupancy sensors, daylighting controllers and power packs.

Applications

The ELCU-200 is designed to control lighting in areas where emergency lighting fixtures are connected on dedicated emergency lighting circuits that are typically on 24 hours per day. The ELCU-200 allows normal control of emergency lighting for energy savings and/or task related reasons while strictly adhering to National Electric Code (NEC) requirements. It is suitable for any application where enhanced energy saving of emergency lighting is desired.

Features

- Eliminates energy waste caused by emergency lighting that is always on
- Integral push-to-test button activates emergency mode for a true test condition
- Connects to EMTS-100 Remote Test Switch or other input to activate emergency on from a remote location
- Operates as a control device or as a shunt
- Senses local single circuit power failure
- Zero cross switching technology for reliability and increased product life
- Compatible with WattStopper occupancy sensors, daylighting controls, lighting control panels, and dimmers
- LED indication for emergency and normal power
- Half-second delayed on positively identifies emergency fixtures for required maintenance
- Provides absolute fail-to-on emergency lighting
- UL924 listed, meets NEC, OSHA and NFPA safety codes; UL2043 plenum rated
- Qualifies for use on ARRA-funded projects

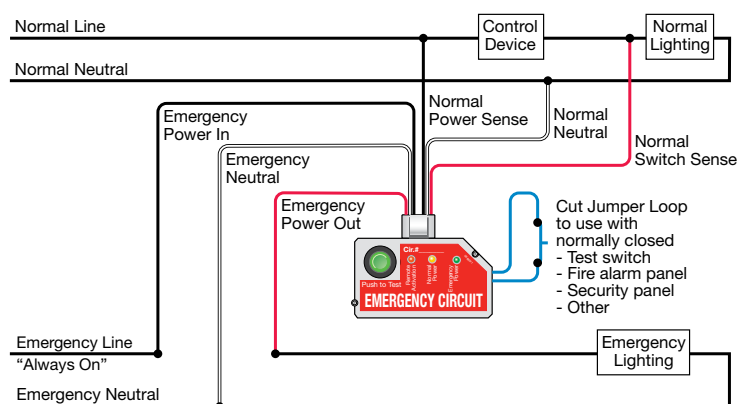


Specifications

- 120/277 VAC; 60Hz
- Maximum load:
 - Ballast 20 A @ 120/277 VAC
 - Incandescent 10 A @ 120 VAC
 - Motor 1HP @ 120 VAC
- Remote activation: supplies 24 VDC source for dry contact closure
- Integral control: push-to-test button on unit
- Housing: fire rated V-0, 176° F (80°C)
- Operating temperature range: 32 to 131°F (0 to 55°C)
- Relative humidity range: 5 to 95%, noncondensing
- Dimensions: 1.7" x 2.97" x 1.64" (43.2mm x 75.4mm x 41.7mm) H x W x D with a 1/2" (12.7mm) threaded nipple
- UL, cUL listed Emergency Lighting and Power Equipment; five year warranty

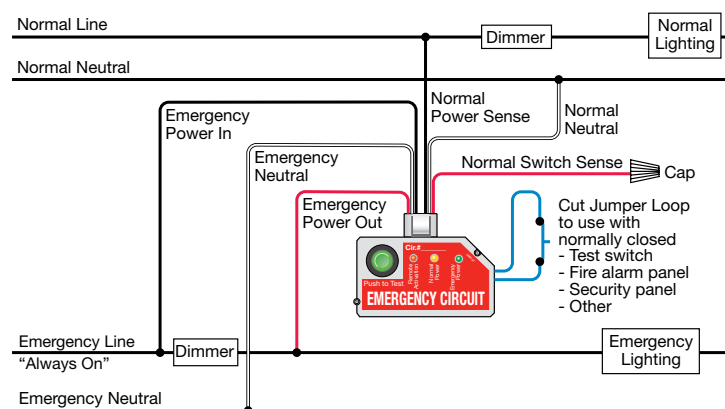
Installation and System Wiring

ELCU Wired As a Control Device



When wired as a control device, the ELCU-200 receives a switching signal from the output of the control device (relay, switch, power pack, etc.)

ELCU Wired As a Shunt, or Bypass, Device



When wired as a shunt, the switching line is not used.

Note: Use with WattStopper universal dimmers or contact dimmer manufacturer to determine the suitability of the specified dimmer for shunt operation.

Ordering Information

Catalog No.	Description	Voltage
<input type="checkbox"/> ELCU-200	Emergency Lighting Control Unit	120/277 VAC; 60Hz
<input type="checkbox"/> ELCU-200-U	Emergency Lighting Control Unit, ARRA-compliant	120/277 VAC; 60Hz
<input type="checkbox"/> EMTS-100	Remote Test Switch on single gang plate	24VDC, normally closed contact

Lighting Integrator Emergency Relay Panel Option

UL924 listed for use on emergency circuits

Factory-assembled interior mounts in standard LI enclosure, ships completely wired

Meets NEC (NFPA70) UL 924 requirements for emergency lighting control



Allows normal control of emergency circuits via schedule, switch, photocell or other device

Guarantees that emergency lighting will turn on upon loss of normal power

PROJECT
LOCATION/TYPE

Product Overview

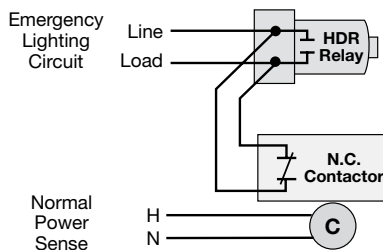
Description

The Lighting Integrator Emergency Relay Panel option provides certified fail-safe operation of lighting control circuits controlled by HDR relays in an LI lighting control panel. The option is available with any 24 or 48 size LI panel.

Operation

A dedicated normal power sense connection monitors the presence of normal power and allows the HDR relays to control the emergency lighting circuits based on ordinary control schedules and devices, such as switches, occupancy sensors, and daylighting control devices. When normal power is lost for any reason, all HDR relays controlling emergency circuits are each individually bypassed automatically by a set of normally closed contacts. The HDR relays do not change state during a power outage so lighting is restored when normal power is restored.

Wiring



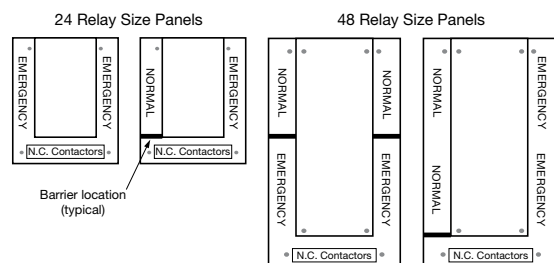
Applications

The Lighting Integrator emergency lighting control panel option is ideal for applications where always-hot emergency lighting circuits need to be controlled along with the normal lighting circuits. Because the lighting control panel with integrated yet dedicated emergency relays operates normally based on the type of intelligence card installed in the panel, this is suitable for virtually any type of application. These panels can be used reliably for fail safe emergency lighting operation in schools, office buildings, libraries, airports, industrial plants, warehouses, and auditoriums.

Specifications

- 30 Amp normally closed contactors used for shunt operation
- One to 24 emergency relays per panel, 24 or 48 size enclosure only
- Emergency relay rating: same as HDR
- Normal power sense input, 120, 277 or 347 volts, voltage specific
- UL listed for use on emergency circuits

Emergency Relay Panel Configurations



Description

Order LI Emergency Relay Panel option using the ordering section on the LI level panel cut sheet.

Ordering Information







Commercial occupancy sensors and controls for every application

Occupancy sensors maximize energy savings by ensuring that lights are turned off when spaces are unoccupied.

WattStopper’s sensors provide convenient automatic-on or manual-on control and are packed with innovative features and options. Many models are available in line or low voltage for flexibility in placement and wiring. Sensors use passive infrared, ultrasonic and WattStopper’s patented dual technology.

Additional controls, including plug load controls, time switches and hotel card-key switches, round out this comprehensive product line.



Sensors use passive infrared, ultrasonic and dual technology

Table of Contents

Occupancy Sensor Overview	C3-C8
Designing with Occupancy Sensors	C9-C18
Occupancy Sensor Matrix	C19-C22
Product Details	C23-C112



Occupancy sensors return maximum energy savings and more

Because occupancy sensors ensure that lighting is only on when people are present, energy savings with sensors exceed savings provided by other control solutions.

Meet energy codes with WattStopper Occupancy Sensors

WattStopper, the pioneer of energy-efficient lighting controls, continues to develop new sensors that not only save energy, but facilitate achieving multiple design goals.

Energy code compliance

Automatic-on or manual-on occupancy sensors meet the automatic-off requirement of all major energy codes, including ASHRAE 90.1 (2007 and earlier), IECC and California's Title 24.

ASHRAE 90.1-2010 includes new requirements for manual-on control, or automatic-on to not more than 50%, and WattStopper offers a wide range of compliant sensors.



Sustainable design

Employing occupancy sensors beyond the requirements of energy codes provides greater energy savings, contributing to sustainable building practices. By optimizing a building's energy performance, design teams can earn points for LEED certification.

Lighting tax deduction

Using occupancy sensors can help building owners earn a Commercial Building Tax Deduction (CBTD) under the Energy Policy Act of 2005 (EPAAct). To qualify, a building must exceed the energy performance required by reference codes. In 2009, the EPAAct program was extended until 2013.

Actual energy savings attributed to occupancy sensor installation	
Application	Range of documented savings
Break Room	17-29%
Classroom	36-52%
Conference Room	22-65%
Private Office	25-50%
Restroom	30-75%

Sources: U.S. Environmental Protection Agency (EPA), Lighting Research Center (LRC) and California Energy Commission (CEC) publications.



Safety and convenience

WattStopper has refined its sensing technologies and manufacturing techniques to provide superior performance, from instant on response to product reliability and longevity. This attention to detail ensures security as well as occupant comfort and satisfaction for years to come.

Compatible with all standard lighting types

Our sensors work with every standard commercial lighting type, enabling you to bring savings to every application.

Lighting control best practices

As occupancy sensor use has become mainstream, engineers, code developers and researchers have learned a great deal about how to increase energy savings while also improving occupant comfort. Cutting edge designs now employ bi-level switching coupled with manual-on control, and most WattStopper products include this functionality.

Bi-level automatic-on control

Bi-level switching has the potential to save energy by enabling occupants to use just as much lighting as needed, and is required by EAct and California's Title 24.



Bi-level automatic-on control delivers the greatest savings. This is when one zone is turned on automatically and the other zone must be turned on manually.

This strategy has been shown to use 52% less energy than automatic-on occupancy sensors. And, most occupants are comfortable working in lower lighting levels — a win-win for workers and energy managers.*

*Based on California Lighting Technology Center research

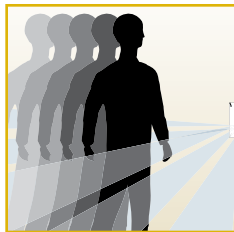


Choice of technologies and features ensure optimal performance

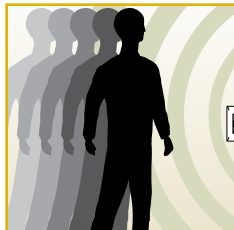
By expanding its already extensive line of commercial sensors, WattStopper gives engineers and facility managers more control options than ever before, offering sensors that are the best fit for any application.

Sensors featuring **PIR, ultrasonic or dual technology** are ideally suited to different applications.

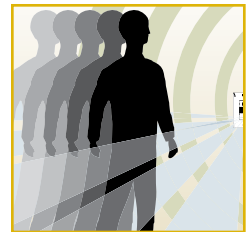
Passive infrared (PIR) technology detects occupancy by sensing the difference between heat emitted from a human body in motion and the background space. Relying on a clear line of sight, PIR sensors feature precise cut-off of coverage.



Ultrasonic technology works by transmitting ultrasonic sound waves throughout an area and measuring the speed at which they return. Occupant movements change the frequency of the waves. Ultrasonic sensors can detect movement around partitions.



WattStopper invented and patented dual technology, which combines PIR and ultrasonic detection. Dual technology sensors ensure maximum sensitivity and coverage for hard to sense spaces for optimal reliability and energy savings.



Low-profile sensors leave any space clean and uncluttered.

Next-generation sensors feature fixed or plug-in wiring **terminals for fast, easy installation.**



Most sensors support **manual-on or automatic-on** operation, and most single relay wall switch sensors now default to manual-on.

A choice of **single or dual relay** sensors allows control of one or two zones of lighting from a single-gang box, potentially reducing wall clutter and simplifying retrofits.

Multi-way sensors enable true three- and four-way lighting control in rooms with more than one entrance, or any area with multiple switch locations.

Line and **low voltage** models are available to accommodate the special wiring needs of different applications.

Selectable **fixed time delays** help installers maximize savings while eliminating the callbacks associated with an automatically adjusted delay option.

Integral **nightlighting** with field-selectable color and intensity serves to gently illuminate enclosed spaces or provide a sense of security and preserve night vision in hotel guest bathrooms.

WattStopper occupancy sensors also feature:

- Zero crossing circuitry
- Test mode, walk-through and service modes
- Audible and/or visual shutoff warnings
- Light level sensor
- Selectable trigger mode (dual technology)
- Color matched lens



Applying Occupancy Sensors

PIR best applications

- Small offices
- Warehouses
- High ceiling locations
- Library bookstacks or other aisles
- Common areas
- Lobbies
- Computer rooms

Ultrasonic best applications

- Restrooms
- Open office spaces
- Enclosed hallways
- Stairways

Dual technology best applications

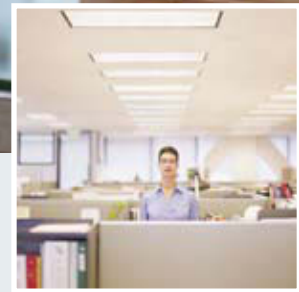
- Classrooms
- Large conference rooms
- Large offices
- Lunch rooms



In **offices** where the wall switch has a complete view of the work space, replace the switch with a passive infrared wall switch sensor. Take advantage of the built-in light level feature to keep lights off when ample daylight is present.



Control lighting in **restrooms** with ultrasonic sensors and eliminate hours of unneeded on-time. Ceiling-mounted ultrasonics can sense motion around restroom stalls for reliable coverage.

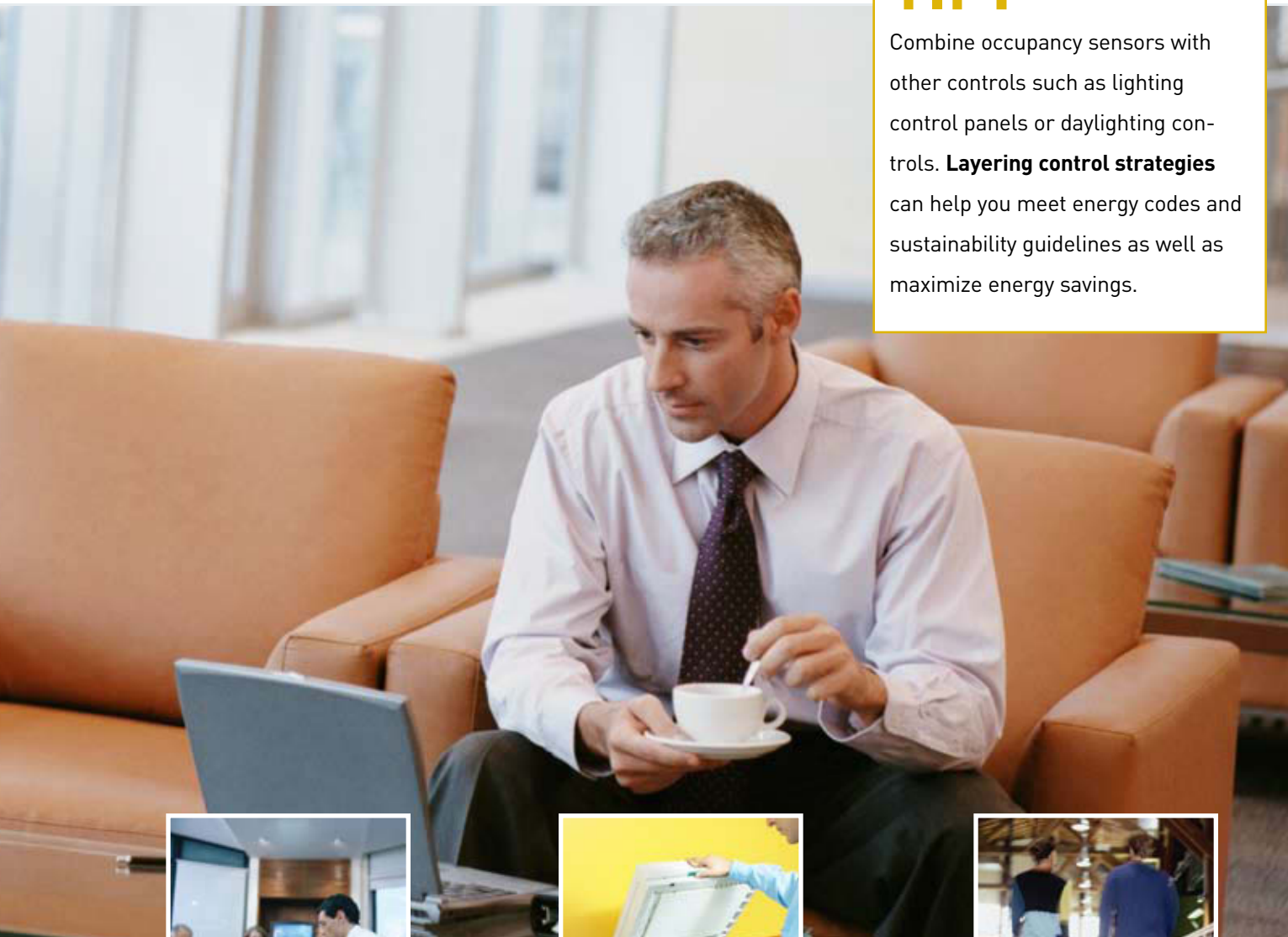


In **open or partitioned offices**, use ultrasonic or dual technology sensors. Placed on the ceiling, these sensors cover the area in zones that overlap.



TIP!

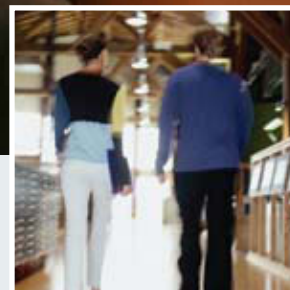
Combine occupancy sensors with other controls such as lighting control panels or daylighting controls. **Layering control strategies** can help you meet energy codes and sustainability guidelines as well as maximize energy savings.



In large **conference rooms**, occupants may be still for long periods of time. Dual technology sensors will be able to detect small motions and keep lights on as long as the space is occupied.



Spaces such as **copy rooms** are ideal for occupancy-based control, with a passive infrared sensor placed in the corner of the ceiling or as a wall switch replacement. Hours of wasted lighting energy can be saved each day.



In **warehouses**, a passive infrared sensor mounted to the ceiling or a fixture will control aisleway lighting so that lights in unoccupied areas will turn off or turn to a lower level. Users can achieve this control with fluorescent as well as HID lighting.



Designing with Occupancy Sensors

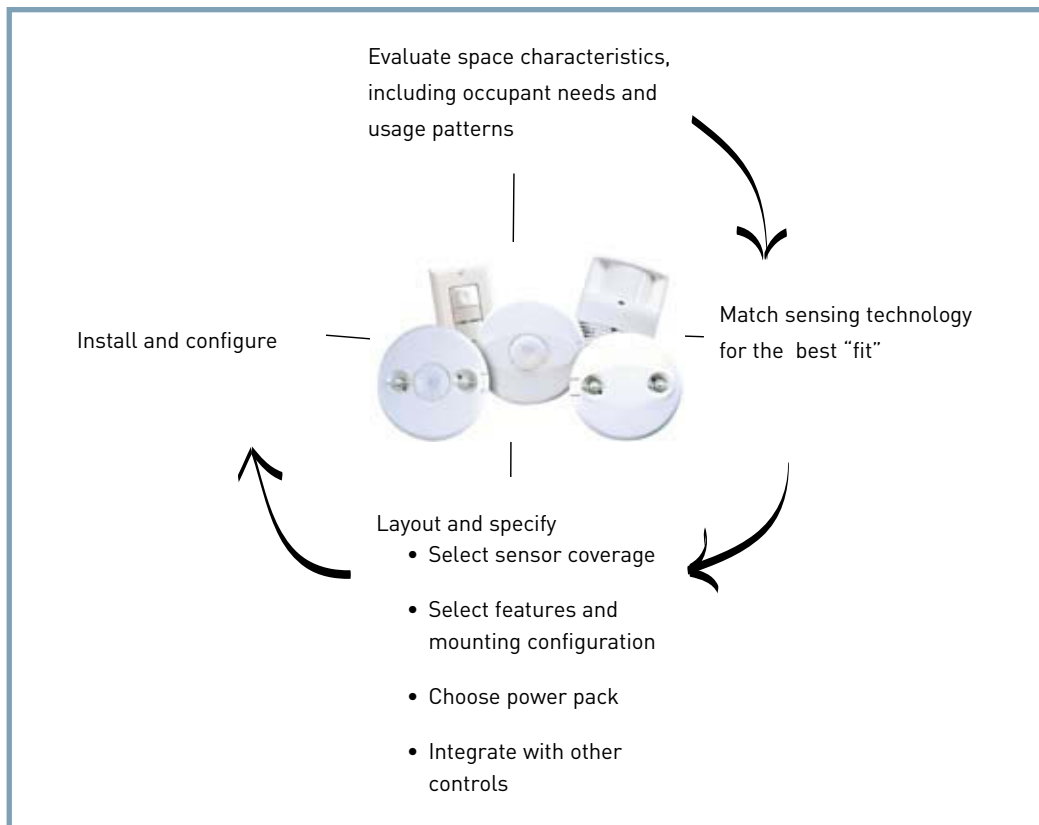
Is occupancy sensing the appropriate control strategy?

Certain usage patterns are particularly suited to occupancy-based control. If you answer “Yes” to some or all of these questions, occupancy sensors are a viable control choice.

- Are there periods of time when the space is unoccupied?
- Is energy wasted due to lights being left on when no one is present?
- Are lights left on after business hours?
- Is the space intermittently used?



- Can lights (or portions of lighting) be turned off during the day?





1. Evaluate space characteristics

Evaluate space characteristics, especially the following qualities, because these will influence sensor product selection:

- Room/space dimensions and shape
- Location of main occupant activity
- Location of walls, doors, windows and drapes
- Ceiling height, partition height and location
- Location of shelves, file cabinets and large equipment
- Large objects that could block or alter a sensor's coverage
- Location of HVAC ducts and fans
- Availability of daylight for added light level sensing
- Location of desk/workspace; orientation with regard to walls, etc.
- Special attention to high levels of air flow/vibration, extreme temperature conditions, unusually low levels of activity

From The Tool Box:

Auditing tools such as the IT-200 IntelliTimer Pro

Logger can help identify the energy saving potential in specific spaces. The IT-200 clips onto the ceiling and tracks when the space is vacant/occupied and when the lights are on/off. Download the data to a PC and generate a report to find out the savings potential (See pages C113-C114).





Designing with Occupancy Sensors

2. Choose sensing technology

Select the sensing technology that best “fits” the space characteristics of the application.



Occupancy sensor matrix				
	Technology/ Product type	Coverage type	Compatible application characteristics	Incompatible application characteristics
PIR	wall switches	- line of sight - clear cutoff	- smaller, enclosed spaces	- very low motion levels by occupants - obstacles blocking sensor view
	ceiling/wall sensors	- line of sight - clear cutoff	- spaces where the sensor has a view of the activity	- very low motion levels by occupants - obstacles blocking sensor view
Ultrasonic	wall switches	- no clear cutoff	- smaller, enclosed spaces	- high level of air flow
	ceiling sensors	- volumetric - no clear cutoff	- open spaces - spaces with obstacles	- high ceilings - high levels of vibration or air flow
Dual Technology	wall switches	- complete coverage	- spaces with low or variable motion levels by occupants	- high level of air flow
	ceiling/wall sensors	- complete coverage	- spaces with low or variable motion levels by occupants	- high levels of air flow



3. Layout and specify the project

Coverage pattern

Once the technology choice is made, many different coverage sizes and shapes are available. See the product matrix on pages C19-C20 to identify which WattStopper sensors are recommended for the application. Then see product cut sheets for detailed drawings of each sensor's coverage patterns.

Keep in mind whether occupants will be engaged in major motions, such as walking, or minor motions, such as computer work or reading. Coverages change depending on motion type. You also need to remain aware of cutoff needs. An enclosed room has different needs than an open office area.

Sensor coverage tested according to NEMA guidelines

WattStopper truly believes repeatability and uniformity in testing is important to producing quality products for our customers. Therefore, we closely adhere to the recommended methods for testing all our sensors' coverage patterns as described in Guide Publication WD 7-2000 from the National Electrical Manufacturers Association (NEMA).



This guide, which promotes uniformity for the definition and measurement of characteristics relevant to the use and application of occupancy sensors, characterizes minor and major motion as the two basic types of testing coverage patterns. It defines minor motion as the movements of a person sitting at an office desk reaching for a telephone, turning the pages of a book, opening a file folder or picking up a coffee cup and major motion as the movement of a person walking through an area.



Designing with Occupancy Sensors

Features

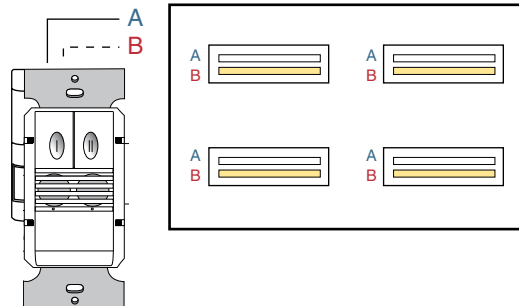
We've developed different sensor features so you can select the right combination for your applications. Consider the benefits of the following features for your project.



Occupancy sensor features	
Feature	Benefit
Isolated Relay	Enables interfacing with a facility's HVAC, BAS or monitoring system
Light Level Sensing	Increased energy savings in areas with abundant natural light
Terminal Wiring	Simplified installation
Manual-ON/Auto-ON	Options to meet code and maximize energy savings for different applications
Dual Relays	Enables occupancy-based bi-level switching for increased energy savings and code compliance
Zero Crossing	Reduced stress on sensor relay and increased sensor life
Low Voltage	Flexibility in wiring
Line Voltage	No need for power pack
Walk-through Mode	Increased energy savings by turning lights off after transient occupancy
Alerts	Visual or audible warning of impending shutoff
Multi-way Capability	Facilitates control in spaces with multiple entrances
Dimming	Added energy savings and comfort
Nightlight	Added comfort and safety

TIP!

Bi-level lighting control from a single switch can facilitate compliance with some codes. This is accomplished using a wall switch sensor with dual relays.





Mounting configuration

Some sensors are recommended for ceiling mount use, such as the CI series, W series, WT series, UT series, and WPIR. Others, such as the CX and DT-200 can

either be ceiling or wall mounted. This is important for applications where one of the surfaces may be unsuitable for sensor installation.

Wall switches

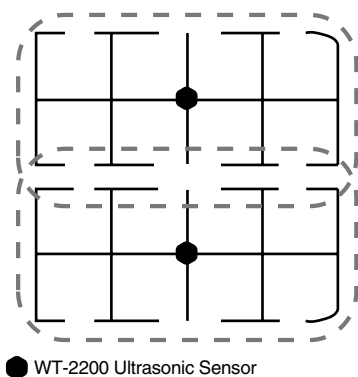
- Replace existing wall switches
- Utilize PIR, Ultrasonic and Dual Technology
- Best suited to small enclosed offices or rooms
- Give users manual control via the pushbutton
- PW/UW/DW single relay sensors default to manual-on; dual relay sensors default to auto-on to 50% for maximum energy savings

Ceiling or wall mount sensors

- Flexibility in sensor mounting facilitates broader coverage for most applications
- Low voltage sensors require power packs; line voltage options available
- Choice of sensing technologies, range of features and coverage patterns
- Can offer manual control

TIP!

Expand sensor coverage of large spaces by creating control zones. Link multiple sensors together to control lighting in a coordinated way. When creating zones of coverage, take care to ensure that individual sensor coverages overlap by 10-20%, as illustrated here.



● WT-2200 Ultrasonic Sensor



Designing with Low Voltage Occupancy Sensors

Choose power packs

Power packs are a key component of most occupancy sensor projects, providing power to low voltage sensors and other control devices, responding to signals from those devices and switching relays to control connected loads.

See pages C83 to C97 for power pack product information.

Power packs can also provide advanced features such as switched inputs, inputs for scheduling, and dimming control. Think about these factors when choosing a power pack:

Voltage

When selecting a power pack, consider the voltage of the electrical systems. Pay attention to the input ratings of the power pack.

Low voltage output needs

Be sure the power pack provides enough current to power all of the connected devices.

Relay ratings

Power packs have specific ratings for different load types (i.e., incandescent, fluorescent, motor). Make sure the relay is rated for the type of load to be controlled and the load being switched does not exceed the load rating of the power pack.



Relay type

The power pack relay is vital. Many power packs feature an isolated relay that offers greater switching flexibility in some applications. Some power packs also have different types of relays so a project designer can implement customized switching (i.e., increased switching flexibility with a form C relay, two or more isolated relays, or smaller, low voltage rated relays used to signal other systems such as security or HVAC systems).



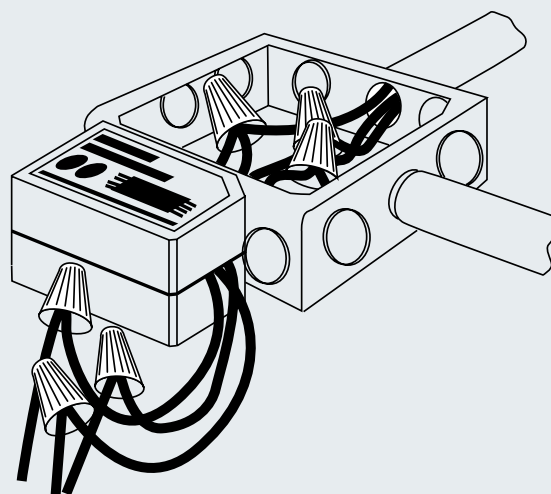


Mounting options

Power packs are often mounted to the outside of a junction box, placing them in the plenum space, so make sure the power pack is plenum rated. Smaller power packs can be installed inside a standard junction box.

Signaling from multiple devices

Intelligent power packs provide inputs so that multiple control devices can be connected. This enables customization of control scenarios for different applications and end user preferences. Use intelligent power packs when multi-device, manual switching, and dimming applications are desired.



TIP!

To protect against the potentially damaging effects of high inrush current common in newer electronic ballasts, select power packs with zero crossing.



Designing with Occupancy Sensors

Integrating occupancy sensors with other controls

For increased flexibility and energy savings, occupancy sensors seamlessly integrate with many lighting controls.

Lighting control panels

Integrating occupancy sensors with lighting control panels provides convenience and savings benefits. Rather than the panel's system clock signalling all lights to turn off at a specific time, occupancy sensor control takes over during after hours. Here, lights remain on only in spaces that are occupied, and turn off after the space is vacated.

Daylighting controls

Occupancy sensors also integrate well with daylighting controls in building spaces that receive daylight. When used together, the occupancy sensors can keep lights off in unoccupied spaces, even when the daylighting controls signal that there is not adequate daylight and would otherwise turn lighting on.




TIP!

Digital Lighting Management (DLM) products are also recommended for projects incorporating layered control strategies. DLM can simplify installation and configuration. See Section A for information on DLM.



4. Install the sensors



When installing sensors, contractors should:

- Position sensor so it has the best view of the entire coverage area, while minimizing the possibility of false ONs or OFFs
 - Wire sensor according to instructions to eliminate any functional problems or sensor damage (i.e., some wall switch sensors require grounding for proper functioning. If an installer fails to properly ground it, the sensor will not work as designed.)
 - If necessary, adjust sensor settings (i.e., sensitivity, time delay) to match activity levels in the controlled space. Lengthen time delay settings for spaces with lower activity levels; shorten time delay settings for high activity areas and highest energy savings.
- 
- Make post-installation adjustments as needed. This is not uncommon, and is often due to last minute changes in furniture or fixture placement.



Occupancy Sensors

Product Matrix












Wall Switch Occupancy Sensors					
	Model #	Pages	Voltage	Description	Typical Applications
Passive Infrared	 WS-250 WS-250-347 NEW!	C23-24	120/277 VAC, 60 Hz 347 VAC, 60 Hz	PIR Wall Switch Sensor	Small offices, small and medium conference rooms, utility/storage rooms
	 PW-100 PW-100-347 PW-100-24	C25-26 C27-28	120/277 VAC, 50/60 Hz 347 VAC, 50/60 Hz 24 VDC	PIR Wall Switch Sensor	Small offices, small conference rooms, individual restrooms, lunch/ break rooms
	 PW-103N NEW!	C29-30	120/277 VAC, 50/60 Hz	PIR Multi-way Wall Switch Sensor with Nightlight	Small offices, small conference rooms, individual restrooms, lunch/ break rooms, hotel guest bathrooms
	 PW-200 PW-200-347	C31-32	120/277 VAC, 50/60 Hz 347 VAC, 50/60 Hz	PIR Dual Relay Wall Switch Sensor	Small offices, small conference rooms, individual restrooms, lunch/ break rooms
	 PW-203 NEW!	C33-34	120/277 VAC, 50/60 Hz	PIR Multi-way Dual Relay Wall Switch Sensor	Small offices, small conference rooms, individual restrooms, lunch/ break rooms
	 WD Series	C35-36	120 or 277 VAC, 60 Hz	PIR Dimmable Wall Switch Sensor	Small offices and small conference rooms
Ultrasonic	 UW-100 UW-100-347 UW-100-24	C37-38 C39-40	120/277 VAC, 50/60 Hz 347 VAC, 50/60 Hz 24 VDC	Ultrasonic Wall Switch Sensor	Individual restrooms, two-stall restrooms, utility/storage rooms
	 UW-200	C41-42	120/277 VAC, 50/60 Hz	Ultrasonic Dual Relay Wall Switch Sensor	Individual restrooms, two-stall restrooms, utility/storage rooms
Dual Technology	 DW-100 DW-100-347 DW-100-24	C43-44 C45-46	120/277 VAC, 50/60 Hz 347 VAC, 50/60 Hz 24 VDC	Dual Technology Wall Switch Sensor	Small and executive offices, small and medium conference rooms, lunch/break rooms
	 DW-103 NEW!	C47-48	120/277 VAC, 50/60 Hz	Dual Technology Multi-way Wall Switch Sensor	Small and executive offices, small and medium conference rooms, lunch/break rooms
	 DW-200	C49-50	120/277 VAC, 50/60 Hz	Dual Technology Dual Relay Wall Switch Sensor	Small and executive offices, small and medium conference rooms, lunch/break rooms
	 DW-203 NEW!	C51-52	120/277 VAC, 50/60 Hz	Dual Technology Multi-way Dual Relay Wall Switch Sensor	Small and executive offices, small and medium conference rooms, lunch/break rooms










Ceiling and Wall Mount Occupancy Sensors					
	Model #	Pages	Voltage	Description	Typical Applications
Passive Infrared	 CX-100 Series	C53-54	24 VDC	PIR Ceiling/Wall Sensor	Large offices, warehouses, computer rooms, open offices, classrooms, aisleways
	 WPIR	C55-56	24 VDC	PIR Ceiling Sensor	Small offices, copy rooms, break rooms, library book stacks
	 CB-100	C57-58	24 VDC	Low Temperature PIR Sensor	Cold storage, freezers, unconditioned spaces
	 CI-300 Series CI-355 Series	C59-60 C61-62	24 VDC 120/277/347 VAC, 50/60Hz	PIR Ceiling Sensor	Open offices, conference rooms, computer rooms, classrooms, warehouses
	 CI-200 Series	C63-64	24 VDC	PIR Ceiling Sensor	Open offices, conference rooms, computer rooms
	 CI-12 CI-24	C65-66	12 VDC 24 VDC	PIR HVAC/BAS Ceiling Sensor	Open offices, conference rooms, computer rooms
Ultrasonic	 UT-300 Series UT-355 Series	C67-68 C69-70	24 VDC 120/277/347 VAC, 50/60Hz	Ultrasonic Ceiling Sensor	Open offices, restrooms, conference rooms, large offices
	 WT Series	C71-72	24 VDC	Ultrasonic Ceiling Sensor	Open offices, restrooms, storage areas, conference rooms, hallways
	 W Series	C73-74	24 VDC	Ultrasonic Ceiling Sensor	Open offices, restrooms, storage areas, conference rooms, hallways
Dual Technology	 DT-200 Series	C75-76	24 VDC	Dual Technology Ceiling/Wall Sensor	Classrooms, conference rooms, training rooms
	 DT-300 Series DT-355 Series	C77-78 C79-80	24 VDC 120/277/347 VAC, 50/60Hz	Dual Technology Ceiling Sensor	Classrooms, conference rooms, training rooms, large offices, computer rooms



Occupancy Sensors Matrix

Power Packs							
Model #	Pages	Description	Voltage	Load Rating			Low Voltage Output
				Ballast(A)	Incan(A)	Motor(HP)	
 BZ-50	C81-82	Universal Voltage Power Pack	120/277 VAC, 50/60 Hz	20	20	1	24 VDC; 150 mA (relay connected)
 BZ-50RC	C83-84	Universal Voltage Power Pack with RJ45 connector	120/277 VAC, 50/60 Hz	20	20	1	24 VDC; 150 mA (relay connected)
 BZ-150	C85-86	Universal Voltage Power Pack for manual-on control	120/277 VAC, 50/60 Hz	20	20	1	24 VDC; 150 mA (relay connected)
 BZ-480	C87-88	2-phase Power Pack	480 VAC, 60 Hz	6	-	1	24VDC; 150mA (130mA with relay connected)
 B347D-P	C89-90	Power Pack	347 VAC, 60Hz	15	-	-	24 VDC; 150 mA, (114 mA with relay connected)
 S120/277/347E-P	C89-90	Auxiliary Relay Pack	120/277/347 VAC, 60Hz	20@120/277 15@347	13@120	1@120	
 A120C-P A277C-P	C95	Form C Power Pack	120 VAC, 60 Hz 277 VAC, 60 Hz	8NO/5NC 6NO/3 NC	5NO/3NC 5NO/2.5NC	1NO/.25NC 2NO/.5NC	24 VDC; 100 mA (64 mA with relay connected)
 C120E-P C277E-P	C95	2-relay Power Pack	120 VAC, 60 Hz 277 VAC, 60 Hz	20	-	-	24VDC; 150mA (114mA - 1 relay, 78mA - both relays connected)
 AT-120 AT-277	C95	Power Supply	120 VAC, 60 Hz 277 VAC, 60 Hz	-	-	-	24VDC; up to 800mA
 BD-100 BD-100M	C91-92	DIN Rail Mounted Power Pack	120/277 VAC, 50/60 Hz	20 20	20 20	1 1	24VDC; 175mA (relay connected)
 LC-100	C93-94	Intelligent Power Pack	120/277 VAC, 50/60 Hz	20	20	1	24VDC; 150mA



Time Switches				
Model #	Pages	Voltage	Description	Typical Applications
 TS -400 TS-400-24	C97-98 C99-100	120/277 VAC, 50/60 Hz 24 VDC	Digital Time Switch	Utility/storage rooms
Hotel Card Key Switches				
 HS-100 HS-150	C101-102	24 VAC/VDC 120/277 VAC, 50/60Hz	Low Voltage Card Key Switch Line Voltage Card Key Switch	Hotel guest rooms
Plug Load Control				
 IDP-3050	C103-104	120 VAC, 50/60 Hz, 15A	Eight outlet power strip with personal sensor	Cubicles, small and large offices, computer rooms, training rooms
Outdoor Sensors				
 EW-200-120 EW-200-277 EW-205-24 EW-205-120	C105-106 C107-108 C105-106	120 VAC, 60Hz 277 VAC, 60 Hz 24 VDC 120 VAC, 60 Hz	EW Outdoor Motion Sensor	Walkways, entryways, dock lighting, doorways, parking lots, garages, warehouses
Accessories				
Model #	Pages	Description		
 MB-1 MB-2	C109	MB sensor mounting brackets		
 WC-1 WC-2 WC-3 WC-4	C110	Protective cage for occupancy sensors		
Auditing Tool				
Model #	Pages	Operation	Description	Typical Applications
 IT-200	C111-112	Lithium battery operated	Intelitimer ProLogger	Auditing any building space

WS-250 Passive Infrared Wall Switch Sensor

180° coverage,
maximum of 900 ft²

Shallow (1") back housing and
flying leads for easy installation

Built-in light level sensor



Button provides positive
tactile feedback

Dual voltage model,
120/277 VAC

Compatible with all
electronic ballasts

PROJECT

LOCATION/TYPE

Product Overview

Description

The WS-250 Passive Infrared (PIR) Wall Switch Sensor turns lighting on and off based on occupancy and ambient light level. It replaces existing wall switches and fits behind a standard decorator wall plate. The WS-250 improves on the WS-200, featuring a shallower housing, flying leads and new control button.

Operation

The WS-250 utilizes advanced PIR technology to detect occupancy. Detection occurs when the WS-250 senses the difference between infrared energy from a human body in motion and the background space. Lighting automatically turns on when occupancy is detected. After a user-specified length of time when no occupancy is detected, lighting automatically switches off. The sensor can also be used with line voltage switches for multi-level lighting.

Light Level Sensor

The WS-250 features a built-in light level sensor. This feature holds lighting systems off when natural light levels are above the preset level. Once lights are switched on, the sensor will not switch them off even if daylight levels increase. Using the light level feature is optional and the setting is adjustable by the user.

Applications

The WS-250 has the flexibility to work in a variety of applications including offices, conference rooms, break rooms and utility rooms. Energy savings for these areas can be as high as 60% since lighting will no longer remain on once the room is vacant. With a competitive price, low installation cost, and high energy savings, paybacks are usually well under two years.

Features

- ASIC technology reduces components and enhances reliability; includes proprietary chip designed by WattStopper
- Pulse Count Processing eliminates false offs without reducing sensitivity
- Detection Signature Processing eliminates false triggers; provides immunity to RFI and EMI
- Zero crossing circuitry reduces stress on the relay and results in increased sensor life
- Time delay adjustment from 30 seconds up to 30 minutes
- Adjustable unit sensitivity from 20% to 100%
- Light level sensor holds lights off when ambient lighting is above the preset level
- Custom two-tier Fresnel lens enhances detection at the desktop level
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Patented voltage drop protection
- For safety, there is no leakage to load in the off mode and sensor is safety grounded
- LED indicates occupancy detection
- Compatible with decorator wall plates
- Qualifies for ARRA-funded public works projects

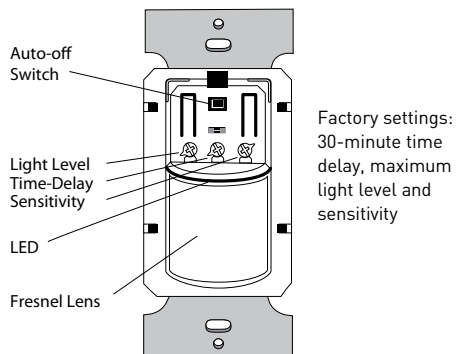


Specifications

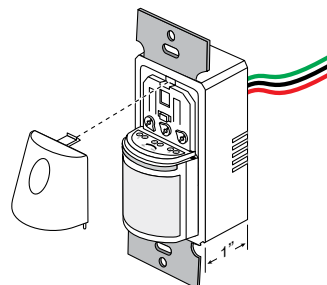
- 120/277 VAC, 60 Hz, or 347 VAC, 60 Hz
- Time delay adjustable from 30 seconds up to 30 minutes
- Adjustable unit sensitivity from 20% to 100%
- Adjustable light level setting of 2 to 200 foot-candles (21.5 to 2,153 lux)
- Compatible with all electronic ballasts and PL lamp ballasts
- Coverage: Major motion 35' x 30'
Minor motion 20' x 15'
- Dimensions: 2.6" x 1.7" x 1.55" (66.0mm x 43.1mm x 39.4mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Installation

Product Controls



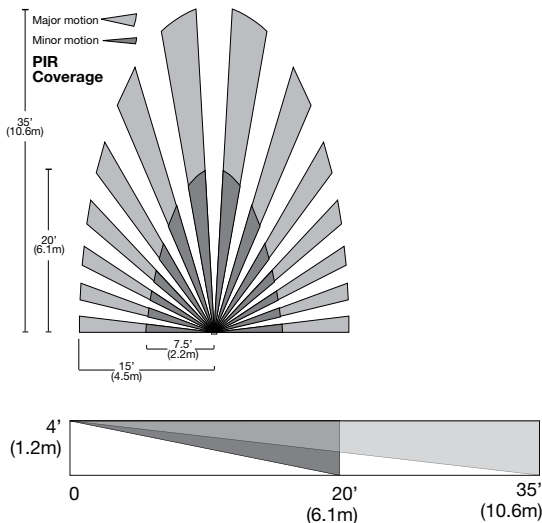
Installation



Extremely shallow (1") back housing and 6" flying leads facilitate quick installation in standard wall box

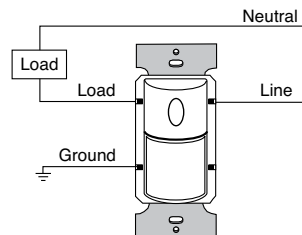
Coverage & Wiring

Coverage Pattern

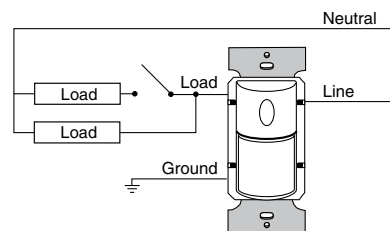


For best performance, WattStopper recommends using this sensor in spaces no larger than 15' x 12'.

Single Level Lighting



Manual Bi-level Lighting



Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> WS-250-W	White	120 VAC; 60 Hz or 277 VAC; 60 Hz	@ 120 VAC, 0-800 W ballast or tungsten or 1/6 hp @ 277 VAC 0-1200 W ballast
<input type="checkbox"/> WS-250-W-U			
<input type="checkbox"/> WS-250-W-FTA			
<input type="checkbox"/> WS-250-LA	Light Almond		
<input type="checkbox"/> WS-250-I	Ivory		
<input type="checkbox"/> WS-250-I-U			
<input type="checkbox"/> WS-250-I-FTA			
<input type="checkbox"/> WS-250-G	Gray		
<input type="checkbox"/> WS-250-B	Black		
<input type="checkbox"/> WS-250-347-W	White	347 VAC; 60 Hz	0-1200 W ballast
<input type="checkbox"/> WS-250-347-I	Ivory		
<input type="checkbox"/> WS-250-347-G	Gray		
<input type="checkbox"/> WS-250-347-B	Black		

Order wall plate separately.

PW-100 Passive Infrared Wall Switch Sensor

High sensitivity and dense coverage for exceptional performance

Color-matched lens and low profile for appealing design



Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Defaults to Manual-ON operation for maximum energy savings

Part of a comprehensive line of PIR, Ultrasonic and Dual Technology wall switch sensors

PROJECT

LOCATION/TYPE

Product Overview

Description

The PW-100 passive infrared (PIR) wall switch sensor can turn lights OFF and ON based on occupancy. It is characterized by high sensitivity to small and large movements, appealing aesthetics, and a variety of features.

Operation

The PW-100 replaces existing wall switches and fits in a single gang junction box. It uses advanced PIR technology to detect occupancy and keep lighting ON when it is needed. Once the space is vacated and the time delay elapses, lights automatically turn OFF. DIP switch settings allow for a variety of control options such as Auto-ON operation, walk-through and test modes.

Manual-on Control

Factory default operation is for Manual-ON, so that users turn lights on only when needed. This control strategy is proven to save more energy than Auto-ON, and will be required where the ASHRAE 90.1-2010 energy code is adopted. If desired, the PW-100 may be reconfigured to turn lights on automatically.

Applications

The PW-100 sensor is well suited for small, enclosed spaces with clear line of sight of the occupant. Common applications include small office, small conference room and lunch/break rooms.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible and/or visual alerts for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- LED indicates occupancy detection
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- 2-wire and 3-wire models available for applications with or without neutral wire
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates
- Qualifies for ARRA-funded public works projects

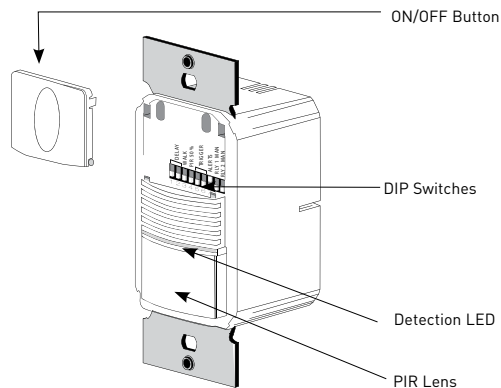


Specifications

- PW-100, PW-101: 120/277 VAC; 50/60 Hz @ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
- PW-100-347: 347 VAC; 50/60Hz; 0-1500 W ballast
- Time delays: 5, 10, 15, 20, 25 or 30 minutes, walk-through, test-mode
- Coverage: Major motion 35' x 30' Minor motion 20' x 15'
- Sensitivity adjustment: PIR (high/low)
- Dimensions: 2.73" x 1.76" x 1.83" (69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	3
Test	↓	↓	↓
5 minutes	↓	↑	↑
10 minutes	↓	↑	↑
15 minutes	↓	↑	↑
20 minutes	↑	↑	↑
25 minutes	↑	↑	↑
30 minutes	↑	↑	↑
Service	↑	↑	↑

Walk-Through	4
Disabled	↓
Enabled	↑

Visible Alert	6
Disabled	↓
Enabled	↑

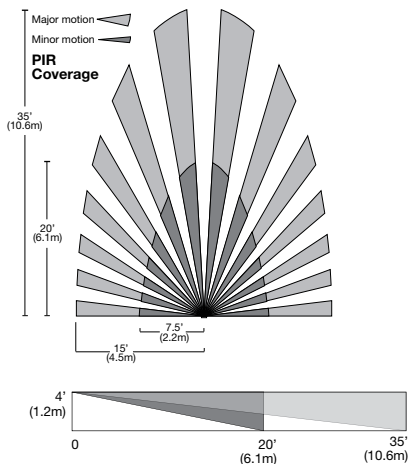
ON Mode	8
Auto On	↓
Manual On	↑

⊙ Service bypasses occupancy & light level functions. Control the load manually using ON/OFF button.

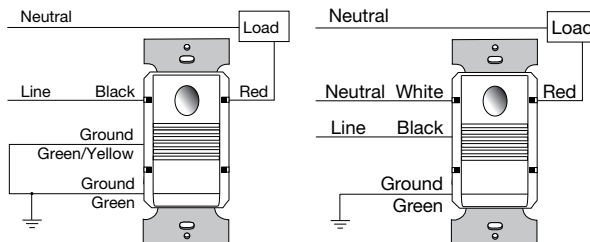
↑=ON ↓=OFF
◀=Factory Setting

Coverage & Wiring

Coverage Pattern



Wiring Diagrams



Wiring for PW-100 with no neutral wire run to the switch box.

Wiring for PW-101 with a neutral connection in the switch box.

For best performance, WattStopper recommends using this sensor in spaces no larger than 15' x 12'.

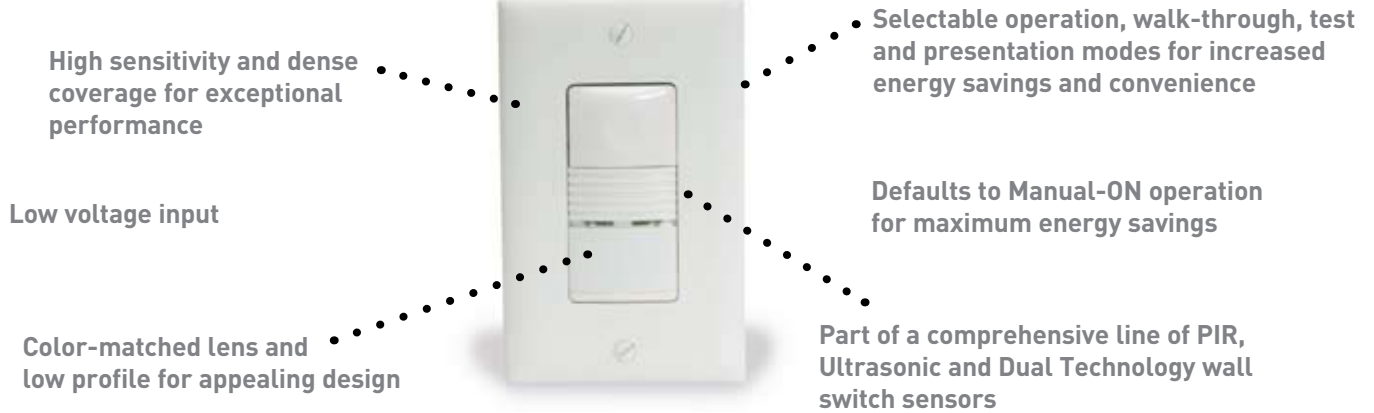
Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> PW-100-W	White	120/277 VAC; 50/60 Hz 2-wire sensor; no neutral connection	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> PW-100-W-U			
<input type="checkbox"/> PW-100-W-FTA			
<input type="checkbox"/> PW-100-LA	Lt. Almond	120/277 VAC; 50/60 Hz 3-wire sensor; requires neutral connection	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> PW-100-I			
<input type="checkbox"/> PW-100-I-U			
<input type="checkbox"/> PW-100-I-FTA	Ivory	347 VAC; 50/60 Hz	0-1500 W ballast
<input type="checkbox"/> PW-100-G			
<input type="checkbox"/> PW-100-B			
<input type="checkbox"/> PW-101-W	White	120/277 VAC; 50/60 Hz 3-wire sensor; requires neutral connection	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> PW-101-LA			
<input type="checkbox"/> PW-101-I			
<input type="checkbox"/> PW-101-G	Grey	347 VAC; 50/60 Hz	0-1500 W ballast
<input type="checkbox"/> PW-101-B			
<input type="checkbox"/> PW-100-347-W			
<input type="checkbox"/> PW-100-347-LA			
<input type="checkbox"/> PW-100-347-I			
<input type="checkbox"/> PW-100-347-G	Grey	347 VAC; 50/60 Hz	0-1500 W ballast
<input type="checkbox"/> PW-100-347-B			

Order wall plate separately.



PW-100-24 Passive Infrared Low Voltage Wall Switch Sensor



PROJECT
LOCATION/TYPE

Product Overview

Description

The PW-100-24 passive infrared (PIR) low voltage wall switch sensor can turn lights OFF and ON based on occupancy. It is characterized by high sensitivity to small and large movements, appealing aesthetics, and a variety of features.

Operation

Factory default operation is for Manual-ON, so that users turn lights on only when needed. The PW-100-24 uses advanced PIR technology to detect occupancy and keep lighting ON when it is needed. Once the space is vacated and the time delay elapses, lights automatically turn OFF. DIP switch settings allow for a variety of control options such as Auto-ON operation, walk-through and test modes.

Low Voltage

Low voltage wall switch sensors can offer advantages over line voltage models. Using an isolated form-C relay output, the PW-100-24 sensor integrates seamlessly with VAV or other building systems for greater energy savings. Multiple PW-100-24 sensors can also be connected on a single circuit and can switch loads that exceed the rating of a standard line voltage switch. In addition, low voltage sensor installations do not require the use of conduits reducing installation costs and making relocation easier.

Applications

The PW-100-24 is the perfect choice for locations where line voltage wiring is not possible or for jurisdictions prohibiting the use of 277V switches. It is well suited for small enclosed spaces with clear line of sight of the occupant. Common applications include small offices, small conference rooms, and lunch/break rooms.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- LED indicates occupancy detection
- Selectable audible and/or visual alerts for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates

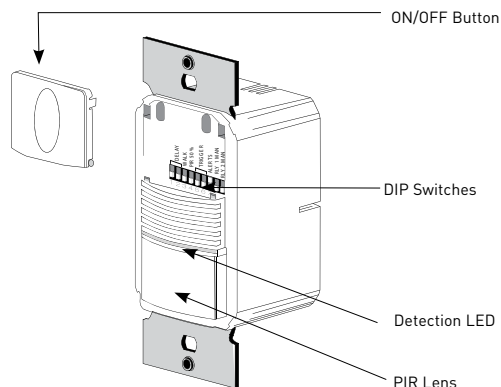


Specifications

- 18-24 VDC, 24 VAC and halfwave rectified AC
- Current consumption: 20 mA
- PW-100-24 contains single-pole, double-throw isolated relay rated for 1 A @ 30 VDC
- Time delays: 5, 10, 15, 20, 25 or 30 minutes, walk-through, test-mode
- Coverage: Major motion 35' x 30'
Minor motion 20' x 15'
- Sensitivity adjustment: PIR (high/low)
- Dimensions: 2.73" x 1.76" x 1.83"
(69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	3
Test	↓	↓	↓
5 minutes	↓	↑	↑
10 minutes	↑	↑	↑
15 minutes	↑	↑	↑
20 minutes	↑	↑	↑
25 minutes	↑	↑	↑
30 minutes	↑	↑	↑
Service	↑	↑	↑

Walk-Through	4
Disabled	↓
Enabled	↑

Visible Alert	6
Disabled	↓
Enabled	↑

PIR Sensitivity	5
High	↓
Low, 50%	↑

Audible Alert	7
Disabled	↓
Enabled	↑

ON Mode	8
Auto On	↓
Manual On	↑

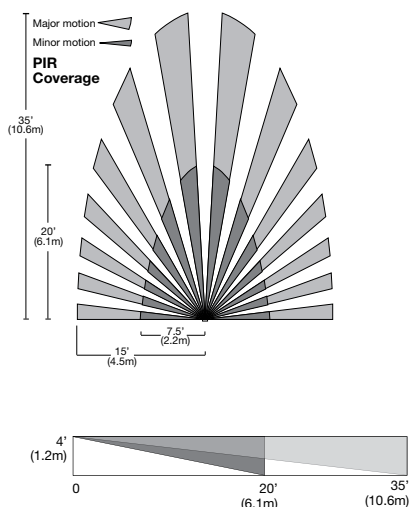
Switch 9 is not used

↑ = ON ↓ = OFF
◀ = Factory Setting

⊗ Service bypasses occupancy & light level functions. Control the load manually using ON/OFF button.

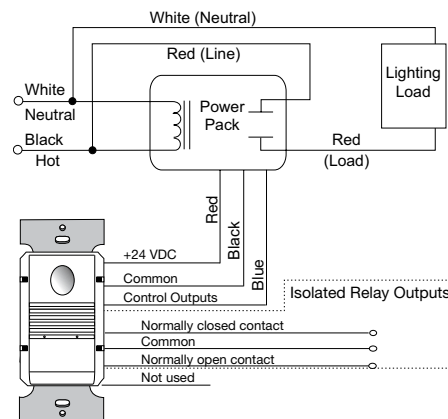
Coverage & Wiring

Coverage Pattern



For best performance, WattStopper recommends using this sensor in spaces no larger than 15' x 12'.

PW-100-24 Low Voltage Wiring



Ordering Information

Catalog No.	Color	Voltage
<input type="checkbox"/> PW-100-24-W	White	18-24 VDC, 24 VAC and halfwave rectified AC
<input type="checkbox"/> PW-100-24-LA	Lt. Almond	
<input type="checkbox"/> PW-100-24-I	Ivory	
<input type="checkbox"/> PW-100-24-G	Grey	
<input type="checkbox"/> PW-100-24-B	Black	

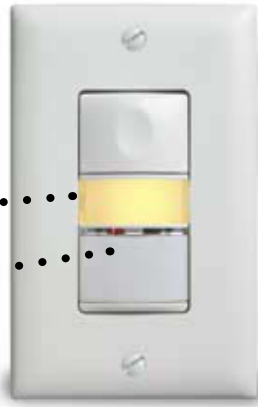
Order wall plate separately.

PW-103N Passive Infrared Multi-way Wall Switch Sensor with Nightlight

High sensitivity and dense coverage for exceptional performance

Optional nightlight with choice of three colors and two light levels

Color-matched lens and low profile for appealing design



Allows multi-way control from one of up to four control locations

Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Part of a comprehensive line of PIR, Ultrasonic and Dual Technology wall switch sensors

PROJECT

LOCATION/TYPE

Product Overview

Description

The PW-103N passive infrared (PIR) multi-way wall switch sensor can turn lights OFF and ON based on occupancy. It provides high sensitivity to small and large movements, appealing aesthetics, a field selectable nightlight and a variety of features.

Operation

The PW-103N replaces existing wall switches and fits in a single gang junction box. It uses advanced PIR technology to detect occupancy and keep lighting ON when it is needed. Once the space is vacated and the time delay elapses, lights automatically turn OFF. DIP switch settings allow control options including Auto-ON operation, walk-through and test modes. The PW-103N has an LED nightlight that can be set to high or low intensity and to amber, white or blue, or to off. Multiple PW-103N sensors may be used for control of one or more loads from up to four locations.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible and/or visual alerts for impending shutoff

Multi-way Control

The PW-103N offers true multi-way functionality. When connected sensors are in Manual-ON mode (default), an occupant must press the ON/OFF button of one of the sensors to turn the load ON. When sensors are in Auto-ON mode, the load will automatically turn ON when occupancy is detected by one of the sensors. Lights will remain ON as long as occupancy is detected. The last sensor to detect occupancy will turn the load OFF after the time delay has elapsed. In either operating mode, an occupant may turn the load OFF manually.

Applications

The PW-103N sensor is well suited for spaces with multiple doorways or switch locations, or spaces that would benefit from nightlighting. Common applications include private offices, small conference rooms, lunch/break rooms, individual restrooms and hotel guest bathrooms.

- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- LED indicates occupancy detection
- Field selectable high or low intensity amber, white or blue nightlight
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates

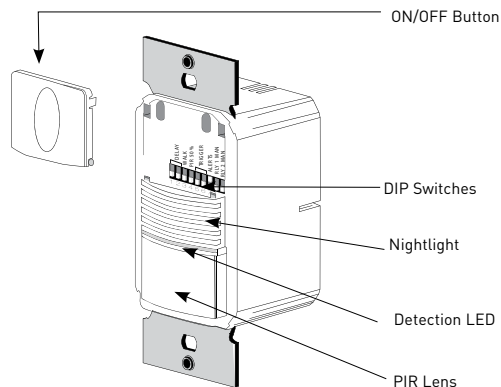


Specifications

- PW-103N: 120/277 VAC; 50/60 Hz
@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
@ 277 VAC, 0-1200 W ballast
- Time delays: 5, 10, 15, 20, 25 or 30 minutes, walk-through, test-mode
- Coverage: Major motion 35' x 30'
Minor motion 20' x 15'
- Sensitivity adjustment: PIR (high/low)
- Dimensions: 2.73" x 1.76" x 1.83"
(69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	3
Test	↓	↓	↓
5 minutes	↓	↓	↑
10 minutes	↓	↓	↑
15 minutes	↓	↑	↑
20 minutes	↑	↑	↓
25 minutes	↑	↑	↓
30 minutes	↑	↑	↓
Service	↑	↑	↑

Walk-Through	4
Disabled	↓
Enabled	↑

PIR Sensitivity	5
High	↓
Low, 50%	↑

Visible Alert	6
Disabled	↓
Enabled	↑

Audible Alert	7
Disabled	↓
Enabled	↑

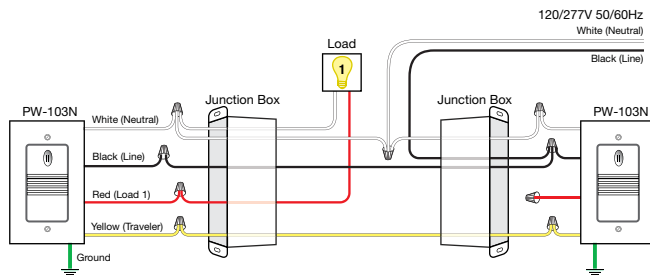
On Mode	8
Auto On	↓
Manual On	↑

Nightlight	9
Disabled	↓
Enabled	↑

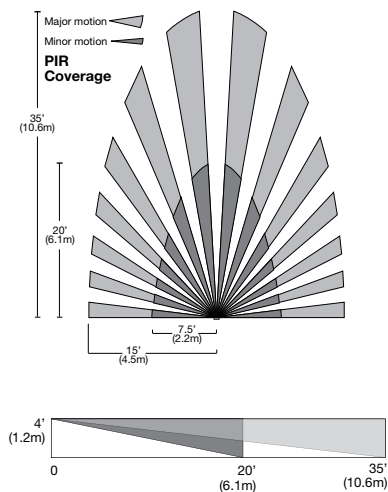
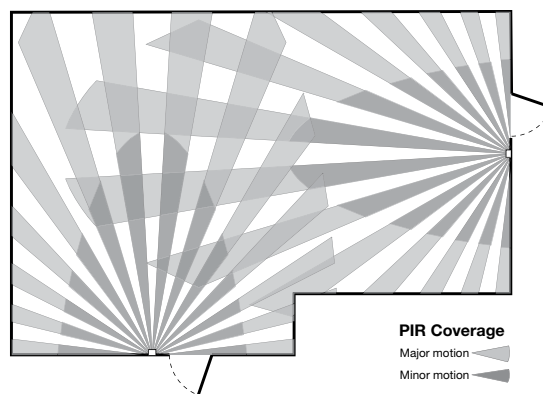
Service bypasses occupancy & light level functions. Control the load manually using ON/OFF button. ↑=ON ↓=OFF ◀=Factory Setting

Coverage & Wiring

Multi-way Wiring Diagram



Coverage Pattern



For best performance in single location applications, WattStopper recommends using this sensor in spaces no larger than 15' x 12'. In multi-way applications, each connected sensor expands the coverage area.

Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> PW-103N-W	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> PW-103N-LA	Lt. Almond		
<input type="checkbox"/> PW-103N-I	Ivory		
<input type="checkbox"/> PW-103N-G	Grey		
<input type="checkbox"/> PW-103N-B	Black		

Order wall plate separately.

PW-200 Passive Infrared Dual Relay Wall Switch Sensor

High sensitivity and dense coverage for exceptional performance

Two relays for control of two separate lighting loads or circuits

Color-matched lens and low profile for appealing design



Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Defaults to Auto-ON to 50% operation for maximum energy savings

Part of a comprehensive line of PIR, Ultrasonic and Dual Technology wall switch sensors

Product Overview

Description

The PW-200 passive infrared (PIR) wall switch sensor turns lights ON and OFF based on occupancy. It contains two relays for controlling two independent lighting loads or circuits, and a variety of features.

Operation

The PW-200 replaces existing wall switches and fits in a single gang junction box. Each of the PW-200's relays can control a separate lighting load. It uses advanced PIR technology to detect occupancy and turn the first relay ON. Once the space is vacated and the time delay elapses, lights automatically turn OFF. Dual ON/OFF buttons allow the user to manually turn on and off each of the loads. DIP switch settings allow for a variety of control options such as Manual-ON or Auto-ON for each relay, walk-through and test modes.

PROJECT

LOCATION/TYPE

Bi-Level Control

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

Applications

The PW-200 sensor is well suited for small, enclosed spaces with a clear line of sight of the occupant. In addition, its dual relays allow bi-level switching or control of a secondary load. Common applications include small office, small conference room and lunch/break rooms.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing on both relays for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation, selectable for each relay
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- LED indicates occupancy detection
- Selectable audible and/or visual alerts for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates
- Qualifies for ARRA-funded public works projects

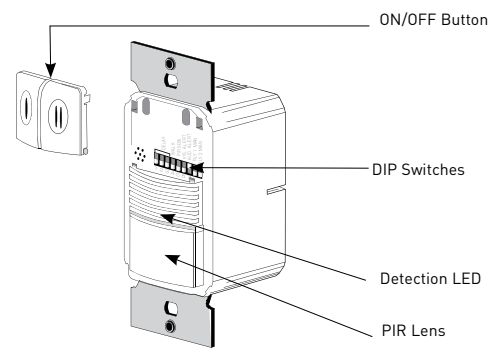


Specifications

- PW-200: 120/277 VAC; 50/60 Hz
@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
@ 277 VAC, 0-1200 W ballast
- PW-200-347: 347 VAC; 50/60 Hz; 0-1500 W ballast
- Time delays: 5, 10, 15, 20, 25 or 30 minutes, walk-through, test-mode
- Coverage: Major motion 35' x 30'
Minor motion 20' x 15'
- Sensitivity adjustment: PIR (high/low)
- Dimensions: 2.73" x 1.76" x 1.83"
(69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	3
Test	↓	↓	↓
5 minutes	↓	↑	↑
10 minutes	↓	↑	↑
15 minutes	↓	↑	↑
20 minutes	↑	↓	↓
25 minutes	↑	↓	↓
30 minutes	↑	↓	↓
override	↑	↑	↑

Walk-Through	4
Disabled	↓
Enabled	↑

Visible Alert	6
Disabled	↓
Enabled	↑

PIR Sensitivity	5
High	↓
Low, 50%	↑

Audible Alert	7
Disabled	↓
Enabled	↑

Relay 1 Mode	8
Auto On	↓
Manual On	↑

Relay 2 Mode	9
Auto On	↓
Manual On	↑

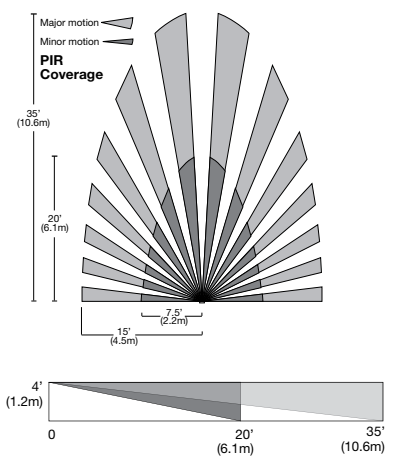
⊙ Bypass occupancy & light level functions. Loads are manually controlled with PW-200 buttons.

↑=ON ↓=OFF

Factory Settings:
 ↓ All models
 ▲ PW-100 series
 ▲ PW-200 series

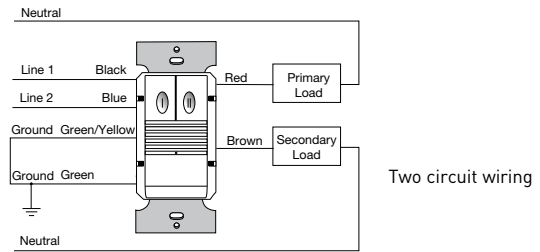
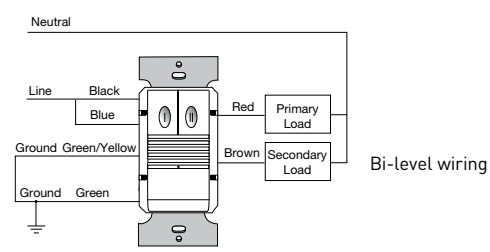
Coverage & Wiring

Coverage Pattern



For best performance, WattStopper recommends using this sensor in spaces no larger than 15' x 12'.

Wiring Diagrams




Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> PW-200-W <input type="checkbox"/> PW-200-W-U <input type="checkbox"/> PW-200-W-FTA	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> PW-200-LA	Lt. Almond		
<input type="checkbox"/> PW-200-I <input type="checkbox"/> PW-200-I-U <input type="checkbox"/> PW-200-I-FTA	Ivory		
<input type="checkbox"/> PW-200-G	Grey		
<input type="checkbox"/> PW-200-B	Black		
<input type="checkbox"/> PW-200-347-W <input type="checkbox"/> PW-200-347-LA <input type="checkbox"/> PW-200-347-I <input type="checkbox"/> PW-200-347-G <input type="checkbox"/> PW-200-347-B	White Lt. Almond Ivory Grey Black	347 VAC; 50/60 Hz	0-1500 W ballast

Order wall plate separately.



PW-203 Passive Infrared Multi-way Dual Relay Wall Switch Sensor



High sensitivity and dense coverage for exceptional performance

Two relays for control of two separate lighting loads

Color-matched lens and low profile for appealing design

- Allows multi-way control from one of up to four control locations

Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Part of a comprehensive line of PIR, Ultrasonic and Dual Technology wall switch sensors

PROJECT
LOCATION/TYPE

Product Overview

Description

The PW-203 passive infrared (PIR) multi-way wall switch sensor turns lights ON and OFF based on occupancy. It contains two relays for controlling two independent lighting loads and a variety of features.

Operation

The PW-203 replaces existing wall switches and fits in a single gang box. Each of the PW-203's relays can control a separate lighting load. It uses advanced PIR technology to detect occupancy and turn the first relay ON. Once the space is vacated and the time delay elapses, lights automatically turn OFF. Dual ON/OFF buttons allow the user to manually switch each of the loads, and each relay can be set for Manual-ON or Auto-ON. The PW-203 features a built-in light level sensor that controls the second relay. If adequate daylight is present, the sensor will hold the second relay off until daylight levels drop for increased energy savings.

Multi-way Control

Multiple PW-203 sensors may be connected for control from up to four locations, and provide true multi-way functionality. When Manual-ON mode is active, an occupant must press an ON/OFF button on one of the sensors to turn a load ON. When Auto-ON mode is active, the load will automatically turn ON when occupancy is detected by one of the sensors. Lights will remain ON as long as occupancy is detected. The last sensor to detect occupancy will turn the loads OFF after the time delay has elapsed. In either operating mode, an occupant may turn the load OFF manually.

Applications

The PW-203 sensor is well suited for spaces requiring bi-level lighting control, or control of two independent loads, that have multiple doorways or switch locations. Common applications include small offices, small conference rooms and lunch/break rooms.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing on both relays for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation, selectable for each relay
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible and/or visual alerts for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- LED indicates occupancy detection
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates

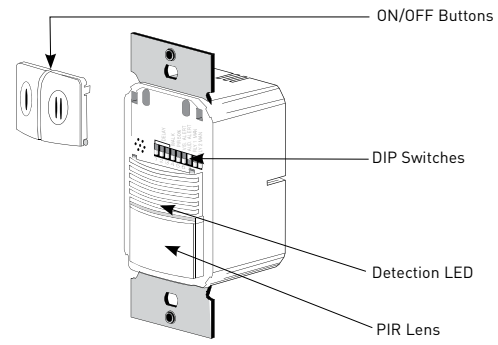


Specifications

- 120/277 VAC; 50/60 Hz
 @ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
 @ 277 VAC, 0-1200 W ballast
- Time delays: 5, 10, 15, 20, 25 or 30 minutes, walk-through, test-mode
- Coverage: Major motion 35' x 30'
 Minor motion 20' x 15'
- Sensitivity adjustment: PIR (high/low)
- Dimensions: 2.73" x 1.76" x 1.83"
 (69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	3
Test	↓	↓	↓
5 minutes	↓	↓	↑
10 minutes	↓	↑	↑
15 minutes	↑	↑	↑
20 minutes	↑	↓	↓
25 minutes	↑	↓	↑
30 minutes	↑	↓	↑
Service	↑	↑	↑

Walk-Through	4
Disabled	↓
Enabled	↑

Time Delay	Visible Alerts	Relay 1 Mode	Relay 2 Mode
1	2	3	4
5	6	7	8
9	10	11	12

Audible Alert	7
Disabled	↓
Enabled	↑

PIR Sensitivity	5
High	↓
Low, 50%	↑

Visible Alert	6
Disabled	↓
Enabled	↑

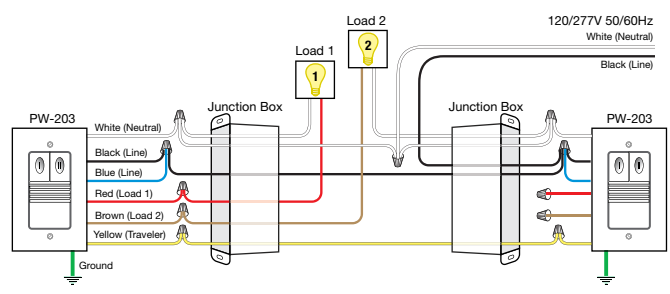
Relay 1 Mode	8
Auto On	↓
Manual On	↑

Relay 2 Mode	9
Auto On	↓
Manual On	↑

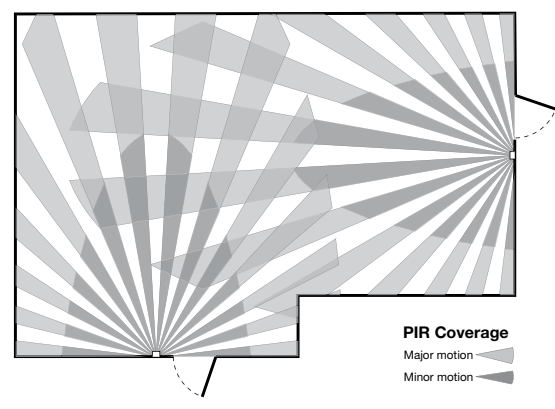
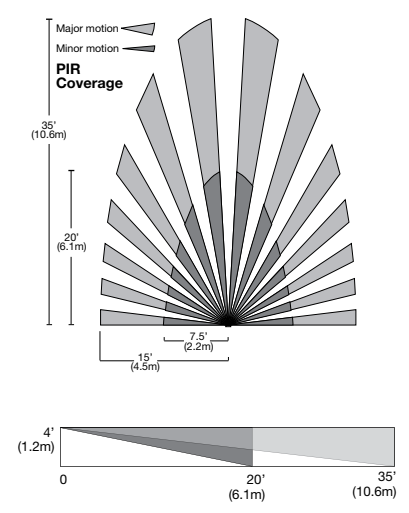
Service bypasses occupancy & light level functions. Control the load manually using ON/OFF button. ↑=ON ↓=OFF ◀=Factory Setting

Coverage & Wiring

Multi-way Bi-level Wiring Diagram



Coverage Patterns



For best performance in single location applications, WattStopper recommends using this sensor in spaces no larger than 15' x 12'. In multi-way applications, each connected sensor expands the coverage area.

Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> PW-203-W	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> PW-203-LA	Lt. Almond		
<input type="checkbox"/> PW-203-I	Ivory		
<input type="checkbox"/> PW-203-G	Grey		
<input type="checkbox"/> PW-203-B	Black		

Order wall plate separately.

WD Passive Infrared Dimmable Wall Switch Sensor

Occupancy sensing
dimmable wall switch

Slide dimmer adjusts
light level

Low profile, flat
decorator design



Works with dimming
ballasts* or incandescent lamps

Vandal resistant,
hard lens

ASIC enhances
reliability and helps to
eliminate false triggers

PROJECT

LOCATION/TYPE

Product Overview

Description

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

Operation

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

Dimming Feature

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

Applications

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

Features

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

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

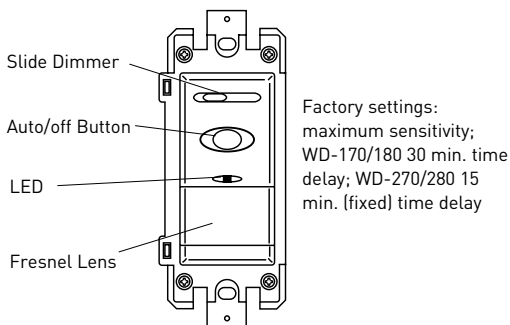


Specifications

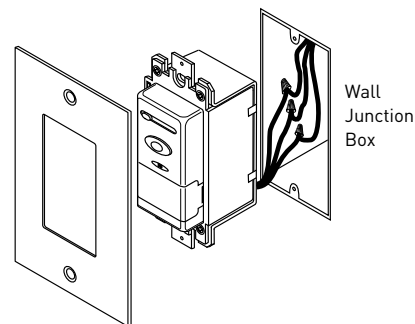
- WD-170, WD-270 operate at 120 VAC; WD-180, WD-280 operate at 277 VAC
- Maximum 300 ft² (27.8 m²); 150 ft² (13.9 m²) for desktop activity
- 1.0 mm hard poly IR 2 lens
- WD-170, WD-180: time delay adjustable during installation from 30 seconds up to 30 minutes
- WD-270, WD-280: fixed initial 15 min time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

Controls & Installation

Product Controls

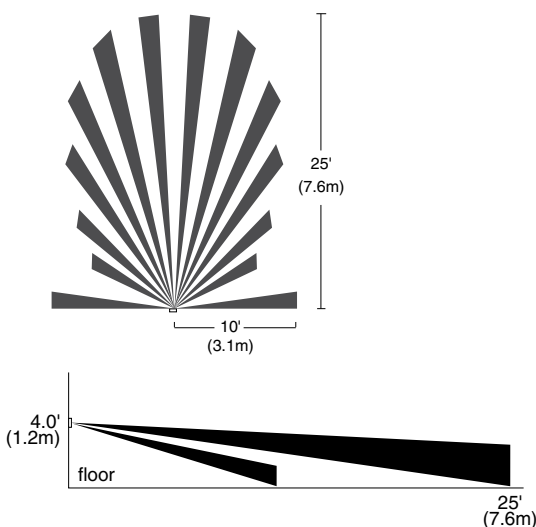


Installation



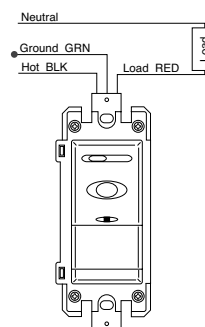
Coverage & Wiring

Coverage Pattern

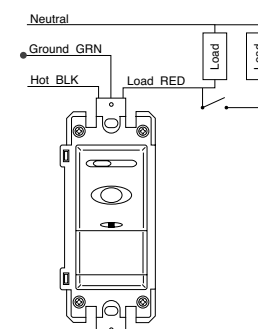


The 2-level lens provides superior coverage at a desk-top level by allowing the sensor to detect vertical as well as horizontal motion.

Single Level Lighting



Manual Bi-level Lighting

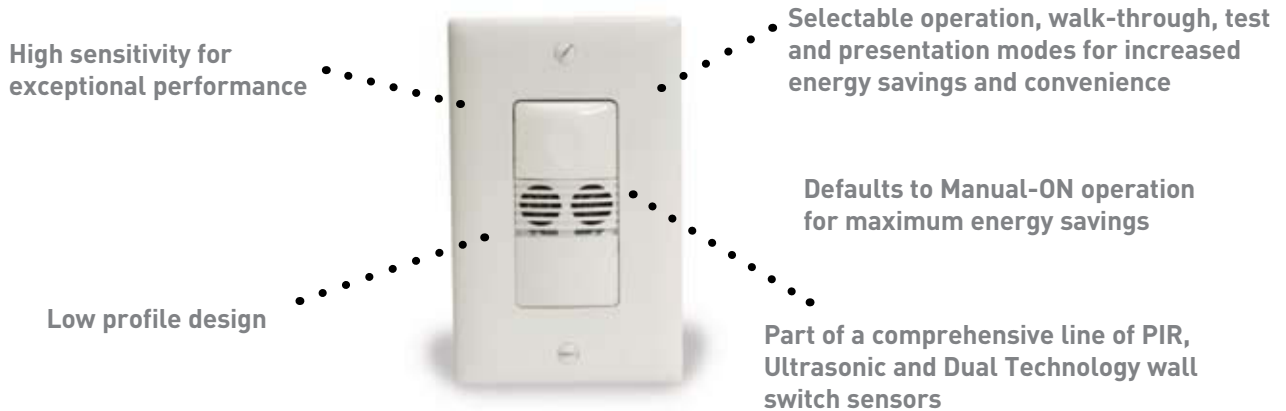


Ordering Information

Catalog No.	Color	Voltage	Load Rating	Coverage	OFF Mode
<input type="checkbox"/> WD-170-W	White	120 VAC; 60 Hz	10-500 W Ballast 0-500W Tungsten	180°, 300 ft ² [27.9 m ²]	Automatic-OFF
<input type="checkbox"/> WD-170-A	Almond				
<input type="checkbox"/> WD-170-I	Ivory				
<input type="checkbox"/> WD-180-W	White	277 VAC; 60 HZ	10-500 Watt Ballast	180°, 300 ft ² [27.9 m ²]	Automatic-OFF
<input type="checkbox"/> WD-180-A	Almond				
<input type="checkbox"/> WD-180-I	Ivory				
<input type="checkbox"/> WD-270-W	White	120 VAC; 60 Hz	10-500 W Ballast, 0-500W Tungsten	180°, 300 ft ² [27.9 m ²]	Dim-bef-disconnect
<input type="checkbox"/> WD-270-A	Almond				
<input type="checkbox"/> WD-270-I	Ivory				
<input type="checkbox"/> WD-280-W	White	277 VAC; 60 HZ	10-500 Watt Ballast	180°, 300 ft ² [27.9 m ²]	Dim-bef-disconnect
<input type="checkbox"/> WD-280-A	Almond				
<input type="checkbox"/> WD-280-I	Ivory				

Order wall plate separately.

UW-100 Ultrasonic Wall Switch Sensor



PROJECT

LOCATION/TYPE

Product Overview

Description

The UW-100 ultrasonic wall switch sensor can turn lights OFF and ON based on occupancy. It is characterized by high sensitivity to small and large movements, appealing aesthetics, and a variety of features.

Operation

The UW-100 fits in a single junction box. It uses high frequency (40kHz) ultrasound to detect occupancy and keep lighting ON when it is needed. Once the space is vacated and the time delay elapses, lights automatically turn OFF. DIP switch settings allow for a variety of control options such as Auto-ON operation, walk-through and test modes.

Manual-on Control

Factory default operation is for Manual-ON, so that users turn lights on only when needed. This control strategy is proven to save more energy than Auto-ON, and will be required where the ASHRAE 90.1-2010 energy code is adopted. If desired, the UW-100 may be reconfigured to turn lights on automatically.

Applications

The UW-100 sensor is ideal for applications where the sensor may have a partially obstructed line of sight of the occupant. Common applications include individual restrooms, restrooms with two stalls and utility/storage rooms.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Choice of Manual-ON or Auto-ON operation
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible and/or visual alerts for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- LED indicates occupancy detection
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates



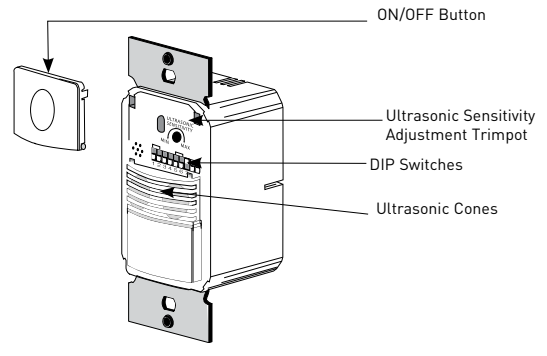
Specifications

- UW-100: 120/277 VAC; 50/60 Hz
@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
@ 277 VAC, 0-1200 W ballast
- UW-100-347: 347 VAC; 50/60Hz, 0-1500 W ballast
- Time delays: 5, 10, 15, 20, 25 or 30 minutes, walk-through, test-mode

- Coverage: Major motion 20' x 20'
Minor motion 15' x 15'
- Sensitivity adjustment: Ultrasonic (fully variable)
- Dimensions: 2.73" x 1.76" x 1.83"
(69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	3
Test	↓	↓	↓
5 minutes	↓	↓	↑
10 minutes	↓	↓	↑
15 minutes	↓	↓	↑
20 minutes	↑	↑	↑
25 minutes	↑	↑	↑
30 minutes	↑	↑	↑
Service	↑	↑	↑

Audible Alert	6
Disabled	↓
Enabled	↑

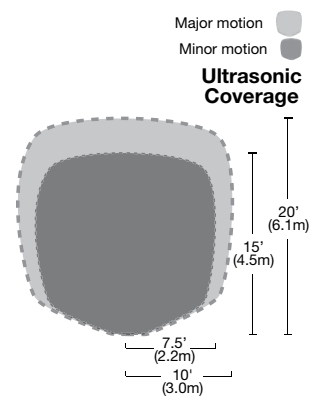
ON Mode	7
Auto On	↓
Manual On	↑

Switches 8 & 9 are not used.
 ↑=ON ↓=OFF
 ◀=Factory Setting

⊗ Service bypasses occupancy & light level functions. Disables ultrasonic transmissions. Manual load control with ON/OFF button.

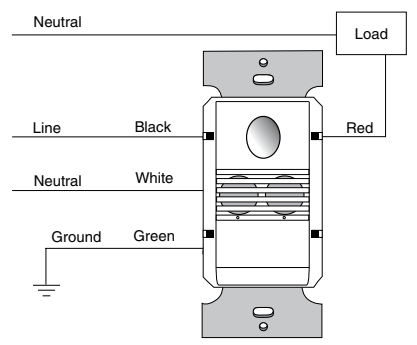
Coverage & Wiring

Coverage Pattern



For best performance, WattStopper recommends using this sensor in spaces no larger than 15' x 15'.

Wiring Diagram



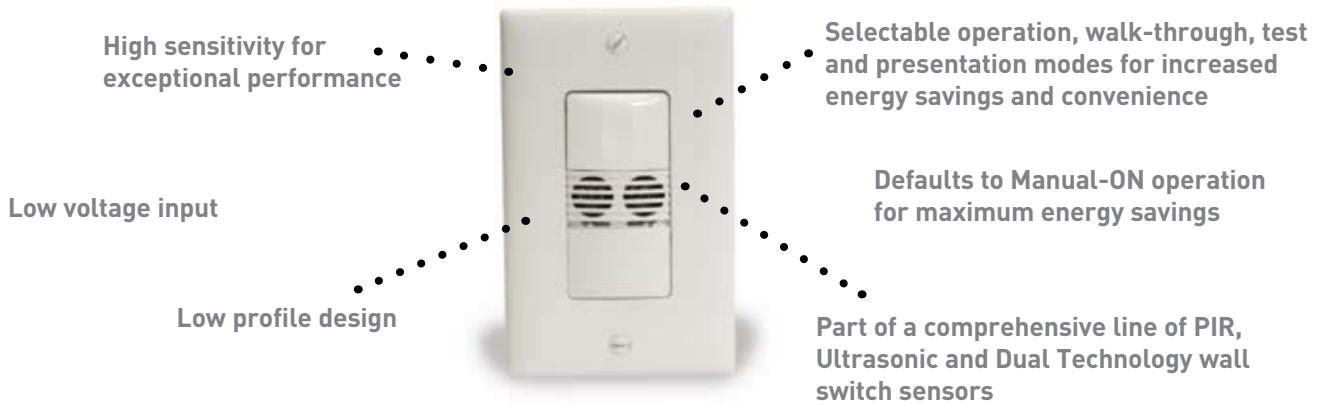
Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> UW-100-W	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> UW-100-LA	Lt. Almond		
<input type="checkbox"/> UW-100-I	Ivory		
<input type="checkbox"/> UW-100-G	Grey		
<input type="checkbox"/> UW-100-B	Black		
<input type="checkbox"/> UW-100-347-W	White	347 VAC; 50/60 Hz	0-1500 W ballast
<input type="checkbox"/> UW-100-347-LA	Lt. Almond		
<input type="checkbox"/> UW-100-347-I	Ivory		
<input type="checkbox"/> UW-100-347-G	Grey		
<input type="checkbox"/> UW-100-347-B	Black		

Order wall plate separately.



UW-100-24 Ultrasonic Low Voltage Wall Switch Sensor



PROJECT
LOCATION/TYPE

Product Overview

Description

The UW-100-24 ultrasonic low voltage wall switch sensor can turn lights OFF and ON based on occupancy. It is characterized by high sensitivity to small and large movements, appealing aesthetics, and a variety of features.

Operation

Factory default operation is for Manual-ON, so that users turn lights on only when needed. The UW-100-24 uses high frequency (40kHz) ultrasound to detect occupancy and keep lighting ON. Once the space is vacated and the time delay elapses, lights automatically turn OFF. DIP switch settings allow for a variety of control options such as Auto-ON operation, walk-through and test modes.

Low Voltage

Low voltage wall switch sensors can offer advantages over line voltage models. Using an isolated form-C relay output, the UW-100-24 sensor integrates seamlessly with VAV or other building systems for greater energy savings. Multiple UW-100-24 sensors can also be connected on a single circuit and can switch loads that exceed the rating of a standard line voltage switch. In addition, low voltage sensor installations do not require the use of conduits reducing installation costs and making relocation easier.

Applications

The UW-100-24 is the perfect choice for locations where line voltage wiring is not possible or for jurisdictions prohibiting the use of 277V switches. It is well suited for applications where the sensor may have a partially obstructed line of sight of the occupant such as individual restrooms, restrooms with two stalls and utility/storage rooms.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Choice of Manual-ON or Auto-ON operation
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible and/or visual alerts for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- LED indicates occupancy detection
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates

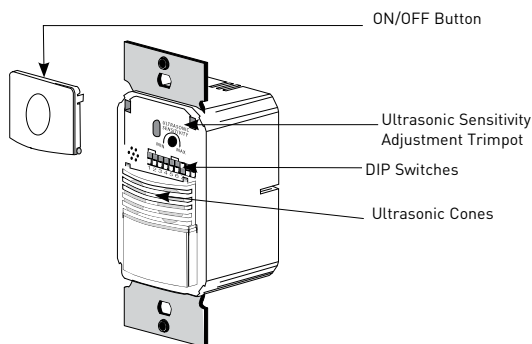


Specifications

- 18-24 VDC, 24 VAC and halfwave rectified AC
- Current consumption: 35 mA
- UW-100-24 contains single-pole, double-throw isolated relay rated for 1 A @ 30 VDC
- Time delays: 5, 10, 15, 20, 25 or 30 minutes, walk-through, test-mode
- Coverage: Major motion 20' x 20'
Minor motion 15' x 15'
- Sensitivity adjustment: Ultrasonic (fully variable)
- Dimensions: 2.73" x 1.76" x 1.83"
(69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	3
Test	↓	↓	↓
5 minutes	↓	↓	↑
10 minutes	↓	↑	↑
15 minutes	↓	↑	↑
20 minutes	↑	↓	↑
25 minutes	↑	↓	↑
30 minutes	↑	↓	↑
Service	↑	↑	↑

Service bypasses occupancy & light level functions. Disables ultrasonic transmissions. Manual load control with ON/OFF button.

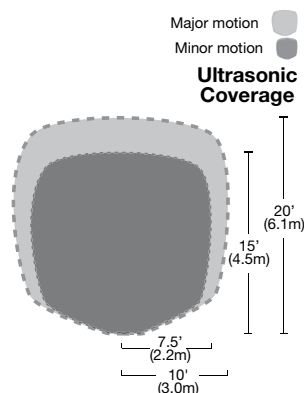
Audible Alert	6
Disabled	↓
Enabled	↑

ON Mode	7
Auto On	↓
Manual On	↑

Switches 8 & 9 are not used.
↑=ON ↓=OFF
←=Factory Setting

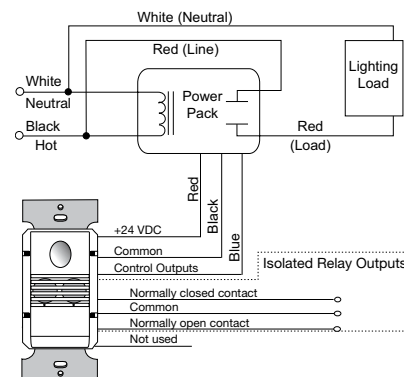
Coverage & Wiring

Coverage Pattern



For best performance, WattStopper recommends using this sensor in spaces no larger than 15' x 15'.

UW-100-24 Low Voltage Wiring

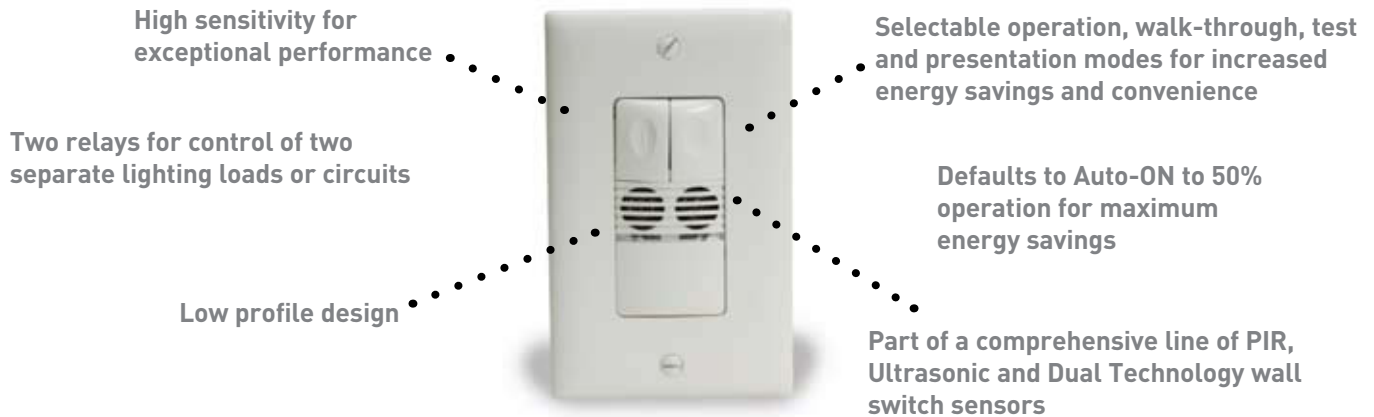


Ordering Information

Catalog No.	Color	Voltage
<input type="checkbox"/> UW-100-24-W	White	18-24 VDC, 24 VAC and halfwave rectified AC
<input type="checkbox"/> UW-100-24-LA	Lt. Almond	
<input type="checkbox"/> UW-100-24-I	Ivory	
<input type="checkbox"/> UW-100-24-G	Grey	
<input type="checkbox"/> UW-100-24-B	Black	

Order wall plate separately.

UW-200 Ultrasonic Dual Relay Wall Switch Sensor



PROJECT
LOCATION/TYPE

Product Overview

Description

The UW-200 ultrasonic wall switch sensor turns lights ON and OFF based on occupancy. It contains two relays for controlling two independent lighting loads or circuits and a variety of features.

Operation

The UW-200 fits in a single gang junction box. Each of the UW-200's relays can control a separate lighting load. It uses high frequency (40kHz) ultrasound to detect occupancy and turn the first relay ON. Once the space is vacated and the time delay elapses, lights automatically turn OFF. Dual ON/OFF buttons allow the user to manually turn on and off each of the loads. DIP switch settings allow for a variety of control options such as Manual-ON or Auto-ON for each relay, walk-through and test modes.

Bi-Level Control

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

Applications

The UW-200 sensor is ideal for applications where the sensor may have a partially obstructed line of sight of the occupant. In addition, its dual relays allow bi-level switching or control of a secondary load such as an exhaust fan. Common applications include individual restrooms, restrooms with two stalls and utility/storage rooms.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing on both relays for long relay life
- Choice of Manual-ON or Auto-ON operation, selectable for each relay
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible and/or visual alerts for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- LED indicates occupancy detection
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates



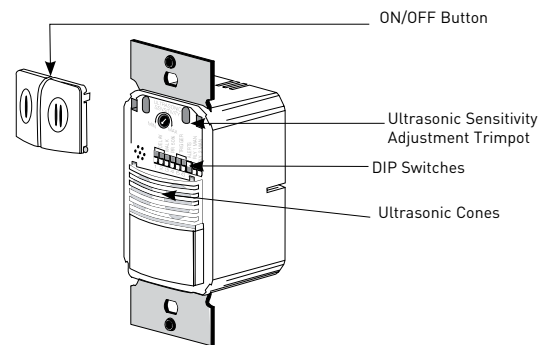
Specifications

- 120/277 VAC; 50/60 Hz
@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
@ 277 VAC, 0-1200 W ballast
- Time delays: 5, 10, 15, 20, 25 or 30 minutes, walk-through, test-mode

- Coverage: Major motion 20' x 20'
Minor motion 15' x 15'
- Sensitivity adjustment: Ultrasonic (fully variable)
- Dimensions: 2.73" x 1.76" x 1.83"
{69.3mm x 44.7mm x 46.5mm} L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	3
Test	↓	↓	↓
5 minutes	↓	↓	↑
10 minutes	↓	↑	↑
15 minutes	↓	↑	↑
20 minutes	↓	↑	↑
25 minutes	↑	↑	↑
30 minutes	↑	↑	↑
Service	↑	↑	↑

Walk-Through	4
Disabled	↓
Enabled	↑

Visible Alert	5
Disabled	↓
Enabled	↑

Audible Alert	6
Disabled	↓
Enabled	↑

Relay 1 Mode	7
Auto On	↓
Manual On	↑

Relay 2 Mode	8
Auto On	↓
Manual On	↑

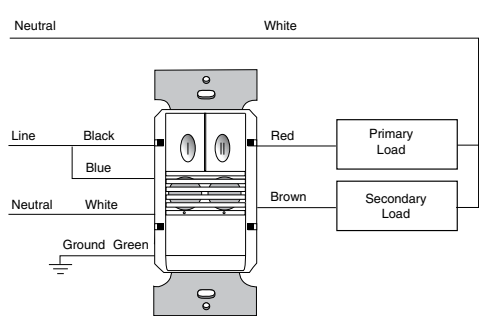
No Function	9
-------------	---

Service bypasses occupancy & light level functions. Control loads manually using ON/OFF buttons.

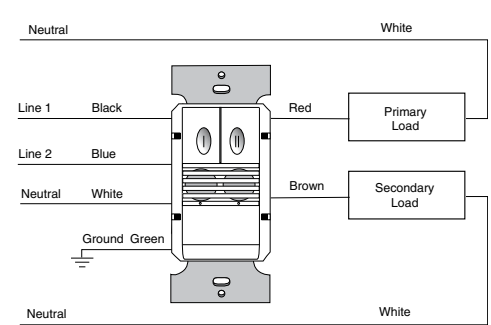
Factory Settings:
 ▲ All models
 ▲ UW-100 series
 ▲ UW-200 series

Wiring

UW-200 Bi-level Wiring

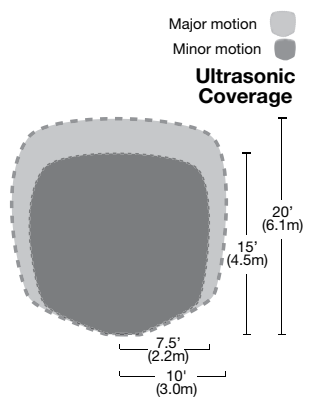


UW-200 Two Circuit Wiring



Coverage

Coverage Pattern



For best performance, WattStopper recommends using this sensor in spaces no larger than 15' x 15'.

Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> UW-200-W	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> UW-200-LA	Lt. Almond		
<input type="checkbox"/> UW-200-I	Ivory		
<input type="checkbox"/> UW-200-G	Grey		
<input type="checkbox"/> UW-200-B	Black		

Order wall plate separately.

DW-100 Dual Technology Wall Switch Sensor

High sensitivity and dense coverage for exceptional performance

Color-matched lens and low profile for appealing design



Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Defaults to Manual-ON operation for maximum energy savings

Part of a comprehensive line of PIR, Ultrasonic and Dual Technology wall switch sensors

PROJECT

LOCATION/TYPE

Product Overview

Description

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

Operation

The DW-100 fits in a single gang junction box. Once the lights are ON, detection by either technology holds lights ON until occupancy is no longer detected and the time delay elapses. DIP switch settings allow for a variety of control options including Auto-ON operation, walk-through and test mode. By default, Auto-ON turns lighting on when both PIR and ultrasonic technologies detect occupancy. Additional DIP switch settings allow the user to choose which sensing technologies turn-ON and hold-ON the lighting.

Manual-on Control

Factory default operation is for Manual-ON, so that users turn lights on only when needed. This control strategy is proven to save more energy than Auto-ON, and will be required where the ASHRAE 90.1-2010 energy code is adopted. If desired, the DW-100 may be reconfigured to turn lights on automatically.

Applications

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

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible alert for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Four occupancy logic options give users the ability to customize control to meet application needs
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates
- Qualifies for ARRA-funded public works projects

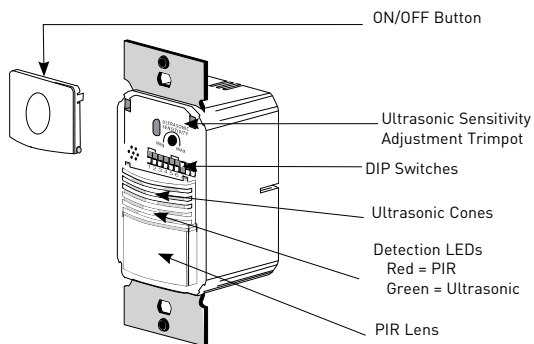


Specifications

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

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2	
Test	↓	↓	
5 minutes	↓	↑	
15 minutes	↑	↑	
30 minutes	↑	↑	

Walk-Through	3	
Disabled	↓	
Enabled	↑	

PIR Sensitivity	4	
High	↓	
Low, 50%	↑	

Audible Alert	7	
Disabled	↓	
Enabled	↑	

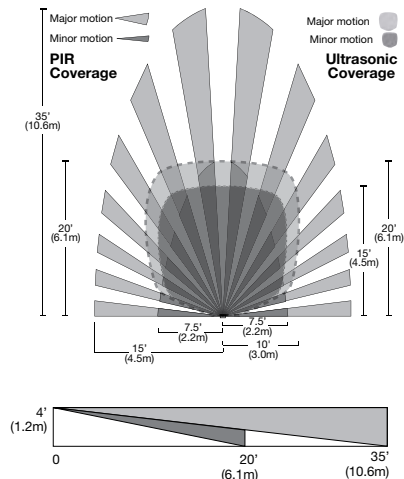
ON Mode	8	
Auto On	↓	
Manual On	↑	

Trigger Mode	5	6	
Standard	Both	Either	Either(S)
Option A	PIR	PIR	PIR
Option B	PIR	PIR	PIR
Option C	Both	Both	Both

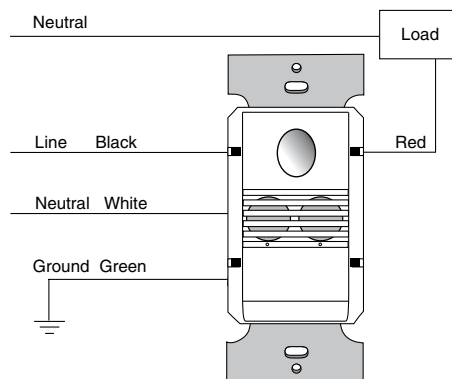
Switch 9 is not used
 ↑=ON ↓=OFF
 ◀=Factory Setting

Coverage & Wiring

Coverage Pattern



Wiring Diagram



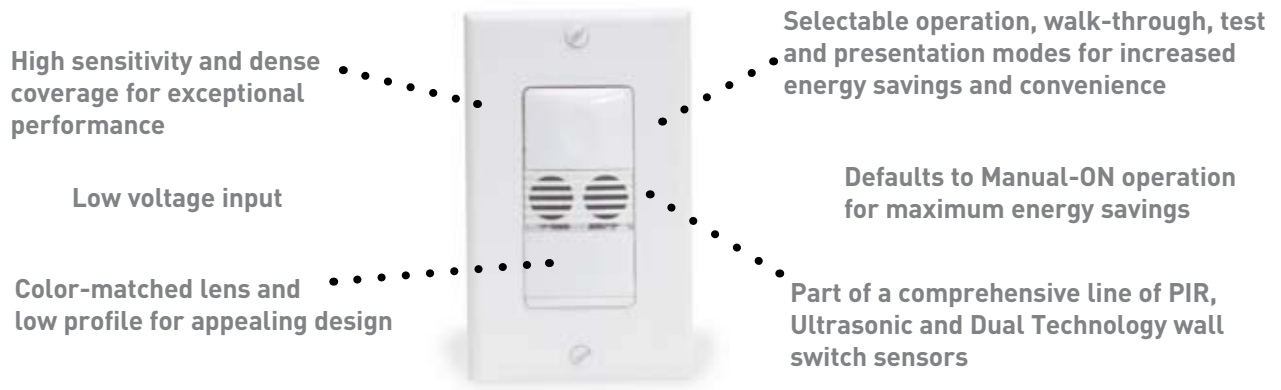
For best performance, WattStopper recommends using this sensor in spaces no larger than 18' x 15'.

Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> DW-100-W <input type="checkbox"/> DW-100-W-U <input type="checkbox"/> DW-100-W-FTA	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> DW-100-LA	Lt. Almond		
<input type="checkbox"/> DW-100-I <input type="checkbox"/> DW-100-I-U <input type="checkbox"/> DW-100-I-FTA	Ivory		
<input type="checkbox"/> DW-100-G	Grey		
<input type="checkbox"/> DW-100-B	Black		
<input type="checkbox"/> DW-100-347-W <input type="checkbox"/> DW-100-347-LA <input type="checkbox"/> DW-100-347-I <input type="checkbox"/> DW-100-347-G <input type="checkbox"/> DW-100-347-B	White Lt. Almond Ivory Grey Black	347 VAC; 50/60 Hz	0-1500 W ballast

Order wall plate separately.

DW-100-24 Dual Technology Low Voltage Wall Switch Sensor



PROJECT
LOCATION/TYPE

Product Overview

Description

The DW-100-24 dual technology low voltage wall switch sensor combines the benefits of passive infrared (PIR) and ultrasonic technologies to turn lights OFF and ON based on occupancy. It is characterized by high sensitivity to small and large movements, appealing aesthetics, and a variety of features.

Operation

Factory default operation is for Manual-ON, so that users turn lights on only when needed. Once the lights are ON, detection by either technology holds lights ON until occupancy is no longer detected and the time delay elapses. DIP switch settings allow for a variety of control options including Auto-ON operation, walk-through and test mode. By default, Auto-ON turns lighting on when both PIR and ultrasonic technologies detect occupancy. Additional DIP switch settings allow the user to choose which sensing technologies turn-ON and hold-ON the lighting.

Low Voltage

Low voltage wall switch sensors can offer advantages over line voltage models. Using an isolated form-C relay output, the DW-100-24 sensor integrates seamlessly with VAV or other building systems for greater energy savings. Multiple DW-100-24 sensors can also be connected on a single circuit and can switch loads that exceed the rating of a standard line voltage switch. In addition, low voltage sensor installations do not require the use of conduits reducing installation costs and making relocation easier.

Applications

WattStopper's dual technology has the flexibility to work in a variety of applications where one technology alone may not be sufficient. The DW-100-24 is the perfect choice for locations where line voltage wiring is not possible or for jurisdictions prohibiting the use of 277V switches. Common applications include small and executive offices, small and medium conference rooms and lunch/break rooms.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible alert for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Four occupancy logic options give users the ability to customize control to meet application needs
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates
- Qualifies for ARRA-funded public works projects

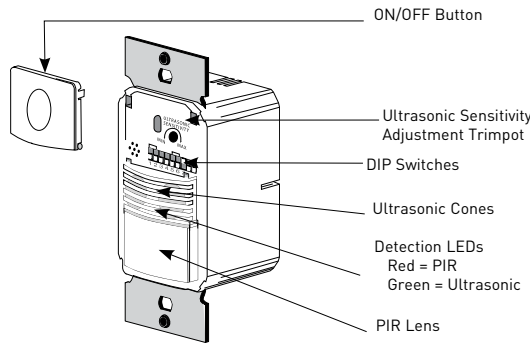


Specifications

- 18-24 VDC, 24 VAC and halfwave rectified AC
- Current consumption: 35 mA
- DW-100-24 contains single-pole, double-throw isolated relay rated for 1 A @ 30 VDC
- Time delays: 5, 15 or 30 minutes, walk-through, test-mode
- Coverage:
 - Major motion, PIR 35' x 30', Ultrasonic 20' x 20'
 - Minor motion, PIR 20' x 15', Ultrasonic 15' x 15'
- Sensitivity adjustment: PIR (high/low), Ultrasonic (fully variable)
- Dimensions: 2.73" x 1.76" x 1.83" (69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2
Test	↓	↓
5 minutes	↑	↑
15 minutes	↑	↑
30 minutes	↑	↑

Walk-Through	3
Disabled	↓
Enabled	↑

PIR Sensitivity	4
High	↓
Low, 50%	↑

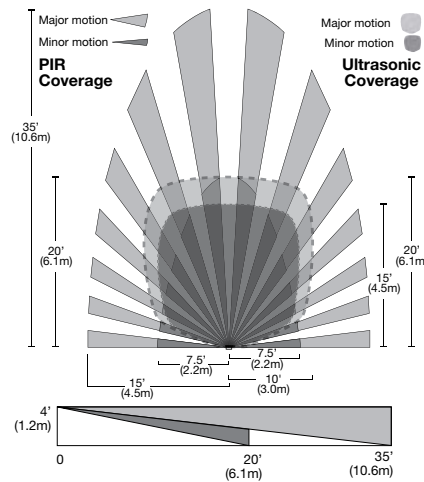
Audible Alert	7
Disabled	↓
Enabled	↑

ON Mode	8
Auto On	↓
Manual On	↑

Switch 9 is not used
↑=ON ↓=OFF
◀=Factory Setting

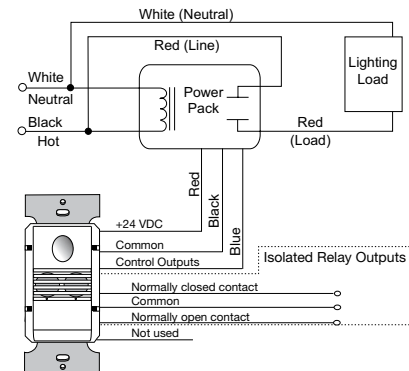
Coverage & Wiring

Coverage Pattern



For best performance, WattStopper recommends using this sensor in spaces no larger than 18' x 15'.

DW-100-24 Low Voltage Wiring



Ordering Information

Catalog No.	Color	Voltage
<input type="checkbox"/> DW-100-24-W	White	18-24 VDC, 24 VAC and halfwave rectified AC
<input type="checkbox"/> DW-100-24-W-U		
<input type="checkbox"/> DW-100-24-W-FTA		
<input type="checkbox"/> DW-100-24-LA	Lt. Almond	
<input type="checkbox"/> DW-100-24-I	Ivory	
<input type="checkbox"/> DW-100-24-G	Grey	
<input type="checkbox"/> DW-100-24-B	Black	

Order wall plate separately.

DW-103 Dual Technology Multi-way Wall Switch Sensor

High sensitivity and dense coverage for exceptional performance

Defaults to Manual-ON operation for maximum energy savings

Color-matched lens and low profile for appealing design



Allows multi-way control from one of up to four control locations

Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Part of a comprehensive line of PIR, Ultrasonic and Dual Technology wall switch sensors

PROJECT

LOCATION/TYPE

Product Overview

Description

The DW-103 dual technology multi-way wall switch sensor combines the benefits of passive infrared (PIR) and ultrasonic technologies, and can turn lights OFF and ON based on occupancy. It provides high sensitivity to small and large movements, appealing aesthetics and a variety of features.

Operation

The DW-103 replaces existing wall switches and fits in a single gang junction box. Factory default operation is for Manual-ON, and detection by either technology keeps lights ON until occupancy is no longer detected and a time delay elapses. DIP switch settings allow control options including Auto-ON operation, walk-through and test modes. Additional DIP switches determine which sensing technologies turn-ON and hold-ON the lighting. Multiple DW-103 sensors may be used for control of one or more loads from up to four locations.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible alert for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Four occupancy logic options give users the ability to customize control to meet application needs
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates

Multi-way Control

The DW-103 offers true multi-way functionality. When connected sensors are in Manual-ON mode, an occupant must press the ON/OFF button of one of the sensors to turn the load ON. When sensors are in Auto-ON mode, the load will automatically turn ON when occupancy is detected by one of the sensors. Lights will remain ON as long as occupancy is detected. The last sensor to detect occupancy will turn the load OFF after the time delay has elapsed. In either operating mode, an occupant may turn the load OFF manually.

Applications

WattStopper's dual technology is recommended for spaces where one technology alone may not be sufficient. Common applications include private offices, conference rooms and lunch/break rooms. Additionally, dual technology sensors may be mounted at a height suitable for ADA compliance.

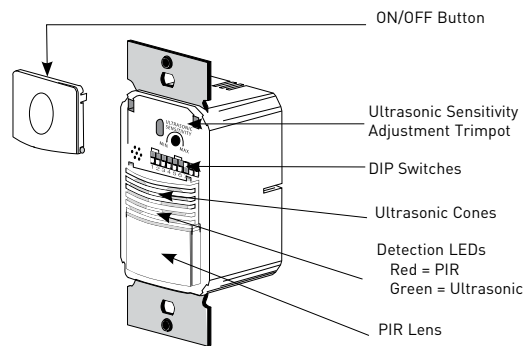


Specifications

- DW-103: 120/277 VAC; 50/60 Hz
@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
@ 277 VAC, 0-1200 W ballast
- Time delays: 5, 15, or 30 minutes, walk-through, test-mode
- Coverage:
Major motion, PIR 35' x 30', Ultrasonic 20' x 20'
Minor motion, PIR 20' x 15', Ultrasonic 15' x 15'
- Sensitivity adjustment: PIR (high/low), Ultrasonic (fully variable)
- Dimensions: 2.73" x 1.76" x 1.83" (69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay	1	2
Test	↓	↓
5 minutes	↑	↑
15 minutes	↑	↑
30 minutes	↑	↑

Walk-Through	3
Disabled	↓
Enabled	↑

PIR Sensitivity	4
High	↓
Low, 50%	↑

Audible Alert	7
Disabled	↓
Enabled	↑

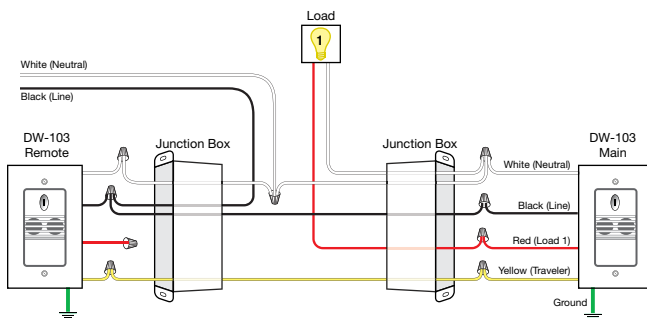
ON Mode	8
Auto	↓
Manual On	↑

Trigger Mode	5	6
Standard	Both	Either
Option A	PIR	PIR
Option B	PIR	PIR
Option C	Both	Both

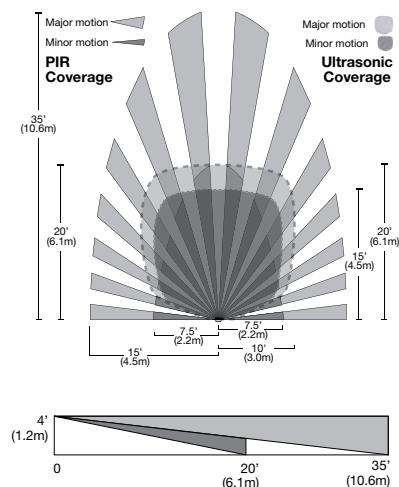
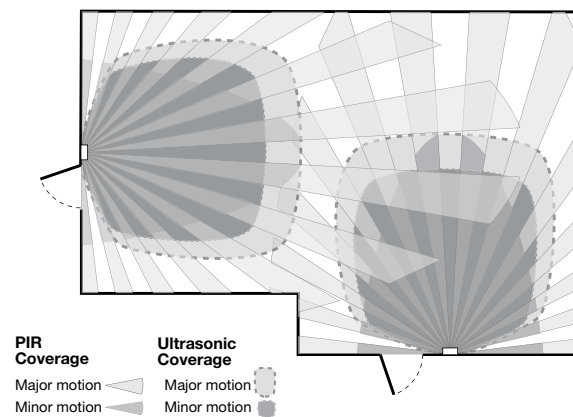
Switch 9 is not used
 ↑=ON ↓=OFF
 ◀=Factory Setting

Wiring & Coverage

Multi-way Wiring Diagram



Coverage Patterns



For best performance in single location applications, WattStopper recommends using this sensor in spaces no larger than 18' x 15'. In multi-way applications, each connected sensor expands the coverage area.

Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> DW-103-W	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> DW-103-LA	Lt. Almond		
<input type="checkbox"/> DW-103-I	Ivory		
<input type="checkbox"/> DW-103-G	Grey		
<input type="checkbox"/> DW-103-B	Black		

Order wall plate separately.

DW-200 Dual Technology Dual Relay Wall Switch Sensor

High sensitivity and dense coverage for exceptional performance

Two relays for control of two separate lighting loads or circuits

Color-matched lens and low profile for appealing design



Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Defaults to Auto-ON to 50% operation for maximum energy savings

Part of a comprehensive line of PIR, Ultrasonic and Dual Technology wall switch sensors

Product Overview

Description

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

Operation

The DW-200 fits in a single gang junction box. Each of the DW-200's relays can control a separate lighting load. By default, when both PIR and ultrasonic technologies detect occupancy, relay 1 turns ON automatically. Detection by either technology holds lights ON. When occupancy is no longer detected and the time delay elapses, lights automatically turn OFF. Dual ON/OFF buttons allow the user to manually turn on and off each of the loads. DIP switch settings allow for a variety of control options such as Auto-ON or Manual-ON for each relay, walk-through, and test mode.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing on both relays for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation, selectable for each relay
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments
- Selectable audible alert for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Four occupancy logic options give users the ability to customize control to meet application needs
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates
- Qualifies for ARRA-funded public works projects

PROJECT

LOCATION/TYPE

Bi-Level Control

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

Applications

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

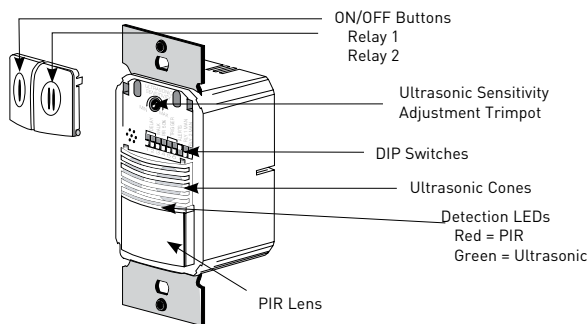


Specifications

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

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay 1 2	Test	↓ ↑
5 minutes	↓ ↑	
15 minutes	↓ ↑	
30 minutes	↓ ↑	
Walk-Through 3	Disabled	↓ ↑
Enabled	↓ ↑	
PIR Sensitivity 4	High	↓ ↑
Low, 50%	↓ ↑	

↑ = ON ↓ = OFF

Trigger Mode 5 6	Initial Occupancy	Maintain Occupancy	Re-trigger (seconds duration)
Standard	Both	Either	Either(S)
Option A	PIR	PIR	PIR
Option B	PIR	PIR	PIR
Option C	Both	Both	Both

Audible Alert 7	Disabled	↓ ↑
Enabled	↓ ↑	
Relay 1 ON Mode 8	Auto On	↓ ↑
Manual On	↓ ↑	

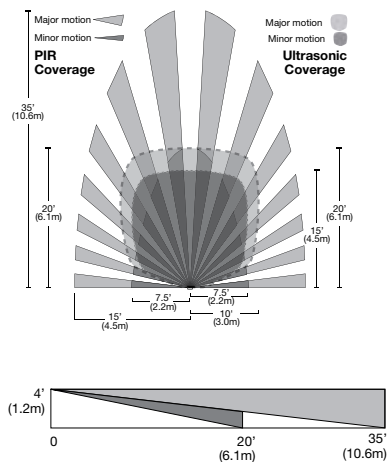
DW-203 only:

Relay 2 ON Mode 9	Auto On	↓ ↑
Manual On	↓ ↑	

Factory Settings:
 ◀ All models
 ▲ DW-100 series
 ▲ DW-200 series

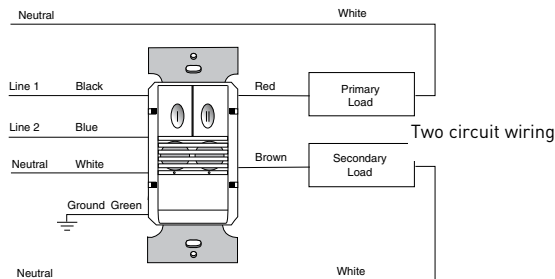
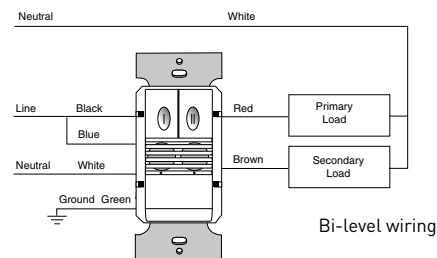
Coverage & Wiring

Coverage Pattern



For best performance, WattStopper recommends using this sensor in spaces no larger than 18' x 15'.

Wiring Diagrams



Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> DW-200-W <input type="checkbox"/> DW-200-W-U <input type="checkbox"/> DW-200-W-FTA	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> DW-200-LA	Lt. Almond		
<input type="checkbox"/> DW-200-I <input type="checkbox"/> DW-200-I-U <input type="checkbox"/> DW-200-I-FTA	Ivory		
<input type="checkbox"/> DW-200-G	Grey		
<input type="checkbox"/> DW-200-B	Black		

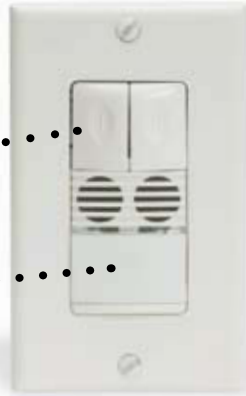
Order wall plate separately.

DW-203 Dual Technology Multi-way Dual Relay Wall Switch Sensor

High sensitivity and dense coverage for exceptional performance

Two relays for control of two separate lighting loads or circuits

Color-matched lens and low profile for appealing design



Allows multi-way control from one of up to four control locations

Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Part of a comprehensive line of PIR, Ultrasonic and Dual Technology wall switch sensors

PROJECT

LOCATION/TYPE

Product Overview

Description

The DW-203 dual technology multi-way wall switch sensor combines the benefits of passive infrared (PIR) and ultrasonic technologies to turn lights ON and OFF based on occupancy. It has two relays for controlling two independent lighting loads or circuits and a variety of features.

Operation

The DW-203 fits in a single gang box. By default, when both PIR and ultrasonic technologies detect occupancy, it turns the first relay ON. Continued detection by either technology keeps lights ON until occupancy is no longer detected and a time delay elapses. Dual ON/OFF buttons allow the user to manually switch each load, and each relay may be set to Manual-ON or Auto-ON. The DW-203 features a light level sensor that controls the second relay when it is in Auto-ON mode. If adequate daylight is present, the sensor will hold the second relay off until daylight levels drop.

Features

- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Zero-crossing for long relay life
- Vandal resistant lens combines precise coverage with durability
- Choice of Manual-ON or Auto-ON operation, selectable for each relay
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds
- Test mode allows quick and easy adjustments

Multi-way Control

Multiple DW-203 sensors may be connected for control from up to four locations, and provide true multi-way functionality. When Manual-ON mode is active, an occupant must press an ON/OFF button on one of the sensors to turn a load ON. When Auto-ON mode is active, the load will automatically turn ON when occupancy is detected by one of the sensors. Lights will remain ON as long as occupancy is detected. The last sensor to detect occupancy will turn the loads OFF after the time delay has elapsed. In either operating mode, an occupant may turn the load OFF manually.

Applications

Dual technology is recommended for spaces where one technology alone may not be sufficient. Applications include private offices, conference rooms and lunch/break rooms with multiple switch locations. Dual technology sensors may be mounted at a height suitable for ADA compliance.

- Selectable audible alert for impending shutoff
- In automatic mode, sensor returns automatically to Auto-ON after lights are turned off manually; ideal for presentations
- Four occupancy logic options give users the ability to customize control
- Optional light level sensing with simple setup
- Service mode allows sensor to operate as a service switch in the unlikely event of a failure
- Sensor coverage tested to NEMA Guide Publication WD 7-2000
- Compatible with decorator wall plates

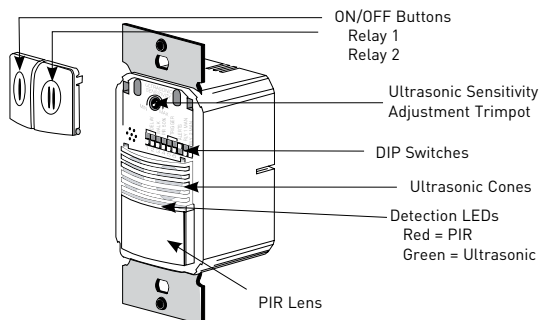


Specifications

- DW-203: 120/277 VAC; 50/60 Hz
@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp
@ 277 VAC, 0-1200 W ballast
- Time delays: 5, 15, or 30 minutes, walk-through, test-mode
- Coverage:
Major motion, PIR 35' x 30', Ultrasonic 20' x 20'
Minor motion, PIR 20' x 15', Ultrasonic 15' x 15'
- Sensitivity adjustment: PIR (high/low), Ultrasonic (fully variable)
- Dimensions: 2.73" x 1.76" x 1.83" (69.3mm x 44.7mm x 46.5mm) L x W x D
- UL and cUL listed
- Five year warranty

Controls & Settings

Product Controls



DIP Switch Settings

Time Delay 1 2	Test ↓ ↑	5 minutes ↓ ↑	15 minutes ↑ ↓	30 minutes ↑ ↑
Walk-Through 3	Disabled ↓	Enabled ↑		
PIR Sensitivity 4	High ↓	Low, 50% ↑		

Trigger Mode	Initial Occupancy	Maintain Occupancy	Re-trigger (minimum duration)	5 6
Standard	Both	Either	Either(5)	↓ ↓ ↓
Option A	PIR	Either	Either(5)	↓ ↓ ↓
Option B	PIR	PIR	PIR	↑ ↑ ↑
Option C	Both	Both	Both	↑ ↑ ↑

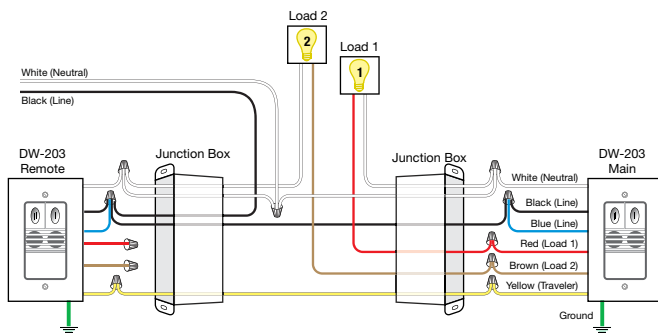
Audible Alert 7	Disabled ↓	Enabled ↑
Relay 1 On Mode 8	Auto On ↓	Manual On ↑
Relay 2 On Mode 9	Auto On ↓	Manual On ↑

↑ = ON ↓ = OFF

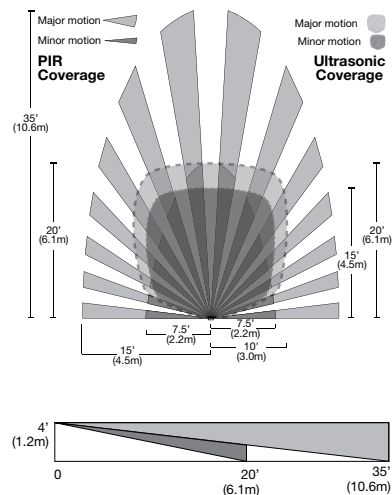
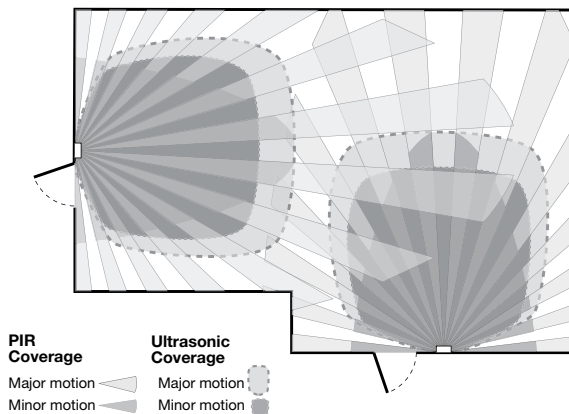
Factory Settings:
 ◀ All models
 ▲ DW-100 series
 ▲ DW-200 series

Wiring & Coverage

Multi-way Bi-level Wiring Diagram



Coverage Patterns



For best performance in single location applications, WattStopper recommends using this sensor in spaces no larger than 18' x 15'. In multi-way applications, each connected sensor expands the coverage area.

Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> DW-203-W	White	120/277 VAC; 50/60 Hz	@ 120 VAC, 0-800 W ballast or tungsten, 1/6 hp @ 277 VAC, 0-1200 W ballast
<input type="checkbox"/> DW-203-LA	Lt. Almond		
<input type="checkbox"/> DW-203-I	Ivory		
<input type="checkbox"/> DW-203-G	Grey		
<input type="checkbox"/> DW-203-B	Black		

Order wall plate separately.

CX-100 Series Passive Infrared Ceiling/Wall Sensors

Turns lights on and off based on occupancy

User-adjustable time delay and sensitivity

ASIC technology reduces components and provides greater reliability



Choice of four coverage patterns

Built-in light level sensor

Isolated relay for use with HVAC or other control systems

Automatic or manual-on operation when used with a BZ-150 Power Pack

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's CX-100 Series Passive Infrared (PIR) Ceiling/Wall Sensors detect occupancy to control lighting in a wide variety of applications. These sensors provide superior coverage and performance with great energy savings.

Operation

CX-100 Series Sensors are 24 VDC and control lighting systems through WattStopper power packs. Utilizing the latest PIR technology, they turn lights on when a difference is detected between infrared energy from a human body in motion and the background space. After the area is vacated and the time delay elapses, lighting automatically turns off.

Features

- ASIC technology reduces components and enhances reliability
- Pulse Count Processing eliminates false off without reducing sensitivity
- Detection Signature Analysis eliminates false triggers and provides immunity to RFI and EMI
- Digital time delay adjustable from 15 seconds to 30 minutes
- Adjustable sensitivity enables occupancy detection to match the level of activity for each space
- LED indicates occupancy detection

Coverage Choices

The CX-100 Series Sensors are available with a choice of coverage patterns. The standard lens offers coverage up to 1000 square feet for typical desktop activity. When using the CX-100/105-1 or -3 lens, motion moving toward sensors will begin to be detected at 55 to 60 feet.

Applications

The CX sensors are ideal for large areas and can cover up to 2000 square feet of walking motion. By choosing the proper lens pattern for each application, the sensors can reliably cover large offices, computer rooms, classrooms, aisleways, warehouses and open offices where coverage cut-off is desired. Corner mounting to a wall or ceiling adds versatility and more control to the coverage.

- The CX-100's integrated light level sensor can create bi-level control for added energy savings
- Multilevel Fresnel lens for superior desktop occupancy detection with four lens patterns
- Isolated relay can interface with HVAC, EMS and monitoring systems, or with an additional lighting load
- Dual-element, temperature compensated pyroelectric sensor
- Swivel mounting bracket for convenient corner mounting to wall or ceiling
- Qualifies for ARRA-funded public works projects

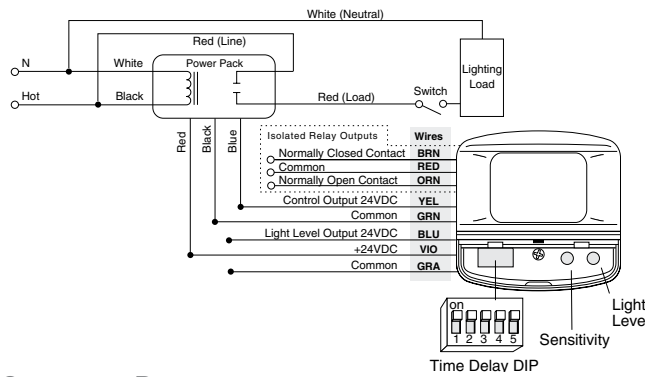


Specifications

- Dual-element, temperature compensated pyroelectric sensor
- CX-100 contains isolated relay with N/O and N/C outputs; rated for 1 Amp at 24 VDC/VAC
- Adjustable time delay: 15 seconds to 30 minutes
- CX-100 integrated light level sensor: three to 200 footcandles (32 to 2,152 lux)
- Max.CX-100s per power pack: B=6, BZ=8
- Max. CX-105s per power pack: B=14, BZ=18
- Dimensions: 3.3" x 3.3" x 2.1" (83.8mm x 83.8mm x 53.3mm) W x L x D
- UL and cUL listed
- Five year warranty

Wiring & Settings

Wiring Diagram



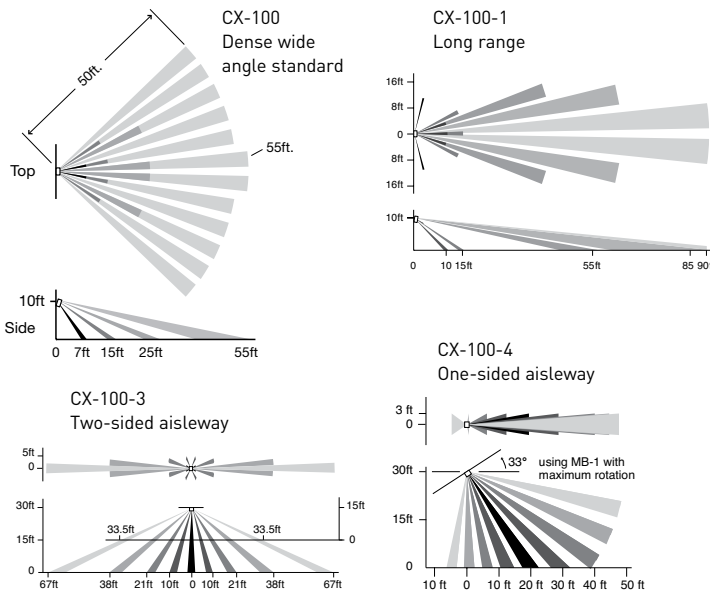
DIP Switch Settings

Time Delays	DIP Switch #				
	1	2	3	4	5
15 seconds	●	●	●	●	—
2 minutes	—	●	●	●	—
4 minutes	—	—	●	●	—
6 minutes	—	—	—	●	—
8 minutes	—	—	—	—	●
10 minutes	—	—	—	—	●
12 minutes	—	—	—	—	●
14 minutes	—	—	—	—	●
16 minutes	—	—	—	—	●
18 minutes	—	—	—	—	●
20 minutes	—	—	—	—	●
22 minutes	—	—	—	—	●
24 minutes	—	—	—	—	●
26 minutes	—	—	—	—	●
28 minutes	—	—	—	—	●
30 minutes	—	—	—	—	●
Override	—	—	—	—	●

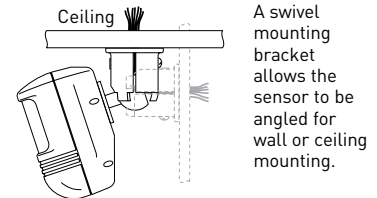
●=on —=off ◆=factory preset

Coverage & Mounting

Coverage Patterns

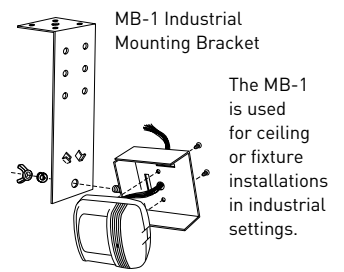


Mounting



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

Industrial Mounting



Coverages shown are maximum and represent half-step walking motion. Under ideal conditions with no barriers or obstacles, coverage for half-step walking motion with the standard lens can reach up to 2000 ft², while coverage for typical desktop activity can reach up to 1000 ft². When using the CX-100/105-1 or -3 lens, motion moving toward sensors will begin to be detected at 55 to 60 feet.

Ordering Information

Catalog No.	Voltage	Current	Coverage	Features
<input type="checkbox"/> CX-100	24 VDC	19 mA	up to 2000 ft ² (185.8 m ²)	isolated relay, light level
<input type="checkbox"/> CX-100-1	24 VDC	19 mA	up to 90 linear ft (27.4 m)	isolated relay, light level
<input type="checkbox"/> CX-100-3	24 VDC	19 mA	up to 120 linear ft (36.6 m)	isolated relay, light level
<input type="checkbox"/> CX-100-4	24 VDC	19 mA	up to 50 linear ft (15.2 m)	isolated relay, light level
<input type="checkbox"/> CX-105 <input type="checkbox"/> CX-105-U <input type="checkbox"/> CX-105-FTA	24 VDC	8 mA	up to 2000 ft ² (185.8 m ²)	
<input type="checkbox"/> CX-105-1 <input type="checkbox"/> CX-105-1-U <input type="checkbox"/> CX-105-1-FTA	24 VDC	8 mA	up to 90 linear ft (27.4 m)	
<input type="checkbox"/> CX-105-3	24 VDC	8 mA	up to 120 linear ft (36.6 m)	
<input type="checkbox"/> CX-105-4	24 VDC	8 mA	up to 50 linear ft (15.2 m)	
<input type="checkbox"/> MB-1	Industrial Mounting Bracket (recommended for use with -3 and -4 lenses)			
<input type="checkbox"/> MB-2	Industrial Mounting Bracket for HID fixtures			

All units are white and use WattStopper power packs. Current consumption can be slightly higher when only one sensor per power pack is used.

WPIR Passive Infrared Ceiling Sensor

PIR sensor turns lights on and off based on occupancy

User-adjustable time delay of 30 seconds to 30 minutes

Automatic or manual-on operation when used with a BZ-150 Power Pack



ASIC technology reduces components and provides greater reliability

30-segment, multi-element Fresnel lens

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's WPIR Sensor is a versatile ceiling-mount sensor that utilizes the latest passive infrared (PIR) technology to turn lights on and off based on occupancy. The WPIR controls lighting in a wide variety of applications, but is especially adept at controlling small spaces with well-defined coverage.

Operation

The WPIR Ceiling Sensor utilizes the latest PIR technology to detect the difference between the infrared energy from a person in motion and the background space within the controlled area. When occupancy is detected, this 24 VDC sensor turns lighting or HVAC systems on through a WattStopper power pack controlled through low voltage wiring. When occupants leave the area, lighting is switched off after the user-adjustable time delay has elapsed.

Fresnel Lens and Coverage

The WPIR is equipped with a multi-element Fresnel lens that allows the sensor to efficiently collect infrared energy and provides optical gain over a defined field of view. The profile of each groove facet is determined by computer simulation to produce the sharpest images possible from a distant object. The use of a 30-segment lens allows overlapping coverage within the defined field of view. The coverage is partially determined by the view available to the sensor. Mounted to a wall, the WPIR will produce a completely different viewing pattern. Zone 4 and 5 (see diagram on back) are then capable of sensing up to 45 feet.

Applications

The WPIR can effectively cover small offices, utility areas or computer rooms. Additional applications include racquetball courts, garage areas, library aisleways and storage rooms.

Features

- ASIC technology enhances reliability and provides immunity to RFI and EMI
- Uses the latest PIR technology to reliably control lighting in a variety of applications
- User-adjustable time delay of 30 seconds to 30 minutes
- Incorporated daylight filter prevents short-wavelength infrared waves, such as those emitted by the sun, from affecting WPIR
- Multi-element Fresnel lens allows the sensor to efficiently collect infrared energy and provide optical gain over a defined field of view
- Alternate viewing patterns depending on mounting choice
- Optional on override through logic key/on bypass
- LED indicates occupancy detection
- Qualifies for ARRA-funded public works projects

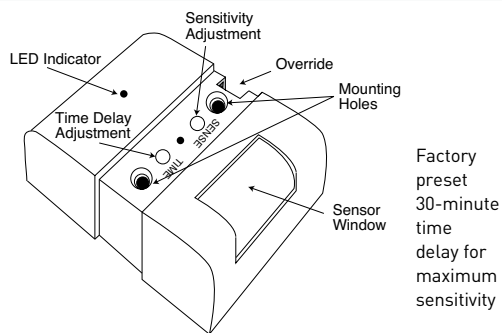


Specifications

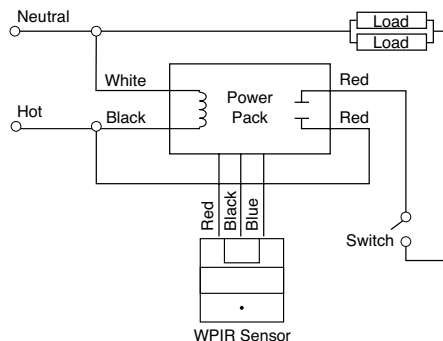
- Dual-element, temperature compensated pyroelectric sensor
- Adjustable time delay: 30 seconds to 30 minutes
- Poly IR4 lens, optical filter material
- Control output: 100mA maximum
- Max. units per power pack: B = eight; BZ = ten
- Dimensions: 2.5" x 2.5" x 1.14" (64mm x 64mm x 29mm) W x L x D
- UL and cUL listed
- Five year warranty

Wiring & Controls

Product Controls

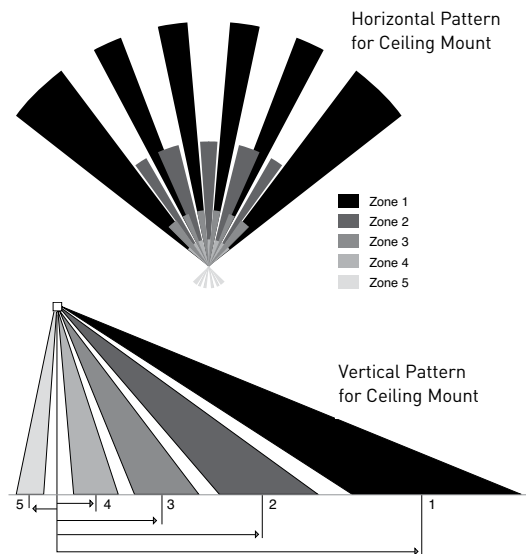


Wiring Diagram

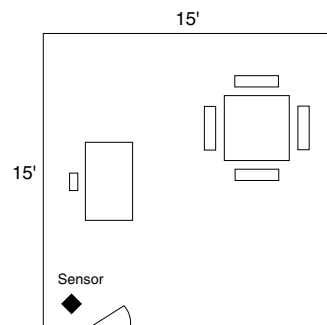


Coverage & Placement

Coverage Pattern

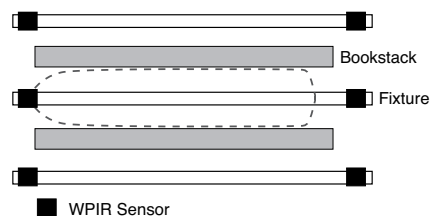


Typical Office Placement



For an enclosed office, the WPIR should be placed in the corner of the room so that it will detect occupants as they enter the room. For the aisleway between bookstacks, the WPIR should be placed at the end of each bookstack to detect occupancy upon entrance to the aisle way from either direction. For longer bookstacks, two or more WPIRs can be used.

Aisleway Library Bookstack Placement



Detection Zones					
Ceiling Height	Zone 5	Zone 4	Zone 3	Zone 2	Zone 1
8'	-1	1	4	8	15
10'	-1.5	1.5	5	10	19
12'	-2	2	6	12	23
15'	-2.5	2.5	8	15	29
20'	-3	3	10	18	36
25'	-4	4	12	23	45
*8'	50	40	25	15	5

* Wall mounted Horizontally

Ordering Information

Catalog No.	Voltage	Current	Coverage
<input type="checkbox"/> WPIR	24 VDC	14 mA	300 ft ² (27.9 m ²)

All units are white and use WattStopper power packs.

CB Low Temperature Passive Infrared Occupancy Sensor

PIR occupancy sensor for areas of extreme low temperature

Watertight enclosure prevents moisture and dust from affecting detection

Isolated relay contact for use with HVAC or other control systems



Choice of three coverage patterns

Convenient DIP switch adjustments of time delay and sensitivity

Ideal for cold storage rooms, freezers and outdoor locations

PROJECT
LOCATION/TYPE

Product Overview

Description

The CB-100 passive infrared (PIR) occupancy sensor was engineered for installation in cold and damp conditions including the outdoors. It uses electronic components to allow for reliable operation in extreme temperature and environmental conditions.

Operation

The CB-100 operates on 24 VDC and controls lighting through WattStopper power packs. It is equipped with a swivel mount bracket for convenient installation. The unit detects occupancy and turns lighting on when it senses a change in infrared heat radiated within the controlled area. After the area is vacated and after a user-adjustable time delay, lighting automatically turns off.

Cold Application Engineering

Specifically designed for low temperature applications, the CB-100 features a gasketed, watertight enclosure which prevents moisture and dust from entering the sensor and affecting occupancy detection. By operating in areas as low as -40° F, the CB-100 saves energy in areas that would not typically be suited for occupancy based control.

Applications

The CB-100 has been manufactured for the specification of lighting control in low temperature areas. With this sensor, areas such as cold storage rooms, freezers, and unconditioned spaces subject to extreme low temperatures can receive the same reliable lighting control and energy savings as other building areas. Using the isolated relay contact to interface with HVAC, EMS or other building control systems will also increase savings.

Features

- Operates in areas with temperatures as low as -40°F
- Gasketed, watertight enclosure prevents moisture and dust from entering the sensor and affecting occupancy detection
- Choice of three different coverage patterns depending on needs of the application
- Swivel mount bracket for convenient installation
- Convenient DIP switch adjustable digital time delay of 15 seconds, 5 minutes or 10 minutes
- DIP switch adjustable sensitivity has 4 settings ranging from minimum to maximum
- Isolated relay can interface with HVAC, EMS systems, monitoring systems, or with an additional lighting load
- Red LED indicates occupancy detection

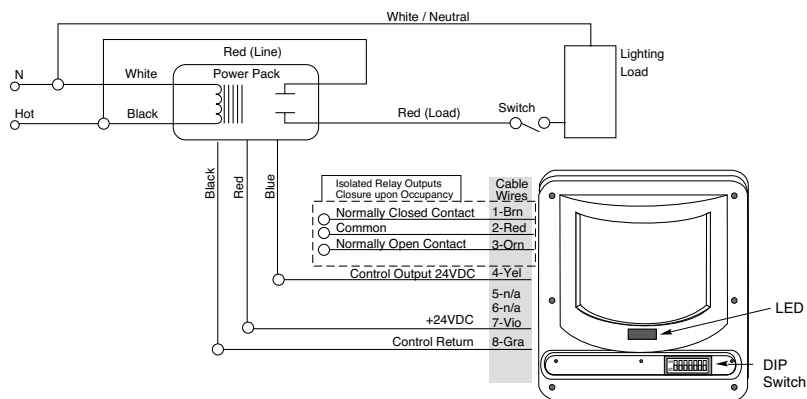


Specifications

- Dual-element, temperature compensated pyro-electric sensor
- Temperature range: -40°F (-40°C) to +95°F (+35°C) (The CB-100 can function at temperatures greater than 95°F but coverage may be reduced)
- Isolated relay with N/O and N/C outputs; rated for 1 Amp at 24 VDC/VAC
- Digital time delay settings of 15 seconds, 5 minutes, or 10 minutes
- Units per power pack: up to 5 (B); up to 7 (BZ)
- Dimensions: 3.94" x 3.74" x 2.36" (100mm x 95mm x 60mm) L x W x D
- UL and cUL listed
- Five year warranty

Wiring, Mounting & Settings

Wiring Diagram



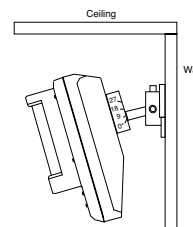
DIP Switch Settings

Sensitivity	1	2
Maximum	-	-
Med High	-	●
Med Low	●	-
Minimum	●	●

● = ON - = OFF
 ◀ = factory preset

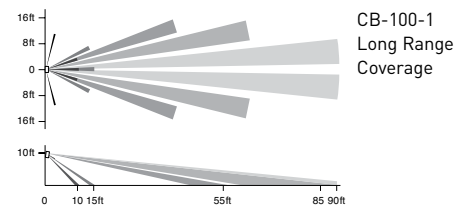
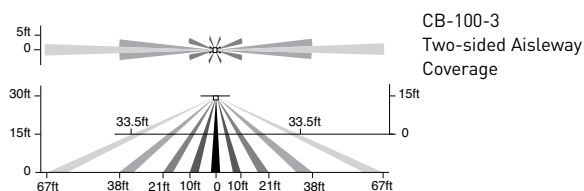
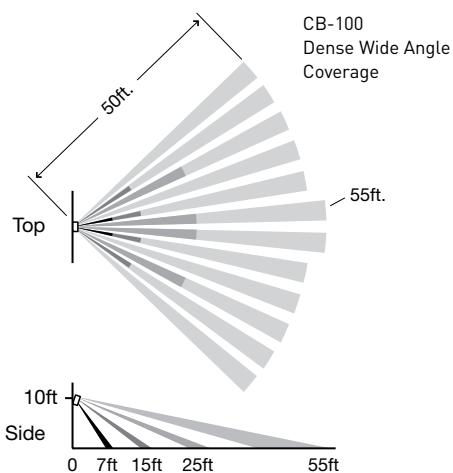
Time Delay	3	4
10 minutes	-	-
5 minutes	-	●
15 seconds	●	●

Wall Mounting



Coverage

Coverage Patterns



Ordering Information

Catalog No.	Voltage	Current	Coverage
<input type="checkbox"/> CB-100	24 VDC	20 mA	up to 2000 ft ² (185.8m ²)
<input type="checkbox"/> CB-100-1	24 VDC	20 mA	up to 90 linear ft (27.4m)
<input type="checkbox"/> CB-100-3	24 VDC	20 mA	up to 120 linear ft (36.6m)

Units are beige and use WattStopper power packs

CI-300 Series Passive Infrared Ceiling Sensors



Architecturally appealing low-profile appearance

Auto set automatically selects optimal time delay and sensitivity settings

Automatic or manual-on operation when used with a BZ-150 Power Pack

Plug terminal wiring for quick and easy installation

Accepts low-voltage switch input for manual-on operation

Walk-through mode increases savings potential

360° coverage

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's CI-300 Passive Infrared (PIR) Ceiling Sensors automatically turn lighting on and off based on occupancy. The sensor mounts on the ceiling with a flat, low-profile appearance and provides 360 degrees of coverage.

Operation

CI-300 Series Sensors operate on 24 VDC, VAC or halfwave rectified. Utilizing the latest PIR technology, they automatically turn lighting on when a difference is detected between infrared energy from a human body in motion and the background space. When no occupancy is detected for the length of the time delay, lighting automatically turns off. For manual-on operation, the CI-300 will operate with a low-voltage momentary switch.

Auto Set

The CI-300 Series Sensors require no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Based on this information, the units automatically adjust time delay and sensitivity settings for optimal performance and energy efficiency. Sensors assign short delays (as low as five minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Applications

CI-300 Series Sensors have the flexibility to work in a variety of applications that include open office spaces, computer rooms, conference rooms, classrooms and warehouses. Areas with high ceilings or with two-level lighting can also be controlled. The convenient mounting system keeps installation costs down to speed up the product's payback.

Features

- Advanced control logic based on RISC microcontroller provides:
 - Detection Signature Processing to eliminate false triggers and provide immunity to RFI and EMI
 - Walk-through Mode turns lights off three minutes after the area is initially occupied – ideal for brief visits such as mail delivery
 - Built-in light level sensor featuring simple, one-step setup
- LED indicates occupancy detection
- CI-300 Series Sensors work with low-voltage momentary switches for manual control
- DIP switch simplifies sensor adjustments
- Clip-mounting system simplifies ceiling tile installation
- Plug terminal wiring system for quick and easy installation
- Available with isolated relay for integration with BAS or HVAC
- Qualifies for ARRA-funded public works projects

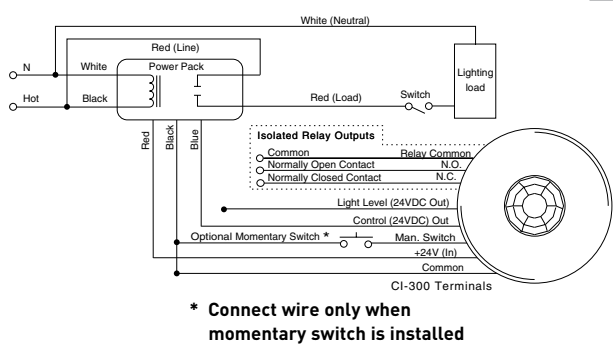


Specifications

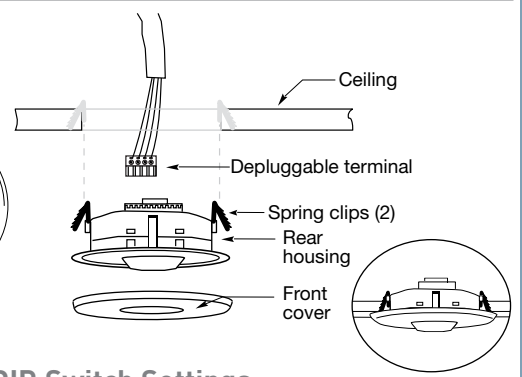
- 24 VDC/VAC
- Time delays: Auto set, fixed (5, 10, 15, 20, or 30 minutes), walk-through, test mode
- Sensitivity adjustment: Auto set or reduced sensitivity
- Multilevel Fresnel lens provides 360° coverage
- CI-300 contains isolated relay with N/O and N/C outputs; rated for 1 Amp at 30 VDC/VAC
- CI-300 built-in light level sensor: 10 to 300 footcandles (107.6 to 3,229.2 lux)
- Mounting options: ceiling tile; 4" square junction box with double-gang mud ring
- Max. CI-300s per power pack: B=5, BZ=7
- Max. CI-305s per power pack: B=12, BZ=16
- Dimensions: 4.5" x 1.02" (114.3mm x 25.9mm) diameter x depth
- UL and cUL listed
- Five year warranty

Wiring & Mounting

Wiring Diagram

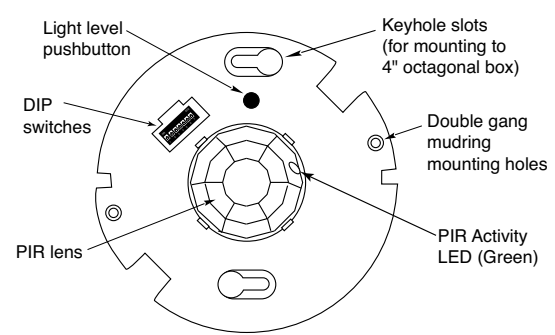


Ceiling Mounting

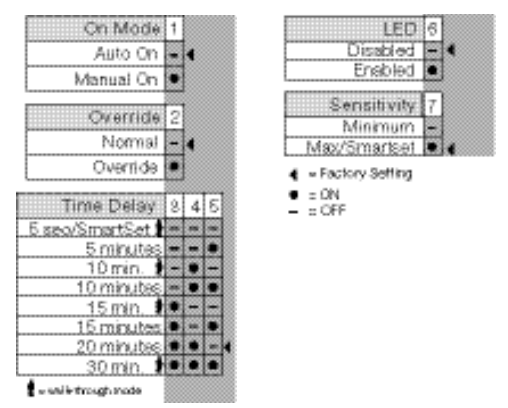


Controls & Settings

Product Controls

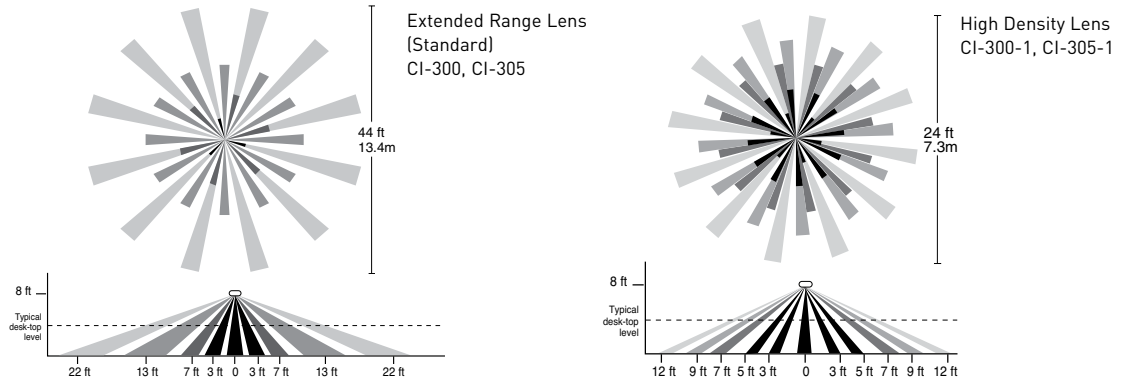


DIP Switch Settings



Coverage

Coverage Patterns



Ordering Information

Catalog No.	Voltage	Current	Coverage	Features
CI-300	24 VDC	20 mA	360°; up to 1200 ft ² (111.5 m ²)	Isolated relay, light level
CI-300-1	24 VDC	20 mA	360°; up to 500 ft ² (46.5 m ²)	Isolated relay, light level
CI-305	24 VDC	9 mA	360°; up to 1200 ft ² (111.5 m ²)	
CI-305-1	24 VDC	9 mA	360°; up to 500 ft ² (46.5 m ²)	

Sensors are white.

CI-355 Passive Infrared Line Voltage Ceiling Sensor

Auto set automatically selects optimal time delay and sensitivity settings

Architecturally appealing low profile appearance

360° coverage

Terminal wiring for quick and easy installation

Operates at 120, 277 or 347 VAC, 50/60 Hz

Walk-through mode increases savings potential



PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's CI-355 passive infrared (PIR) occupancy sensor automatically turns lighting on and off based on occupancy. The sensor mounts on the ceiling with a flat, low-profile appearance and provides 360 degrees of coverage.

Operation

The CI-355 is line voltage and operates at 120, 277 or 347 VAC. The sensor uses passive infrared technology (PIR) to sense occupancy and automatically turn lighting on. PIR works by sensing the difference between infrared energy from a human body in motion and the background space. When no occupancy is detected for the length of the time delay, lighting automatically turns off.

Auto Set

The CI-355 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Using this information, it automatically adjusts the time delay and sensitivity settings for optimal performance and energy efficiency. The sensor assigns short delays (as low as 5 minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Applications

The CI-355 works well in open office spaces, computer rooms, conference rooms, classrooms, and warehouses. It is a good choice for areas with high ceilings or with two-level lighting. The convenient mounting system keeps installation costs down. It also eliminates the need for a power pack by using line voltage wiring.

Features

- Advanced control logic based on RISC micro-controller provides:
 - Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
 - Walk-through mode turns lights off 3 minutes after the area is initially occupied – ideal for brief visits such as mail delivery
 - Built-in light level sensor featuring simple, one-step set-up
- LED indicates occupancy detection
- DIP switch simplifies sensor adjustments
- Clip mounting system makes ceiling tile installation simple
- Uses existing line voltage wiring and doesn't require a power pack
- Qualifies for ARRA-funded public works projects

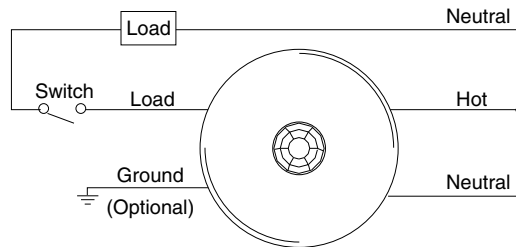


Specifications

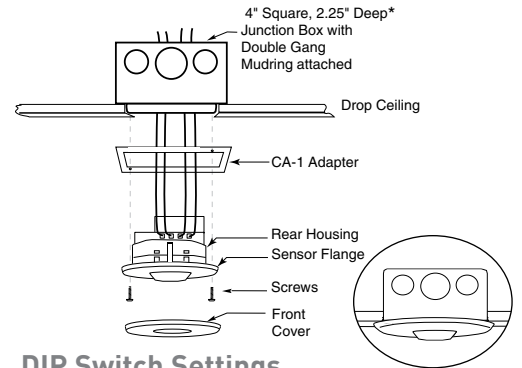
- 120/277/347 VAC, 50/60 Hz
- Time delays: Auto set, fixed (5, 10, 15, 20, or 30 minutes), walk-through, test-mode
- Sensitivity adjustment: Auto set or reduced sensitivity
- Multi-level, 360° Fresnel lens for superior occupancy detection
- Built-in light level sensor – works from 10 to 300 footcandles (107.6 to 3,229.2 lux)
- Mounting options: 4 square junction box with double gang mudring; 4 inch octagonal j-box
- Dimensions: 4.5" diameter x 1.45" deep (114.3mm x 25.9mm)
- UL and cUL listed
- Five year warranty

Wiring & Mounting

Wiring Diagram

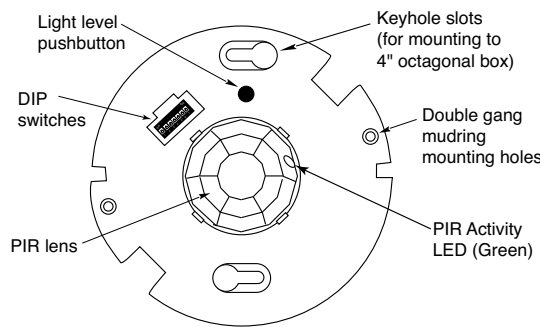


Ceiling Mounting



Controls & Settings

Product Controls



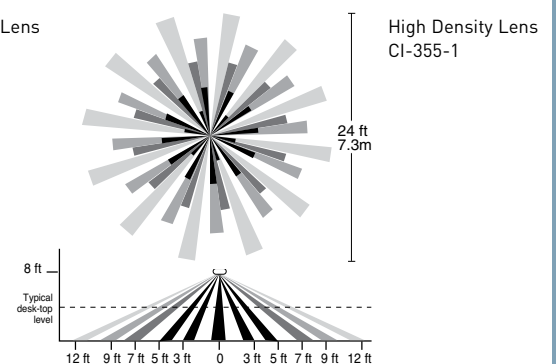
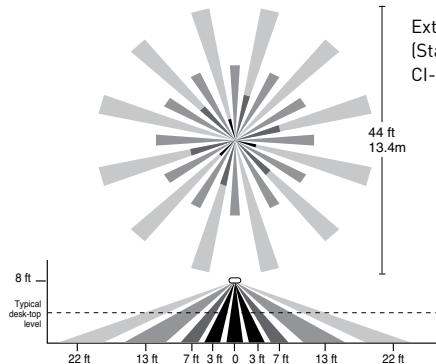
DIP Switch Settings

On Mode	1	LED	6
Auto On	-	Disabled	-
Manual On	●	Enabled	●
Override	2	Sensitivity	7
Normal	-	Minimum	-
Override	●	Max/Smartset	●
Time Delay	3 4 5	◀ = Factory Setting ● = ON - = OFF	
5 sec/SmartSet	- - -		
5 minutes	- ● -		
10 min.	- ● -		
10 minutes	- ● -		
15 min.	- ● -		
15 minutes	- ● -		
20 minutes	- ● -		
30 min.	- ● -		

⏏ = walk-through mode

Coverage

Coverage Patterns



Ordering Information

Catalog No.	Voltage	Load Rating	Coverage
<input type="checkbox"/> CI-355	120 VAC, 50/60 Hz 277 VAC, 50/60 Hz 347 VAC, 50/60 Hz	0-800W Ballast/Tungsten 0-1200W Ballast 0-1500W Ballast	360°; up to 1200 ft ² (111.5 m ²)
<input type="checkbox"/> CI-355-1	120 VAC, 50/60 Hz 277 VAC, 50/60 Hz 347 VAC, 50/60 Hz	0-800W Ballast/Tungsten 0-1200W Ballast 0-1500W Ballast	360°; up to 500 ft ² (46.5 m ²)
<input type="checkbox"/> CA-1	Cosmetic adapter for ceiling installations with 4" square j-box or Wiremold #V5752 box		

CI-200 Series Passive Infrared Ceiling Sensors



PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's CI-200 Series Passive Infrared (PIR) Ceiling Sensors provide 360° coverage to detect occupancy in the controlled area. These low-profile sensors reliably control lighting in a variety of applications.

Operation

The CI-200 Series Sensors are 24 VDC and control lighting through WattStopper power packs. Utilizing the latest PIR technology, they turn lighting on when a difference is detected between the infrared energy from a human being in motion and the background space within the controlled area. After the area is vacated for a user-adjustable time delay, lighting automatically turns off.

Coverage

Coverage from the CI-200 Series Sensors can reach up to 1200 square feet using the Extended Range Lens, and 500 square feet using the High Density Lens (circular pattern) for walking motion. For typical desktop-level activity, coverage can reach up to 300 square feet.

Applications

Applications include open office spaces, computer rooms, conference rooms, classrooms and warehouses. Areas with high ceilings or with two-level lighting can also be controlled. Due to low initial cost and the great energy saving potential, the sensors offer fast paybacks.

Features

- ASIC technology reduces components and enhances reliability
- Pulse Count Processing eliminates false off without reducing sensitivity
- Detection Signature Analysis eliminates false triggers and provides immunity to RFI and EMI
- Low-profile design ensures a clean and uncluttered ceiling appearance
- User-adjustable time delay from 15 seconds to 30 minutes by two-minute increments
- Sensitivity is programmed through a DIP switch which has four settings ranging from minimum to maximum
- Light-level output can create bi-level lighting for added convenience and energy savings
- Isolated relay can be used to interface with HVAC, EMS or an additional lighting load
- LED indicates occupancy detection
- Qualifies for ARRA-funded public works projects

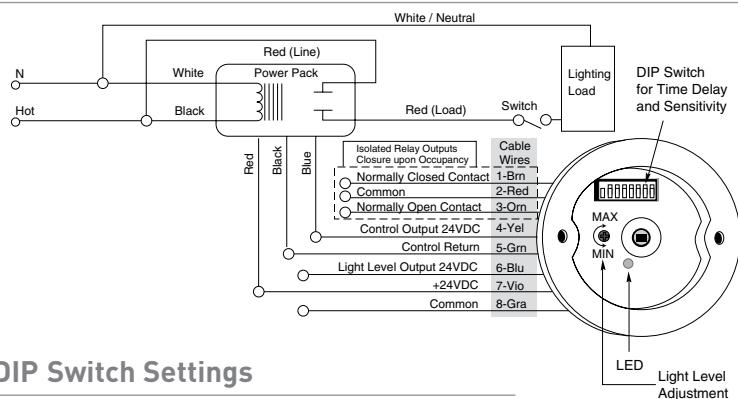


Specifications

- Dual-element, temperature compensated pyroelectric sensor
- CI-200 contains isolated relay with N/O and N/C outputs; rated for 1 Amp at 24 VDC/VAC
- Adjustable digital time delay: 15 seconds to 30 minutes with $\pm 2\%$ tolerance
- Integrated light level sensor: 4-190 footcandles (43-2,045 lux)
- Mounting options: ceiling tile, round mud ring
- Max. CI-200s per power pack: B = 5, BZ = 7
- Max. CI-205s per power pack: B = 10, BZ = 13
- Dimensions: 3.3" x 2.2" (84mm x 56mm) diameter x depth; extends approximately .36" (9.1mm) from ceiling
- UL and cUL listed
- Five year warranty

Wiring, Mounting & Settings

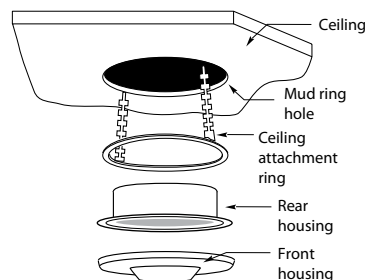
Wiring Diagram



DIP Switch Settings

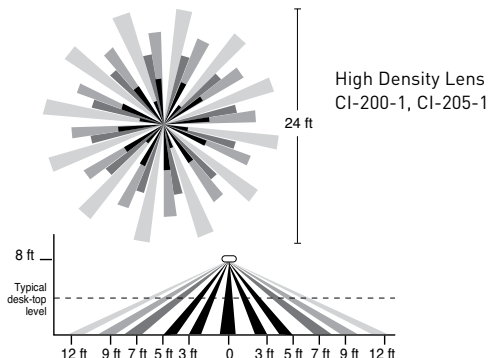
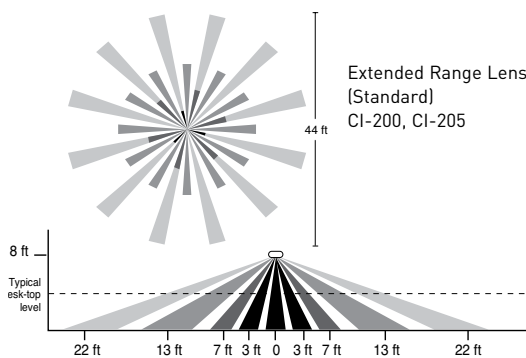
DIP Switch #	1	2	3	4	5	6	DIP Switch #	7	8
Time Delays							Sensitivity		
15 seconds	●	●	●	●	●	●	Minimum	-	-
2 minutes	-	-	●	●	●	●	Medium Low	-	●
4 minutes	-	●	-	●	●	●	Medium High	●	-
6 minutes	-	-	-	●	●	●	Maximum	●	●
8 minutes	-	●	-	-	●	●	▶ = ON - = OFF		
10 minutes	-	-	●	-	●	●	▶ = Factory Presets		
12 minutes	-	●	-	-	●	●			
14 minutes	-	-	-	-	●	●			
16 minutes	-	●	●	-	●	●			
18 minutes	-	-	●	-	-	●			
▶ 20 minutes	-	●	-	-	●	●			
22 minutes	-	-	-	-	●	●			
24 minutes	-	●	●	-	-	●			
26 minutes	-	-	●	-	-	●			
28 minutes	-	●	-	-	-	●			
30 minutes	-	-	-	-	-	●			
Override									

Mounting



Coverage

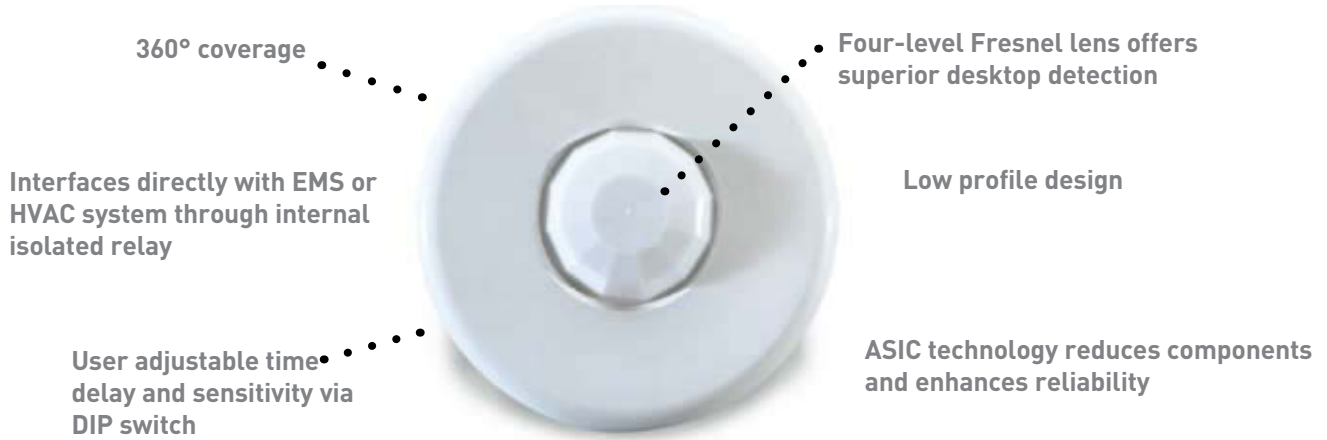
Coverage Patterns



Ordering Information

Catalog No.	Voltage	Current	Coverage	Features
<input type="checkbox"/> CI-200	24 VDC	20 mA	360°; up to 1200 ft ² (111.5 m ²)	Isolated relay, light level
<input type="checkbox"/> CI-200-U				
<input type="checkbox"/> CI-200-1	24 VDC	20 mA	360°; up to 500 ft ² (46.5 m ²)	Isolated relay, light level
<input type="checkbox"/> CI-205	24 VDC	11 mA	360°; up to 1200 ft ² (111.5 m ²)	
<input type="checkbox"/> CI-205-U				
<input type="checkbox"/> CI-205-1	24 VDC	11 mA	360°; up to 500 ft ² (46.5 m ²)	
<input type="checkbox"/> MB-1	Industrial Mounting Bracket			
<input type="checkbox"/> MB-2	Industrial Mounting Bracket for HID fixtures			

CI-12, CI-24 Passive Infrared HVAC/BAS Ceiling Sensor



PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's CI-12 and CI-24 ceiling mount passive infrared occupancy sensors reduce energy waste in unoccupied building spaces by communicating occupancy to EMS and HVAC systems.

Operation

The CI-12 and CI-24 occupancy sensors integrate with building control systems via an internal isolated relay. The isolated relay has normally open and normally closed outputs and is rated for 1 Amp at 24 VAC/VDC. The CI-12 connects directly to 12 VDC building control systems and the CI-24 connects to 24 VAC or 24 VDC building control systems. Power pack use is not necessary. When occupancy is detected, the sensor signals a building control system that then either turns devices on, such as heating or air conditioning, or increases their levels. Likewise, when the controlled area is vacated, the building control system will reduce airflow and fan speed or turn devices off.

Coverage

Coverage for the sensors can reach up to 1200 square feet using the Extended Range lens and 500 square feet using the High Density lens (circular pattern) for walking motion. For typical desktop level activity, coverage can reach up to 300 square feet.

Applications

The CI-12 and CI-24 offer an easy way to reduce energy consumption in a large variety of building spaces. By working directly with a Building Automation System, the cost of purchasing power packs and the cost of labor for power pack installation is eliminated. Furthermore, the sensors' low unit cost and reduction in energy consumption result in fast paybacks.

Features

- ASIC technology reduces components and enhances reliability
- Pulse Count Processing eliminates false offs without reducing sensitivity
- Detection Signature Analysis eliminates false triggers; provides immunity to RFI and EMI
- Digital time delay adjustment from 30 seconds to 30 minutes
- Two levels of sensitivity (minimum or maximum) are selectable through the DIP switch
- Multi-level Fresnel lens for superior desktop detection
- LED indicates occupancy detection
- Qualifies for ARRA-funded public works projects

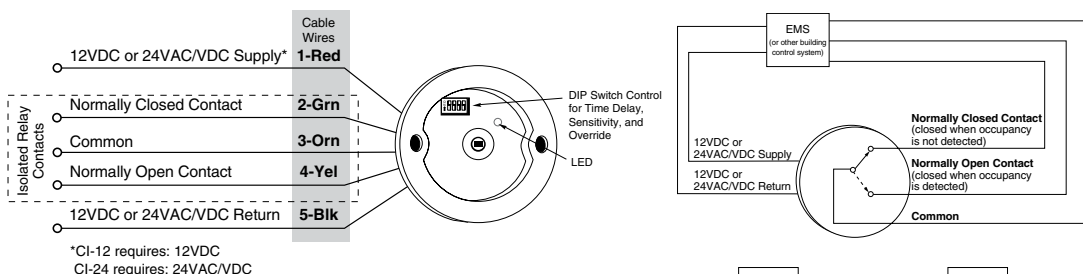


Specifications

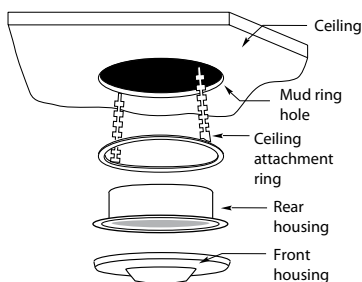
- Dual-element, temperature compensated pyro-electric sensor
- Time delay adjustment from 30 seconds to 30 minutes
- Isolated relay with normally open and normally closed outputs; rated 1 Amp @ 24 VDC/VAC
- Operates at 12 VDC (CI-12); 24 VAC or 24 VDC (CI-24)
- Mounting options: ceiling tile or round mudring
- Dimensions: 3.3" diameter x 2.2" depth (85mm x 56mm), extends approximately 0.36" (9.1mm) from ceiling
- UL and cUL listed
- Five year warranty

Wiring, Mounting & Settings

Wiring Diagram



Mounting



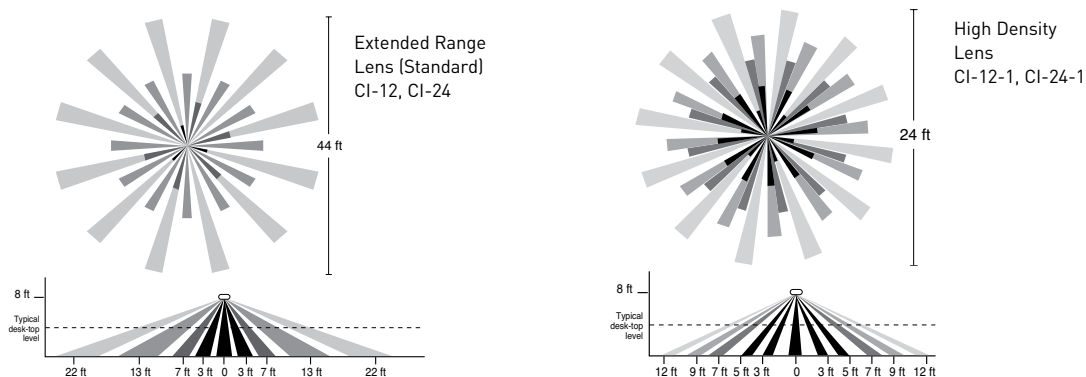
DIP Switch Settings

DIP Switch #	1	2	3	4
Time Delays				
30 seconds	●	●		
10 minutes	●	—		
20 minutes	—	●		
30 minutes	—	—		
Sensitivity				
Minimum				—
Maximum				●
Override				
Normal				—
Override				●

● = ON — = OFF
◀ = factory presets

Coverage

Coverage Patterns



Coverage shown is maximum and represents coverage for half-step walking motion. Under ideal conditions, with no barriers or obstacles, coverage for half-step walking motion can reach up to 1200 ft² using the Extended Range lens and up to 500 ft² using the High Density lens. For typical desk-top level of activity, coverage can reach up to 300 ft² using the High Density lens.

Ordering Information

Catalog No.	Voltage	Current	Coverage
<input type="checkbox"/> CI-12	12 VDC	28 mA	360°; up to 1200 ft ² [111.5 m ²]
<input type="checkbox"/> CI-12-1	12 VDC	28 mA	360°; up to 500 ft ² [46.5 m ²]
<input type="checkbox"/> CI-24	24 VAC or 24 VDC	37 mA	360°; up to 1200 ft ² [111.5 m ²]
<input type="checkbox"/> CI-24-1	24 VAC or 24 VDC	37 mA	360°; up to 500 ft ² [46.5 m ²]

Units are white

UT-300 Series Ultrasonic Ceiling Sensors

Architecturally appealing
low-profile appearance

Auto set automatically
selects optimal time
delay and sensitivity

Ultrasonic diffusers give more
comprehensive coverage



Accepts low-voltage switch
input for manual-on operation

Plug terminal wiring for
quick and easy installation

Walk-through mode
increases savings potential

Automatic or manual-on operation
when used with a BZ-150 Power Pack

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's UT-300 Ultrasonic Ceiling Sensors automatically turn lighting on and off based on occupancy. The sensors mount on the ceiling with a flat, unobtrusive appearance and provides 360° coverage.

Operation

UT-300 Series Sensors operate on 24 VDC, VAC or halfwave rectified. They use 40 KHz high frequency ultrasound to sense occupancy and automatically turn lighting on. When no occupancy is detected for the length of the time delay, lighting automatically turns off. For manual-on operation, the units work with a low-voltage momentary switch.

Auto set

The UT-300 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Based on these patterns, UT sensors automatically adjust time delay and sensitivity settings for optimal performance and energy efficiency. The sensors assign short delays (as low as five minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Application

UT-300 Series Sensors offer excellent control of lighting for many spaces, including restrooms, large offices, open office areas and hallways. They can control large partitioned office spaces when configured in zone patterns. Unit performance combined with ease of installation will provide fast payback and many years of energy savings.

Features

- Advanced control logic based on RISC microcontroller provides:
 - Advanced Signal Processing eliminates false triggers and provides immunity to RFI and EMI
 - Walk-through mode turns lights off three minutes after the area is initially occupied – ideal for brief visits such as mail delivery
- LED indicates occupancy detection
- Coverage 500-2,000 square feet
- Available with isolated relay for integration with BAS or HVAC
- DIP switch simplifies sensor adjustments
- Patented ultrasonic diffusion technology spreads coverage to a wider area
- UT-300 Series Sensors work with low-voltage momentary switches for manual control
- Clip mounting system makes ceiling tile installation simple
- Uses plug terminal wiring system for quick and easy installation
- Qualifies for ARRA-funded public works projects

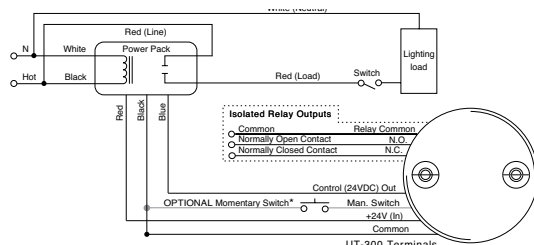


Specifications

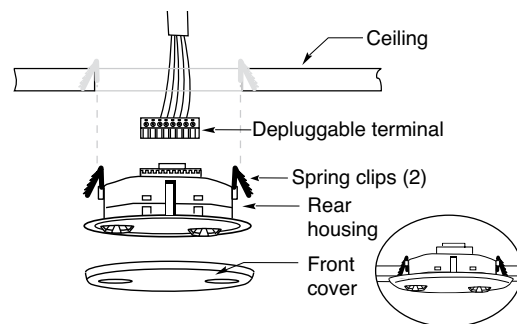
- 24 VDC/VAC
- Time delays: Auto set, fixed (5, 10, 15, 20 or 30 minutes), Walk-through/Test Modes
- Ultrasonic frequency: 40 kHz
- UT-300 contains isolated relay with N/O and N/C outputs; rated for 1 Amp at 30 VDC/VAC
- Mounting options: ceiling tile; 4" square junction box with double-gang mud ring
- Max. UT-300s per power pack: B=2, BZ=3
- Max. UT-305s per power pack: B=3, BZ=4
- Dimensions: 4.5" x 1" (114.3mm x 25.9mm) diameter x depth
- UL and cUL listed
- Five year warranty

Wiring & Mounting

Wiring Diagram

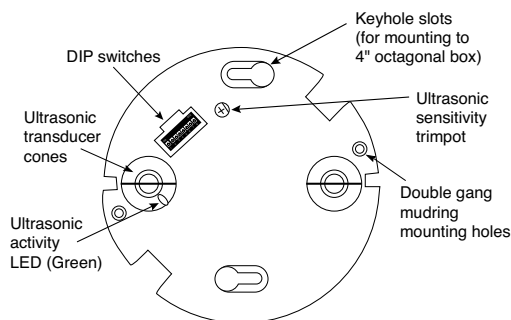


Ceiling Mounting

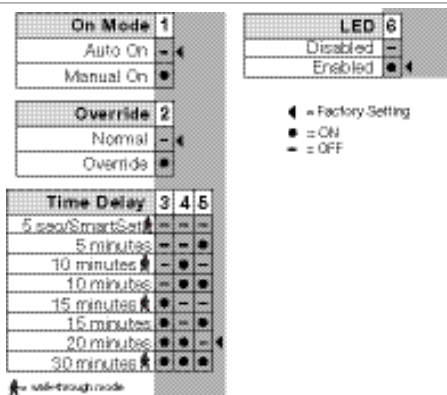


Controls & Settings

Product Controls

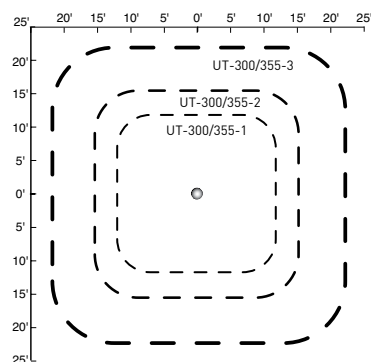


DIP Switch Settings



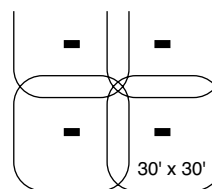
Coverage & Placement

Coverage Patterns



Coverages shown represent half-step walking motion when sensor is mounted 8'-10' high. Actual coverage can vary for each application depending on the shape and use of space and the obstacles present.

Placement



Typical layout for open office space would be to place UT-300-3 sensors so they control zones that overlap. For partitioned spaces, a typical zone is about 25' x 25' with an overlap on the coverage up to 30' x 30'.

Ordering Information

Catalog No.	Voltage	Current	Coverage	Feature
<input type="checkbox"/> UT-300-1	24 VDC	40 mA	500 ft ² (46.5 m ²)	Isolated relay
<input type="checkbox"/> UT-300-1-U				
<input type="checkbox"/> UT-300-2	24 VDC	40 mA	1000 ft ² (92.9 m ²)	Isolated relay
<input type="checkbox"/> UT-300-2-U				
<input type="checkbox"/> UT-300-3	24 VDC	45 mA	2000 ft ² (185.8 m ²)	Isolated relay
<input type="checkbox"/> UT-300-3-U				
<input type="checkbox"/> UT-305-1	24 VDC	30 mA	500 ft ² (46.5 m ²)	
<input type="checkbox"/> UT-305-2	24 VDC	30 mA	1000 ft ² (92.9 m ²)	
<input type="checkbox"/> UT-305-3	24 VDC	35 mA	2000 ft ² (185.8 m ²)	

UT-355 Ultrasonic Line Voltage Ceiling Sensor

Architecturally appealing
low-profile appearance

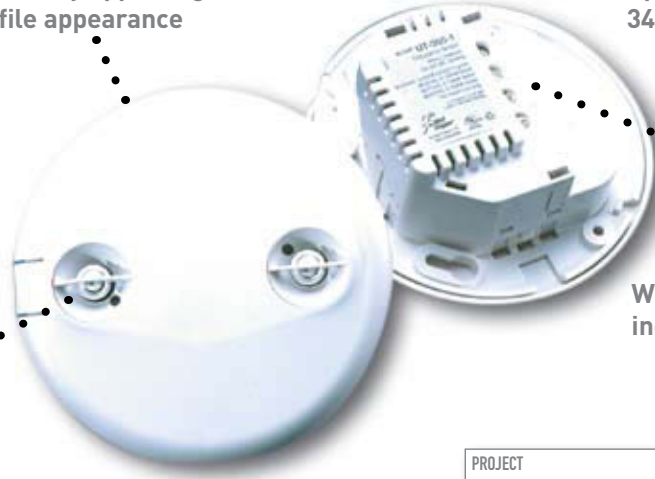
Operates at 120, 277 or
347 VAC, 50/60 Hz

Utilizes advanced,
omni-directional,
ultrasonic technology

Terminal wiring for quick
and easy installation

Ultrasonic diffusers
provide more
comprehensive coverage

Walk-through mode
increases savings potential



PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's low-profile UT-355 Ultrasonic Line Voltage Ceiling Sensor automatically turns lighting on and off based on occupancy. The sensor mounts on the ceiling with a flat, unobtrusive appearance and provides 360° coverage.

Operation

The UT-355 is line voltage and operates at 120, 277, or 347 VAC. It uses high frequency (40 KHz) ultrasound to sense occupancy and automatically turn lighting on. When no occupancy is detected for the length of the time delay, lighting automatically turns off.

Auto Set

The UT-355 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Based on these patterns, UT sensors automatically adjust time delay and sensitivity settings for optimal performance and energy efficiency. The sensor assigns short delays (as low as five minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Application

UT sensors offer excellent control of lighting for many spaces, including restrooms and large offices. The UT sensors' performance and ease of installation will provide fast paybacks and many years of energy savings.

Features

- Advanced control logic based on RISC microcontroller provides:
 - Advanced Signal Processing to eliminate false triggers and provide immunity to RFI and EMI
 - Walk-through Mode to turn lights off three minutes after the area is initially occupied, ideal for brief visits such as mail delivery
- LED indicates occupancy detection
- Coverage 500-2,000 square feet
- DIP switch simplifies sensor adjustments
- Patented ultrasonic diffusion technology spreads coverage to a wider area
- Clip mounting system makes ceiling tile installation simple
- Terminal wiring system provides quick and easy installation
- Qualifies for ARRA-funded public works projects

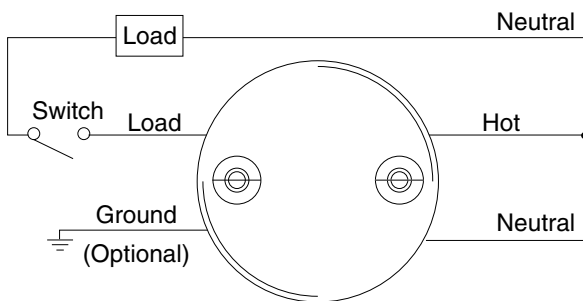


Specifications

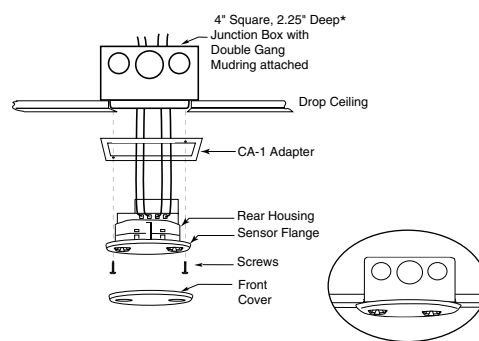
- 120/277/347 VAC, 50/60 Hz
- Time delays: Auto set, fixed (5, 10, 15, 20, or 30 minutes), Walk-through & Test modes
- Sensitivity adjustment: Auto set or reduced sensitivity
- Ultrasonic frequency of 40 kHz
- Mounting options: 4" square junction box with double-gang mud ring; 4" octagonal junction box
- Dimensions: 4.5" x 1.45" (114.3mm x 25.9mm) diameter x depth
- UL and cUL listed
- Five year warranty

Wiring & Mounting

Wiring Diagram

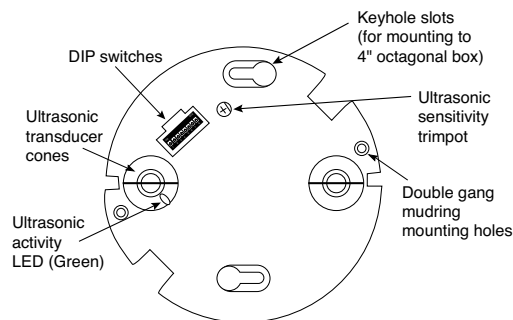


Ceiling Mounting



Controls & Settings

Product Controls



DIP Switch Settings

On Mode	1	Time Delay		
Auto On	◀	3	4	5
Manual On	●	5 sec/Auto▲	-	-
		5 minutes	-	●
		10 minutes▲	-	●
		10 minutes▲	●	-
		15 minutes▲	●	-
		15 minutes▲	●	-
		20 minutes▲	●	-
		30 minutes▲	●	●

Override	2
Normal	◀
Override	●

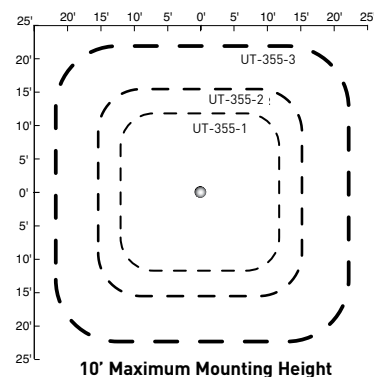
LED	6
Disabled	-
Enabled	●

▲ = Factory Setting
● = ON
- = OFF

▲ = walk-through mode

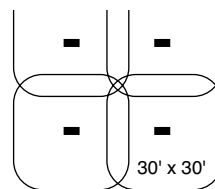
Coverage & Placement

Coverage Patterns



Coverages shown represent half-step walking motion when sensor is mounted 8'-10' high. Actual coverage can vary for each application depending on the shape and use of space and the obstacles present.

Placement



Typical layout for open office space would be to place UT-355-3 sensors so they control zones that overlap. For partitioned spaces, a typical zone is about 25' x 25' with an overlap on the coverage up to 30' x 30'.

Ordering Information

Catalog No.	Voltage/Description	Load Rating	Coverage
□ UT-355-1	120 VAC, 50/60 Hz;	0-800 W Ballast/ Tungsten,	500 ft ² (45.5 m ²)
□ UT-355-2	277 VAC, 50/60 Hz; or	0-1200 W Ballast, or	1000 ft ² (92.9 m ²)
□ UT-355-3	347 VAC, 50/60 Hz	0-1500 W Ballast	2000 ft ² (185.8 m ²)
□ CA-1	Cosmetic adapter for ceiling installations with 4" square j-box or Wiremold #V5752 box		

Sensors are white.

WT Ultrasonic Ceiling Sensors

Ultrasonic technology with 32 KHz frequency

Automatic or manual-on operation when used with a BZ-150 Power Pack

Advanced Signal Processing circuitry automatically adjusts detection threshold



User-adjustable DIP switch time delay and sensitivity settings

Hallway and 600, 1100 and 2200 square foot coverages available

Isolated relay allows sensor to interface with building control systems

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's WT Ultrasonic Ceiling Sensors utilize 32 KHz frequency ultrasonic technology to detect occupancy. The sensors are available in several models to control lighting in a wide variety of applications.

Operation

WT Sensors are 24 VDC and utilize advanced, omni-directional, ultrasonic technology. When movement is detected in a controlled area, it switches lighting on through a WattStopper power or auxiliary pack. The sensor controls the power pack through low voltage wiring. Once the area is vacated and the time delay has elapsed, lighting systems automatically switch off.

Advanced Signal Processing (ASP)

WT Sensors use WattStopper's ASP circuitry, which filters out moving air noise by checking for small cyclical changes found in turbulent air. This helps to eliminate false on problems found in sensors without ASP.

Applications

WT sensors offer excellent control of lighting for many areas of a building. The sensors are designed to effectively control offices, restrooms, storage areas and open office areas, and can control large partitioned office spaces when configured in zone patterns. The WT can be used with BD Din Rail Mounted Power Packs and low-voltage momentary wall switches to achieve manual-on/auto-off control. The WT sensors' superior performance and ease of installation will provide fast paybacks and many years of energy savings.

Features

- ASP circuitry helps to eliminate false on
- Advanced, omni-directional, ultrasonic technology for reliable occupancy detection
- Angled transmitter and receiver pairs help optimize sensitivity while eliminating unwanted detection from ceiling air movement
- Coverage ranges from 600 to 2200 square feet, and 90 linear feet for hallways
- Isolated relay can interface with HVAC, EMS or an additional lighting load
- DIP switch-adjustable time delay and sensitivity
- LED indicates occupancy detection
- Qualifies for ARRA-funded public works projects

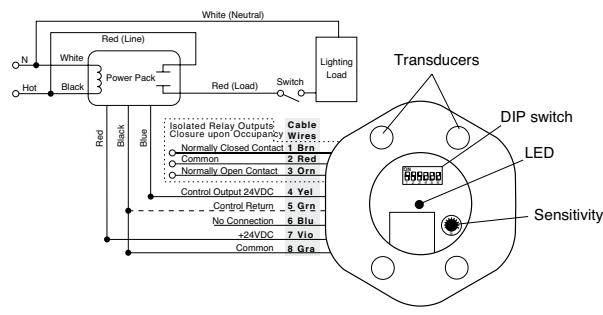


Specifications

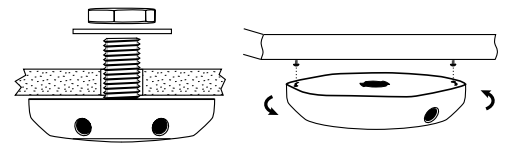
- Solid state, crystal-controlled (32.768 kHz ± 0.002%)
- Omni-directional transmission (360° coverage)
- Temperature and humidity resistant 32 kHz receivers
- Digital DIP switch time delay: 15 seconds to 30 minutes
- Isolated relay with N/O and N/C outputs; rated for 1 Amp @ 30 VDC/VAC
- Mounts to ceiling tile or Wiremold V5738-WH box
- Max. WT-605s per power pack: B=4, BZ=5
- Max. WT-600s per power pack: B= 3, BZ=4
- Max. WT-1105s, WT-2205s, WT-2255s: B=3, BZ=5
- Max. WT-1100s, WT-2200s, WT-2250s: B=2, BZ=3
- Dimensions: 4.8" x 1.5" (122mm x 38mm) diameter x depth
- UL and cUL listed
- Five year warranty

Wiring, Installation & Placement

Wiring & Controls

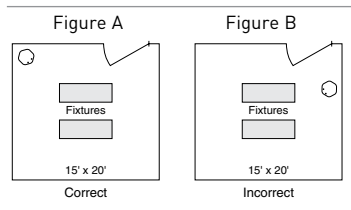


Installation



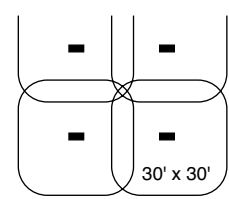
Mount the sensors to a vibration-free surface with the receivers facing the area of coverage.
Note: Place 4' away from supply ducts, 6' from horizontal discharge ducts and 6" from power packs.

Enclosed Office Placement



For enclosed spaces, place sensors as in Figure A. Sensors placed as in Figure B may see out the door and cause false triggers.

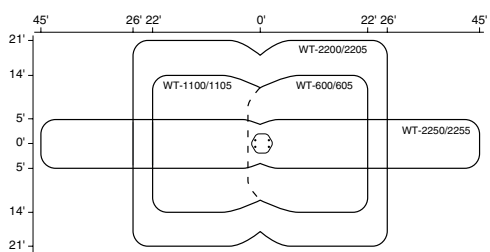
Open Office Placement



A typical layout for an open office space would be to place WT-2200 or WT-2205 sensors so they control zones that overlap. For partitioned spaces, a typical zone is about 25' x 25' with an overlap on the coverages that senses motion up to 30' x 30'.

Coverage & Settings

Coverage Pattern



Coverages shown represent half-step walking motion. Actual coverages can vary for each application depending on the shape and use of space and the obstacles present. Coverage may be reduced if product is mounted greater than 12 feet high.

DIP Switch Settings

◀ = factory preset
 ● = ON -- = OFF

Time Delay	DIP Switch #					
	1	2	3	4	5	6
15 seconds	●	-	-	-	-	-
2 minutes	-	●	-	-	-	-
4 minutes	-	-	●	-	-	-
6 minutes	-	●	●	-	-	-
8 minutes	-	-	-	●	-	-
10 minutes	-	●	●	●	-	-
12 minutes	-	-	●	●	●	-
14 minutes	-	●	●	●	●	-
16 minutes	-	-	-	-	●	-
18 minutes	-	-	-	-	-	●
20 minutes	-	-	-	-	-	●
22 minutes	-	-	-	-	-	●
24 minutes	-	-	-	-	-	●
26 minutes	-	-	-	-	-	●
28 minutes	-	-	-	-	-	●
30 minutes	-	-	-	-	-	●
Output Disable	-	-	-	-	-	●
Override	-	-	-	-	-	●

Ordering Information

Catalog No.	Voltage	Current	Coverage	Feature
<input type="checkbox"/> WT-605	24 VDC	27 mA	180° one-sided, 600 ft ² (55.7 m ²)	
<input type="checkbox"/> WT-600	24 VDC	37 mA	180° one-sided, 600 ft ² (55.7 m ²)	Isolated relay
<input type="checkbox"/> WT-1105	24 VDC	30 mA	360° two-sided, 1100 ft ² (102.2 m ²)	
<input type="checkbox"/> WT-1100	24 VDC	40 mA	360° two-sided, 1100 ft ² (102.2 m ²)	Isolated relay
<input type="checkbox"/> WT-2205	24 VDC	30 mA	360° two-sided, 2200 ft ² (204.4 m ²)	
<input type="checkbox"/> WT-2200	24 VDC	40 mA	360° two-sided, 2200 ft ² (204.4 m ²)	Isolated relay
<input type="checkbox"/> WT-2255	24 VDC	30 mA	360° two-sided, 90 linear ft (27.4 m)	
<input type="checkbox"/> WT-2250	24 VDC	40 mA	360° two-sided, 90 linear ft (27.4 m)	Isolated relay

All units are white and use WattStopper power packs. Current consumption can be slightly higher when only one sensor per power pack is used.

W Series Ultrasonic Ceiling Sensors

Turns lights on and off based on occupancy to reduce energy costs

Adjustable time delay from 15 seconds to 15 minutes



Hallway and 500, 1000 and 2000 square foot coverage available

Ideal for open office areas, conference rooms and restrooms

Advanced Signal Processing (ASP) circuitry automatically adjusts detection threshold

Automatic or manual-on operation when used with a BZ-150 Power Pack

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's W Series Ultrasonic Ceiling Sensors are versatile motion detectors that control lighting in a wide variety of applications. W Series Sensors can be used individually or as part of an integrated system of WattStopper lighting control products.

Operation

The 24 VDC W Series Sensors utilize advanced omni-directional, ultrasonic technology to sense occupancy. When movement is detected in a controlled area, the W Series Sensors will switch lights on via low-voltage wiring through to a WattStopper power or auxiliary pack. Once the area is vacated and the user-adjustable time delay (15 seconds to 15 minutes) has elapsed, lighting systems automatically switch off.

Manual-on Option

To comply with code or for additional control options, W Series Sensors can be used with a BZ-150 power pack for manual-on/auto-off control. If this option is selected, occupants utilize a low-voltage momentary wall switch to turn on lights. Lights automatically turn off after the area is vacated and the user-adjustable time delay has elapsed.

Applications

Ultrasonic sensors effectively control offices, restrooms, utility areas, open office spaces and warehouses. The W-500A is perfect for offices, conference rooms, restrooms and other areas up to 500 square feet. The W-1000A fits in larger spaces, such as storage areas. The W-2000A is ideal for open office areas or large warehouses and can control partitioned open office spaces when configured in highly versatile zone patterns. The W-2000H reliably covers hallways with walls.

Features

- ASP circuitry helps to eliminate false on
- Utilizes advanced omni-directional, ultrasonic technology for reliable occupancy detection
- Omni-directional transmission provides 360° of coverage
- Time delay adjustable from 15 seconds to 15 minutes
- 500, 1000, 2000-square foot and hallway coverage available to fit needs of specific applications
- Optional on override by installing the Override Pin provided with the sensor
- LED indicates occupancy detection
- Qualifies for ARRA-funded public works projects

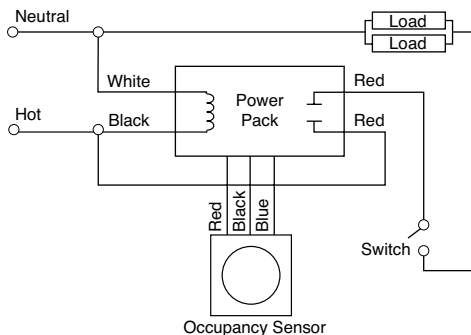


Specifications

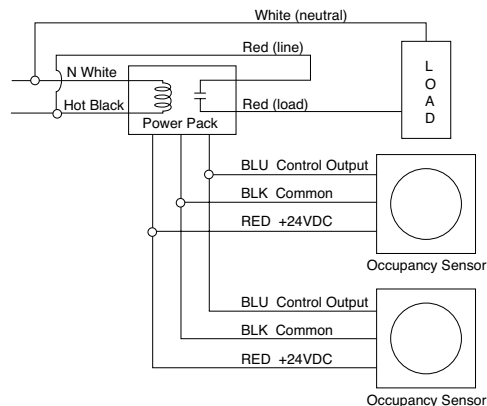
- Solid state, crystal-controlled (25 kHz ± 0.005%)
- Temperature and humidity-resistant 25 kHz receivers: W-500A contains one receiver, other models contain two receivers
- Adjustable time delay: 15 seconds to 15 minutes
- Mounting options: ceiling tile, 4" sq. junction box
- Max. units per power pack: B = seven; BZ = nine
- Dimensions: 4.5" x 4.5" x 1.25" (115mm x 115mm x 32mm) W x L x D
- UL listed
- Five year warranty

Wiring

Standard Wiring Diagram

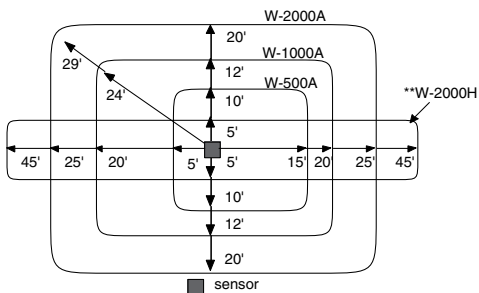


Multiple Sensor Wiring Diagram



Coverage, Installation & Placement

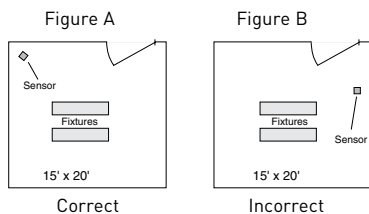
Coverage Pattern



Coverage shown represent half-step walking motion. Actual coverage can vary for each application depending on the shape and the use of space and the obstacles present. Coverage may be reduced if product is mounted greater than 12 feet high.

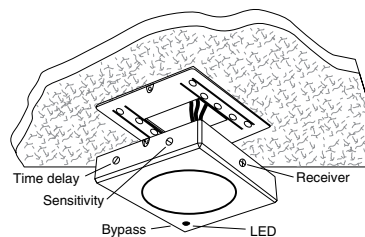
The W-2000H drawing is not drawn to scale. Coverage is 10' x 90' in a hallway; enclosed spaces enhance coverage.

Enclosed Office Sensor Placement



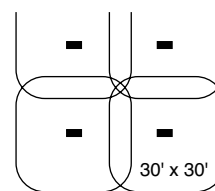
For enclosed spaces, place sensors as in Figure A. Sensors placed as in Figure B may see out the door and cause false triggers.

Installation



Attach sensor to a vibration-free surface. Mount the sensors with the receivers facing the area of coverage. Note: Ultrasonic sensors should be placed 4' away from supply ducts, 6' from horizontal discharge ducts, and 6" from power packs.

Open Office Sensor Placement



A typical layout for an open office spaces would be to place W-2000A sensors so they control zones that overlap. For partitioned spaces, a typical zone is about 25' x 25' with an overlap on the coverage that senses motion up to 30' x 30'.

Ordering Information

Catalog No.	Voltage	Current	Coverage
<input type="checkbox"/> W-500A <input type="checkbox"/> W-500A-FTA <input type="checkbox"/> W-500A-U	24 VDC	16 mA	360°; 500 ft ² (46.5 m ²)
<input type="checkbox"/> W-1000A <input type="checkbox"/> W-1000A-FTA <input type="checkbox"/> W-1000A-U	24 VDC	16 mA	360°; 1000 ft ² (92.9 m ²)
<input type="checkbox"/> W-2000A <input type="checkbox"/> W-2000A-FTA <input type="checkbox"/> W-2000A-U	24 VDC	16 mA	360°; 2000 ft ² (185.8 m ²)
<input type="checkbox"/> W-2000H <input type="checkbox"/> W-2000H-FTA <input type="checkbox"/> W-2000H-U	24 VDC	16 mA	360°; 90 linear ft (27.4 m)**

All units are white and use WattStopper power packs.

**Coverage for an enclosed hallway is 10' x 90' (see pattern above).

DT-200 Series Dual Technology Ceiling/Wall Sensors

Combines passive infrared (PIR) and ultrasonic technologies

Auto set automatically selects optimal settings for each space

Walk-through mode increases savings potential



Built-in light level sensor

Accepts low-voltage switch input for manual-on operation

Automatic or manual-on operation when used with a BZ-150 Power Pack

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's DT-200 Series Dual Technology Ceiling Sensors combine PIR and ultrasonic technologies into one unit to achieve precise coverage in detecting occupancy.

Operation

Low voltage DT-200 Series Sensors utilize a WattStopper power pack to turn lights on when both PIR and ultrasonic technologies detect occupancy. They can also work with a low voltage switch for manual-on operation. PIR technology senses motion via a change in infrared energy within the controlled area, whereas ultrasonic uses 40 kHz high frequency ultrasound. Once on, detection by either technology holds lights on. When no occupancy is detected for the length of the time delay, lights turn off. DT-200 Series Sensors can also be set to trigger lights on when either technology or both detect occupancy, or to require both technologies to hold lighting on.

Features

- Advanced control logic based on RISC microcontroller provides:
 - Detection Signature Processing to eliminate false triggers and provides immunity to RFI and EMI
 - Walk-through Mode turns lights off three minutes after the area is initially occupied – ideal for brief visits, such as mail delivery
 - Available with built-in light level sensor featuring simple, one-step setup
- Sensors work with low-voltage momentary switches to provide manual control
- LEDs indicate occupancy detection
- Eight occupancy logic options provide the ability to customize control to meet application needs
- Available with isolated relay for integration with BAS or HVAC
- Swivel mounting bracket for convenient corner mounting to wall or ceiling
- Qualifies for ARRA-funded public works projects

Auto set

The DT-200 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Based on these patterns, units automatically adjust time delay and sensitivity settings for optimal performance and energy efficiency. Sensors assign short delays (as low as five minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Application

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

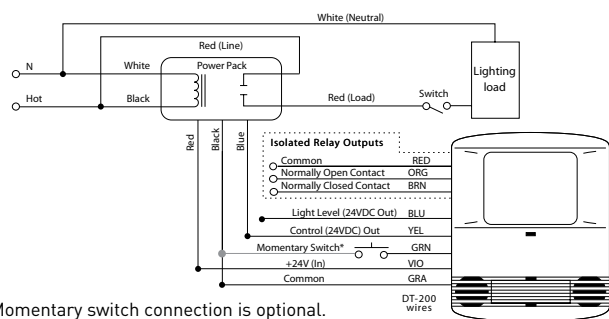


Specifications

- 24 VDC/VAC and halfwave rectified AC
- 40 kHz frequency ultrasonic transmission
- Time delays: Auto set, fixed (5, 10, 15, 20 or 30 minutes), Walk-through/Test Modes
- Sensitivity adjustment: Auto set; reduced sensitivity (PIR); variable with trim pot (ultrasonic)
- Built-in light level sensor: 2 to 200 footcandles (21 to 2,152 lux)
- Low voltage, momentary switch input for manual operation
- DT-200 contains an isolated relay with N/O and N/C outputs; rated for 1 Amp at 24 VDC/VAC
- 2000 ft² of walking motion mounted at 10 ft; 1000 ft² of desktop motion
- Max. DT-200s per power pack: B=2, BZ=3
Max. DT-205s per power pack: B=3, BZ=4
- Dimensions: 4.4" x 3.4" x 2" (110.3mm x 85.9mm x 49.6mm) L x W x D
- UL and cUL listed
- Five year warranty

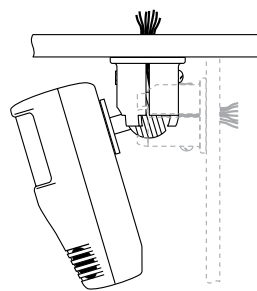
Wiring & Mounting

Wiring Diagram



*Momentary switch connection is optional.
Connect only when momentary switch is installed.

Mounting



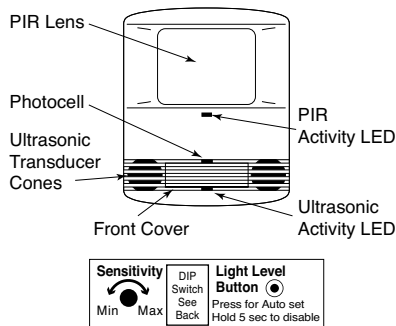
A swivel mounting bracket attached to the sensor allows the sensor to be angled for wall or ceiling mounting.

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

Mount to mud ring.

Controls & Settings

Product Controls



DIP Switch Settings

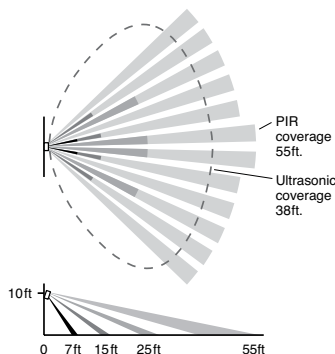
◀ = Factory Setting
● = ON
- = OFF

		Switch#		
		1	2	3
Occupancy	Logic	-	-	-
	Option 1	●	-	-
	Option 2	-	-	-
	Option 3	●	●	-
	Option 4	-	-	●
	Option 5	●	-	●
	Option 6	-	-	●
	Option 7	●	●	●
Time Delay	4	-	-	-
	5 sec/SmartSet	-	-	-
	5 minutes	-	-	●
	10 min.	-	-	●
	10 minutes	-	-	●
	15 min.	-	-	●
PIR Sensitivity	8	-	-	-
	Minimum	-	-	-
	Max./SmartSet	-	-	●
	LEDs	7	-	-
	Disabled	-	-	
	Enabled	●	-	

◀ = walk-through mode

Coverage

Coverage Pattern



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

Ordering Information

Catalog No.	Voltage	Current	Coverage	Features
<input type="checkbox"/> DT-200	24 VDC	43 mA	2000 ft ² (185.8 m ²)	light level, isolated relay
<input type="checkbox"/> DT-205	24 VDC	35 mA	2000 ft ² (185.8 m ²)	

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

DT-300 Series Dual Technology Ceiling Sensors

Architecturally appealing
low-profile appearance

Auto set automatically
selects optimal settings
for each space

Walk-through mode
increases savings potential

Ultrasonic diffusers give more
comprehensive coverage



Plug terminal wiring for
quick and easy installation

Accepts low-voltage
switch input for
manual-on operation

Automatic or manual-on operation
when used with a BZ-150 Power Pack

PROJECT
LOCATION/TYPE

Product Overview

Description

The DT-300 Series Dual Technology Ceiling Sensors combine the benefits of passive infrared (PIR) and ultrasonic technologies to detect occupancy. Sensors have a flat, unobtrusive appearance and provide 360 degrees of coverage.

Operation

Low voltage DT-300 Series sensors utilize a WattStopper power pack to turn lights on when both PIR and ultrasonic technologies detect occupancy. They can also work with a low voltage switch for manual-on operation. PIR technology senses motion via a change in infrared energy within the controlled area, whereas ultrasonic uses 40KHz high frequency ultrasound. Once lights are on, detection by either technology holds them on. When no occupancy is detected for the length of the time delay, lights turns off. DT-300 Series Sensors can also be set to trigger lights on when either technology or both detect occupancy, or to require both technologies to hold lighting on.

Auto Set

The DT-300 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Based on these patterns, the unit automatically adjusts time delay and sensitivity settings for optimal performance and energy efficiency. Sensors assigns short delays (as low as five minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Application

DT-300 Series Dual Technology Sensors have the flexibility to work in a variety of applications, where one technology alone could cause false triggers. Ideal applications include classrooms, open office spaces, large offices and computer rooms. The DT-300 Series mounting system makes them easy to install in ceiling tiles or to junction boxes, providing the flexibility to be used in a wide range of spaces.

Features

- Advanced control logic based on RISC microcontroller provides:
- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- Walk-through mode turns lights off three minutes after the area is initially occupied – ideal for brief visits such as mail delivery
- Available with built-in light level sensor featuring simple, one-step setup
- Sensors work with low-voltage momentary switches to provide manual control
- Patented ultrasonic diffusion technology spreads coverage to a wider area
- LEDs indicate occupancy detection
- Uses plug terminal wiring system for quick and easy installation
- Eight occupancy logic options provide the ability to customize control to meet application needs
- Available with isolated relay for integration with BAS or HVAC
- Qualifies for ARRA-funded public works projects

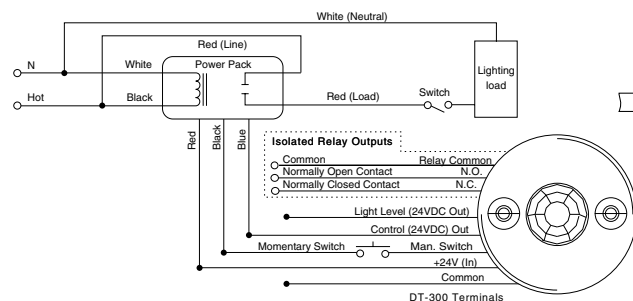


Specifications

- 24 VDC/VAC
- Ultrasonic frequency: 40kHz
- Time delays: Auto set, fixed (5, 10, 15, 20, or 30 minutes), Walk-through/Test Modes
- Sensitivity adjustment: Auto set; reduced sensitivity (PIR); variable with trim pot (ultrasonic)
- Built-in light level sensor: 10 to 300 footcandles (107.6 to 3,229.2 lux)
- Low-voltage, momentary switch input for manual on or off operation
- DT-300 contains an isolated relay with N/O and N/C outputs; rated for 1 Amp @ 30 VDC/VAC
- Multi-level Fresnel lens provides 360° coverage
- Mounting options: ceiling tile; 4" octagonal J-box, 1.5" deep
- Max DT-300s per power pack: B=2, BZ=3
Max DT-305s per power pack: B=3, BZ=4
- Dimensions: 4.50" diameter x 1.02" deep (114.3mm x 25.9mm)
- UL and cUL listed
- Five year warranty

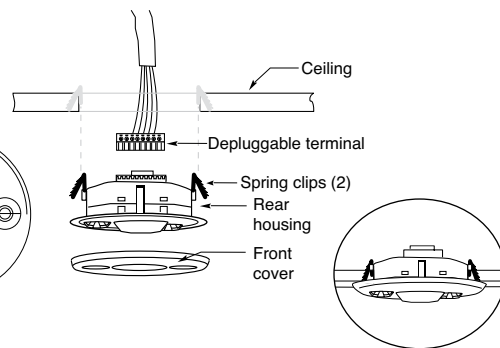
Wiring & Mounting

Wiring Diagram



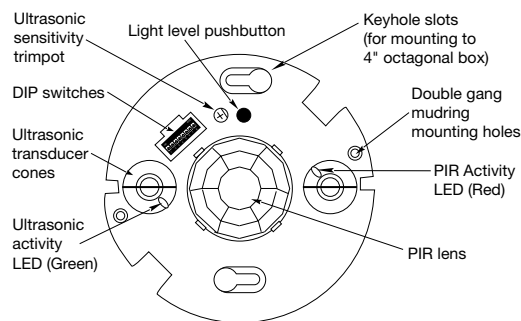
*Momentary switch connection is optional.
Connect only when momentary switch is installed.

Ceiling Mounting



Controls & Settings

Product Controls



DIP Switch Settings

◀ = Factory Setting
● = ON
-- = OFF

Occupancy Logic	Switch#		
	1	2	3
Standard	--	--	--
Option 1	●	--	--
Option 2	--	●	--
Option 3	--	--	●
Option 4	●	●	--
Option 5	●	●	●
Option 6	●	●	●
Option 7	●	●	●

Occupancy Logic	Trigger		
	Initial Occupancy	Maintain Occupancy	Re-trigger (seconds duration)
Standard	Both	Either	Either(5)
Option 1	PIR	Either	Either(5)
Option 2	Both	Both	Both(5)
Option 3	PIR	PIR	PIR(5)
Option 4	Ultra	Ultra	Ultra(5)
Option 5	Man.	Either	Either(30)
Option 6	Man.	Both	Both(30)
Option 7	Man.	Both	Both(30)

Time Delay	4	5	6
5 sec/SmartSet	--	--	--
5 minutes	--	●	--
10 min.	--	●	●
10 minutes	●	●	--
15 min.	●	●	●
15 minutes	●	●	●
20 minutes	●	●	●
30 min.	●	●	●

⬆ = walk-through mode

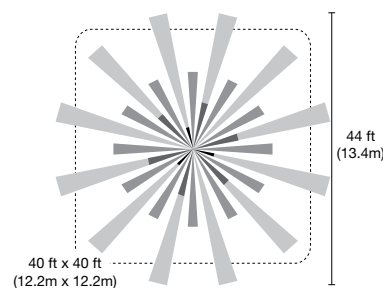
LEDs	7
Disabled	--
Enabled	●

PIR Sensitivity	8
Minimum	--
Max./SmartSet	●

The technology control (occupancy logic) options are adjustable by user. The standard setting recommended for most applications requires both technologies to trigger on, either to hold on.

Coverage

Coverage Pattern



Coverage shown is maximum and represents half-step walking motion. Under ideal conditions, coverage for half-step walking motion can reach up to 1000 ft².

Ordering Information

Catalog No.	Voltage	Current	Coverage	Features
<input type="checkbox"/> DT-300	24 VDC/VAC	43 mA	up to 1000 ft ² (92.9 m ²)	Isolated relay, light level
<input type="checkbox"/> DT-300-U	24 VDC/VAC	43 mA	up to 1000 ft ² (92.9 m ²)	
<input type="checkbox"/> DT-305	24 VDC/VAC	35 mA	up to 1000 ft ² (92.9 m ²)	
<input type="checkbox"/> DT-305-U	24 VDC/VAC	35 mA	up to 1000 ft ² (92.9 m ²)	

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

DT-355 Dual Technology Line Voltage Ceiling Sensor

Architecturally appealing,
low profile appearance

Auto set automatically
selects optimal settings
for each space

Ultrasonic diffusers give
more comprehensive
coverage



Operates at 120, 277 or
347 VAC, 50/60 Hz

Terminal wiring
for quick and easy
installation

Walk-through mode
increases savings potential

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's low profile DT-355 dual technology occupancy sensor combines the benefits of passive infrared (PIR) and ultrasonic technologies. The sensor mounts on the ceiling with a flat, unobtrusive appearance and provides 360 degrees of coverage.

Operation

The DT-355 is line voltage and operates at 120, 277 or 347 VAC. The sensor turns lighting on when both PIR and ultrasonic technologies detect occupancy. PIR technology senses the difference between infrared energy from a human body in motion and the background space. Ultrasonic technology uses high frequency (40KHz) ultrasound to sense motion within the space. Once lighting is on, detection by either technology holds lighting on. When no occupancy is detected for the length of the time delay, lighting turns off. The DT-355 can also be set so that only one technology is needed to trigger or both technologies are needed to hold lighting on.

Auto Set

The DT-355 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Using this information, it automatically adjusts the time delay and sensitivity settings for optimal performance and energy efficiency. The sensor assigns short delays (as low as 5 minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Application

WattStopper's patented dual technology has the flexibility to work in a variety of applications, where one technology alone could encounter false triggers. Ideal applications include classrooms, open office spaces, large offices, and computer rooms. In addition, because the DT-355 can be mounted onto a variety of junction boxes, the sensor has the flexibility to be used in a wide range of spaces. The sensors eliminate the need for a power pack by using line voltage wiring.

Features

- Advanced control logic based on RISC micro-controller provides:
 - Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
 - Walk-through mode turns lights off 3 minutes after the area is initially occupied – ideal for brief visits such as mail delivery
 - Built-in light level sensor featuring simple, one-step setup
- Ultrasonic diffusion technology spreads coverage to a wider area (patent pending)
- DIP switch simplifies sensor adjustments
- LEDs indicate occupancy detection
- Uses existing line voltage wiring and doesn't require a power pack
- Six occupancy logic options give users the ability to customize control to meet application needs
- Qualifies for ARRA-funded public works projects

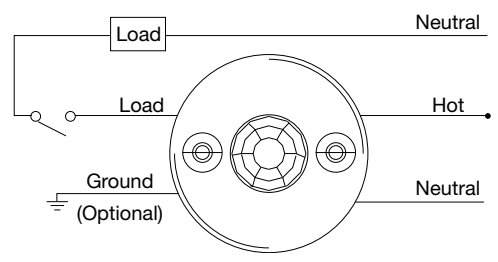


Specifications

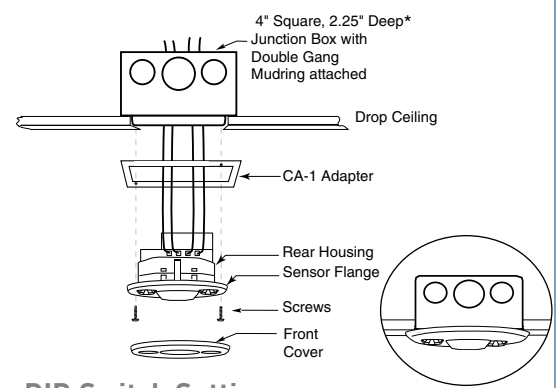
- 120/277/347 VAC, 50/60 Hz
- Ultrasonic frequency of 40kHz
- Time delays: Auto set, fixed (5, 10, 15, 20, or 30 minutes), walk-through, test-mode
- Sensitivity adjustment: Auto set or reduced sensitivity (for PIR sensitivity); ultrasonic sensitivity is variable with trimpot
- Built-in light level sensor – works from 10 to 300 footcandles (107.6 to 3,229.2 lux)
- Multi-level, 360° Fresnel lens for superior occupancy detection
- Mounting options: 4 square junction box with double gang mudring; 4 inch octagonal junction box
- Dimensions: 4.50" diameter x 1.45" deep (114.3mm x 25.9mm)
- UL and cUL listed
- Five year warranty

Wiring & Mounting

DT-355 Wiring Diagram

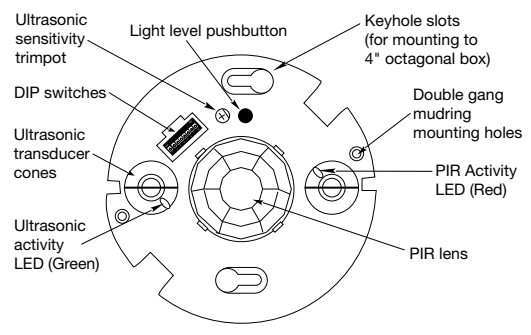


Ceiling Mounting



Controls & Settings

Product Controls



DIP Switch Settings

◀ = Factory Setting
● = ON
- = OFF

Logic	Switch#		
	1	2	3
Standard	-	-	-
Option 1	●	-	-
Option 2	-	●	-
Option 3	●	●	-
Option 4	-	-	●
Option 5	-	●	●
Option 6	●	●	●
Option 7	●	●	●

Occupancy Logic	Trigger		
	Initial Occupancy	Maintain Occupancy	Re-trigger (seconds duration)
Standard	Both	Either	Either(5)
Option 1	Either	Either	Either(5)
Option 2	PIR	PIR	PIR(5)
Option 3	Both	Both	Both(5)
Option 4	PIR	PIR	PIR(5)
Option 5	Ultra	Ultra	Ultra(5)
Option 6	Man.	Either	Either(30)
Option 7	Man.	Both	Both(30)

Time Delay	Switch#		
	4	5	6
5 sec/SmartSet	↑	-	-
5 minutes	-	↑	-
10 min.	-	-	↑
10 minutes	-	●	-
15 min.	-	-	●
15 minutes	●	-	-
20 minutes	●	●	-
30 min.	●	●	●

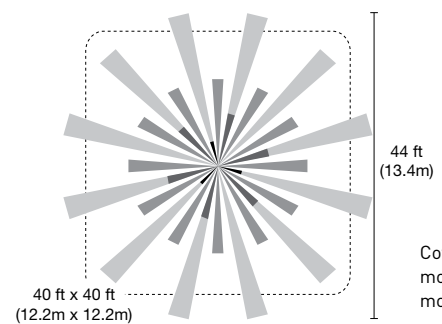
⚡ = walk-through mode

LEDs	Switch#
Disabled	-
Enabled	●

PIR Sensitivity	Switch#
Minimum	-
Max./SmartSet	●

Coverage

Coverage Pattern



Coverage shown is maximum and represents half-step walking motion. Under ideal conditions, coverage for half-step walking motion can reach up to 1000 ft² (92.9 m²).

The technology control (occupancy logic) options are adjustable by user. The standard setting (recommended for most applications) is both technologies to trigger on, either to hold on.

Ordering Information

Catalog No.	Voltage	Load Rating	Coverage
<input type="checkbox"/> DT-355	120 VAC, 50/60 Hz	0-800W Ballast/Tungsten	up to 1000 ft ² , (92.9 m ²)
<input type="checkbox"/> DT-355-U	277 VAC, 50/60 Hz 347 VAC, 50/60 Hz	0-1200W Ballast 0-1500W Ballast	
<input type="checkbox"/> CA-1	Cosmetic adapter for ceiling installations with 4" square j-box or Wiremold #V5748-2 box		

Sensors are white.



BZ-50 Universal Voltage Power Pack



PROJECT
LOCATION/TYPE

Product Overview

Description

The BZ-50 Universal Voltage Power Pack provides 24 VDC operating voltage to WattStopper's low-voltage occupancy sensors. This device is constructed with environmentally friendly materials and is RoHS-compliant.

Operation

The BZ-50 consists of a high-efficiency switching power supply and a high-current relay. It has an input of 120/277 VAC, 50/60Hz, and an output of 24VDC, 225mA. It turns the connected load on and off automatically based on occupancy sensor input.

Plenum Rated

The BZ-50 Power Pack is comprised of Teflon-coated low-voltage leads and an ABS, UL 2043 and 94V-0 plastic resin enclosure that is plenum-rated. As a result, the BZ-50 does not require installation into the junction box, but can be cost-effectively installed directly into the plenum.

Applications

The BZ-50 Power Pack is designed to be flexible enough to control almost any lighting or HVAC load, such as lighting circuits, self-contained air conditioners, pumps, fans, motors, VAV systems, motorized damper controls and setback thermostats. The BZ-50 is well-suited for any application which requires high-voltage switching through low-voltage controls. By linking power packs and sensors, an almost unlimited number of configurations can be obtained.

Features

- Self-contained power supply relay system
- Efficient switching power supply providing optimized current output based on number of sensors
- LED indicates status of relay or if there is a low-voltage overcurrent
- RoHS-compliant
- Zero crossing circuitry for reliability and increased product life
- UL 2043 plenum rated for cost-effective installation
- 1/2" snap-in nipple attaches to standard electrical enclosures through 1/2" knockouts
- 14 AWG wires on the relay for 20A operation
- Qualifies for ARRA-funded public works projects

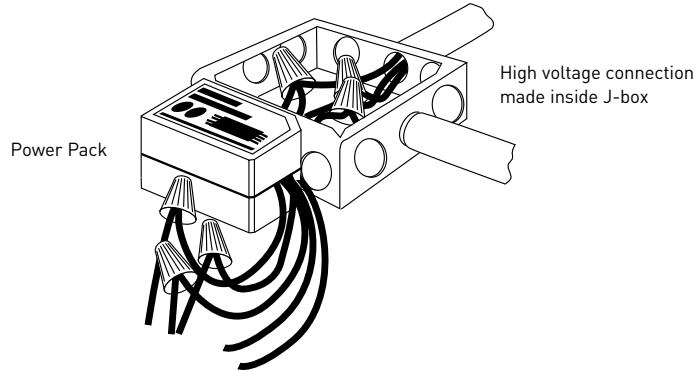


Specifications

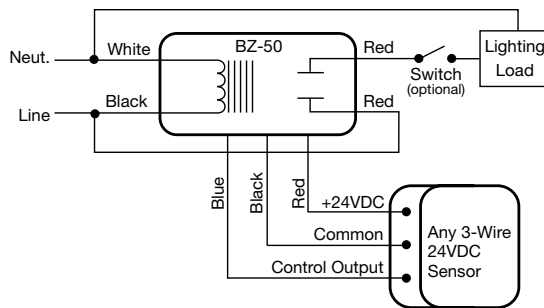
- 120/277VAC, 50/60Hz voltage input
- Secondary voltage of 24 VDC
- Secondary output of 225 mA (with relay connected)
- Low-voltage leads are rated for 300 volts
- UL-rated 94 V-0 grey plastic enclosure
- Dimensions: 1.6" x 2.75" x 1.6" (40.6mm x 69.9mm x 40.6mm) H x W x D with a 1/2" (12.7mm) snap-in nipple
- UL and cUL listed
- Five year warranty

System Layout & Wiring

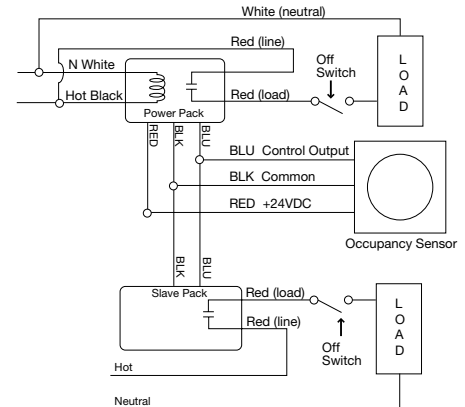
Installation Diagram



Wiring with Occupancy Sensor



Auxiliary Relay Pack with Sensor



Ordering Information

Catalog No.	Input Voltage	Load Ratings			Output
		Ballast(A)	Incan(A)	Motor(HP)	
<input type="checkbox"/> BZ-50	120/277VAC; 50/60Hz	20	20	1*	24 VDC; 225 mA**
<input type="checkbox"/> BZ-50-U					
<input type="checkbox"/> BZ-50-FTA					

*1 Hp rated at 120/250 VAC. **Output is 225 mA with relay connected.

Installation Notes

- 1) All WattStopper power packs should be installed in accordance with state, local, and national electrical codes and requirements.
- 2) Power packs are designed to attach to existing or new electrical enclosures with .5" 125.40mmJ knockout (check electrical codes in your area).
- 3) Most applications require UL-listed, 18-22 AWG, 3-conductor, Class 2 cables for low-voltage wiring. For plenum return ceilings use UL-listed plenum-approved cables.

BZ-50RC Universal Voltage Power Pack

High-efficiency switching power supply

Overcurrent protection (low-voltage)

RJ45 connection

Hold ON and Hold OFF inputs



Zero crossing for reliability and increased product life

Plenum rated

PROJECT

LOCATION/TYPE

Product Overview

Description

The BZ-50RC Universal Voltage Power Pack provides 24 VDC operating voltage to WattStopper's low-voltage occupancy sensors equipped with RJ45 jacks. This device is constructed with environmentally friendly materials and is RoHS-compliant.

Operation

The BZ-50RC consists of a high-efficiency switching power supply and a high-current relay. It has an input of 120/277 VAC, 50/60Hz, and an output of 24VDC, 225mA. It switches line voltage in response to the signal coming from the occupancy sensor. The BZ-50RC can be attached to existing junction boxes or mounted into fixture wiring trays.

Plenum Rated

The BZ-50RC Power Pack is comprised of Teflon-coated low-voltage leads and an ABS, UL 2043 and 94V-0 plastic resin enclosure that is plenum-rated. As a result, the BZ-50RC does not require installation into the junction box, but can be cost-effectively installed directly into a lighting fixture.

Applications

The BZ-50RC Power Pack is designed to be flexible enough to control almost any lighting or HVAC load, such as lighting circuits, self-contained air conditioners, pumps, fans, motors, VAV systems, motorized damper controls and setback thermostats. The BZ-50RC is well-suited for any application which requires high-voltage switching through low-voltage controls. By linking power packs and sensors, an almost unlimited number of configurations can be obtained.

Features

- Self-contained power supply relay system
- Efficient switching power supply providing optimized current output based on number of sensors
- LED indicates status of relay or if there is a low-voltage overcurrent
- Zero crossing circuitry for reliability and increased product life
- UL 2043 plenum rated for cost-effective installation
- 1/2" snap-in nipple attaches to standard electrical enclosures through 1/2" knockouts
- 14 AWG wires on the relay for 20A operation
- Easy RJ45 connection
- RoHS-compliant

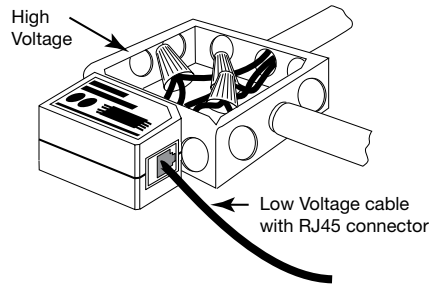


Specifications

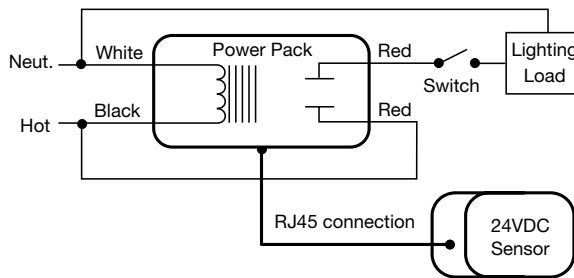
- 120/277VAC, 50/60Hz voltage input
- Load requirements:
 - Ballast: 20 amp @ 120/277 VAC
 - Incan: 20 amp @ 120 VAC
 - Motor: 1 hp @ 120/250 VAC
- Secondary voltage of 24 VDC
- Secondary output of 225 mA (with relay connected)
- Connection: BZ-50RC with RJ45 connections
- Operating temperature 32°-104°F (0-40°C)
- UL-rated 94 V-0 grey plastic enclosure
- Dimensions: 1.6" x 2.75" x 1.6" (40.6mm x 69.9mm x 40.6mm) H x W x D with a 1/2" (12.7mm) snap-in nipple
- UL and cUL listed
- Five year warranty

System Layout & Wiring

Installation Diagram



Wiring with Occupancy Sensor



Ordering Information

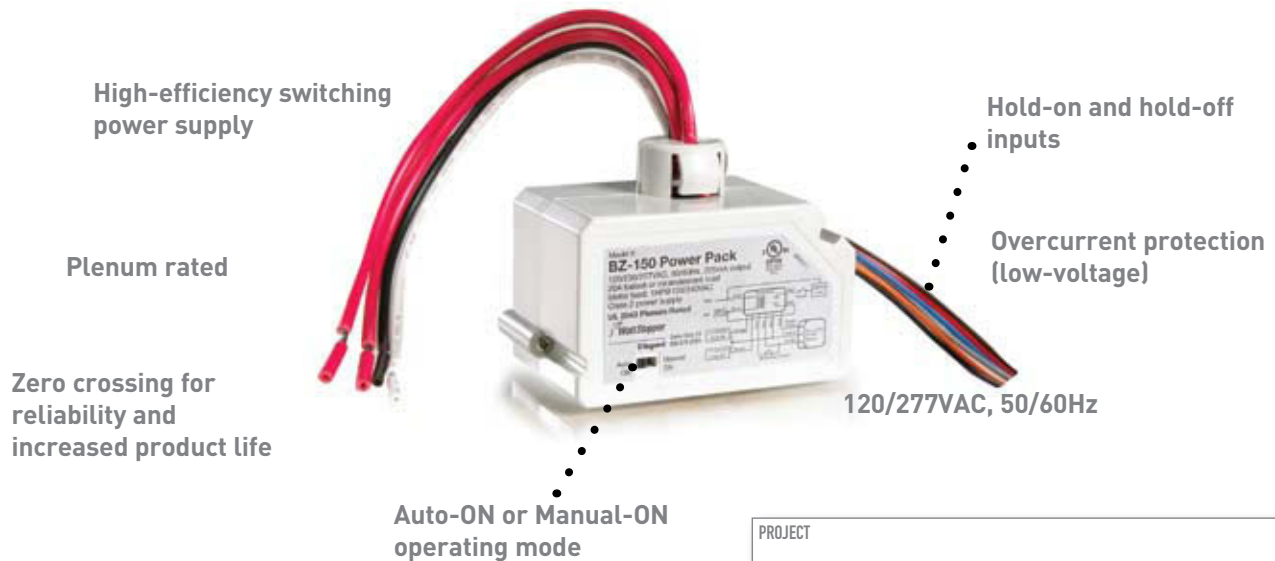
Catalog No.	Description	Load Ratings			Output
		Ballast(A)	Incan(A)	Motor(HP)	
<input type="checkbox"/> BZ-50RC	Universal Power Pack with RJ45 connection	20	20	1*	24 VDC; RJ45 connection
<input type="checkbox"/> FS-C1	10' cable with shielded RJ45 male connectors at each end				
<input type="checkbox"/> FS-C2	6" cable with 3 flying leads at one end and a shielded RJ45 male connector on the other				
<input type="checkbox"/> FS-C3	3' cable with shielded 90° male RJ45 on one end and a shielded straight male RJ45 at the other				
<input type="checkbox"/> FS-C4	Shielded RJ45 splitter with female to dual female receptacles				
<input type="checkbox"/> FS-C5	Shielded RJ45 male to male coupler				

*1 Hp rated at 120/250 VAC. **Output is 225 mA with relay connected.

Installation Notes

- 1) All WattStopper power packs should be installed in accordance with state, local, and national electrical codes and requirements.
- 2) Power packs are designed to attach to existing or new electrical enclosures with .5" 125.40mmJ knockout (check electrical codes in your area).
- 3) Most applications require UL-listed, 18-22 AWG, 3-conductor, Class 2 cables for low-voltage wiring. For plenum return ceilings use UL-listed plenum-approved cables.

BZ-150 Universal Voltage Power Pack



PROJECT
LOCATION/TYPE

Product Overview

Description

The BZ-150 Universal Voltage Power Pack is full featured and can provide 24 VDC operating voltage to WattStopper's low-voltage occupancy sensors. In addition, the BZ-150 enables manual-on, hold-on, hold-off and load shed applications when used with lighting control panels or building management systems. This device is constructed with environmentally friendly materials and is RoHS-compliant.

Operation

The BZ-150 consists of a high-efficiency switching power supply and a high-current relay. It has an input of 120/277 VAC, 50/60Hz, and an output of 24VDC, 225mA. It turns the connected load on and off automatically based on occupancy sensor input, or manually with a low-voltage momentary switch. The dip switch setting allows the user to select Auto ON or Manual ON as the operating mode. Additional low-voltage inputs provide hold-on and hold-off features for broader applications.

Manual On and Bi-level Switching

Energy codes require automatic off. Some codes and EPAct require bi-level switching. The BZ-150 meets both of these requirements, while seamlessly integrating manual on for maximum energy savings. When used with a low-voltage wall switch, Auto ON and Manual ON can be selected while in the field by using the conveniently located dip switch on the front. Combining switches, power packs and sensors provides easy and cost-effective code-compliant solutions.

Applications

The BZ-150 can control lighting circuits, self-contained air conditioners, pumps, fans, motors, VAV systems, motorized damper controls and setback thermostats. By using two low-voltage switches, a ceiling sensor and two BZ-150s (one set to Auto ON and one set to Manual ON) bi-level switching with manual-on operation can be achieved. The hold-on input is ideal for retail and commercial facilities that want to override an occupancy sensor and force lighting on during normal business hours. After hours, a time clock signals the BZ-150 to cancel the hold-on lighting mode, allowing the sensor to resume control. The hold-off input can be used for load shedding or security systems.

Features

- Self-contained power supply relay system
- Efficient switching power supply providing optimized current output based on number of sensors
- LED indicates status of relay or if there is a low-voltage overcurrent
- Hold-on and hold-off inputs integrate with BMS, lighting control panels & other building systems
- Integrates with low-voltage momentary switch to control any 24VDC occupancy sensor
- RoHS-compliant
- Provides auto-on or manual-on field-selectable operating mode
- Zero crossing circuitry for reliability and increased product life
- UL 2043 plenum rated for cost-effective installation
- 1/2" snap-in nipple attaches to standard electrical enclosures through 1/2" knockouts
- 14 AWG wires on the relay for 20A operation
- Qualifies for ARRA-funded public works projects

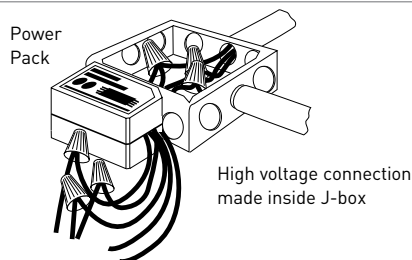


Specifications

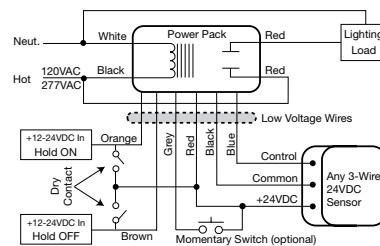
- 120/277VAC, 50/60Hz voltage input
- Secondary voltage of 24 VDC
- Secondary output of 225 mA (with relay connected)
- Low-voltage leads are rated for 300 volts
- UL-rated 94 V-0 grey plastic enclosure
- Dimensions: 1.6" x 2.75" x 1.6" (40.6mm x 69.9mm x 40.6mm) H x W x D with a 1/2" (12.7mm) snap-in nipple
- UL and cUL listed
- Five year warranty

System Layout & Wiring

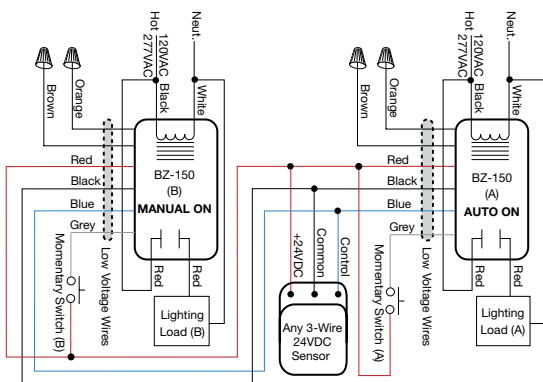
Installation Diagram



Wiring with Occupancy Sensor

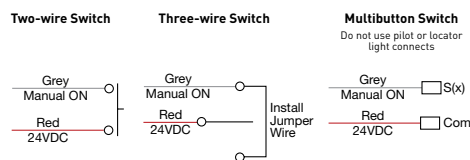


Manual-on & Bi-level Switching



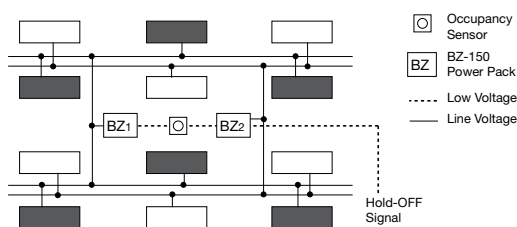
By using two low-voltage switches, a ceiling sensor and two BZ-150s (one set to Auto ON and one set to Manual ON) bi-level switching with manual-on operation can be achieved.

Low-voltage Momentary Switch Options



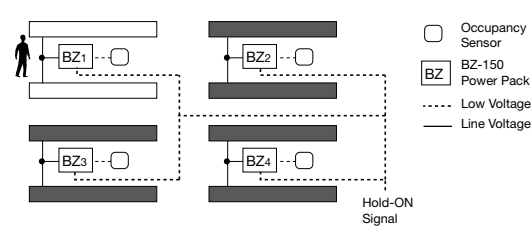
Hold-off & Hold-on Applications

Load Shed (Hold-off) Application for Open Office Spaces



The occupancy sensor connected to each BZ-150 keeps all lights on when the space is occupied. When the load shed command is given (by utility meter, BMS, etc.), lights connected to BZ₂ are held off. Remaining lights (connected to BZ₁) are still controlled by occupancy sensor.

Retail (Hold-on) Application



During store hours, a signal from a time clock to the BZ-150 holds lights on, regardless of occupancy. After hours, the clock schedule cancels the hold-on and occupancy sensor control takes over.

Load Ratings

Catalog No.	Input Voltage	Ballast(A)	Incan(A)	Motor	Output
<input type="checkbox"/> BZ-150	120/277VAC; 50/60Hz	20	20	1 HP 120/250 VAC-rated	24 VDC 225 mA w/relay connected
<input type="checkbox"/> BZ-150-U					
<input type="checkbox"/> BZ-150-FTA					

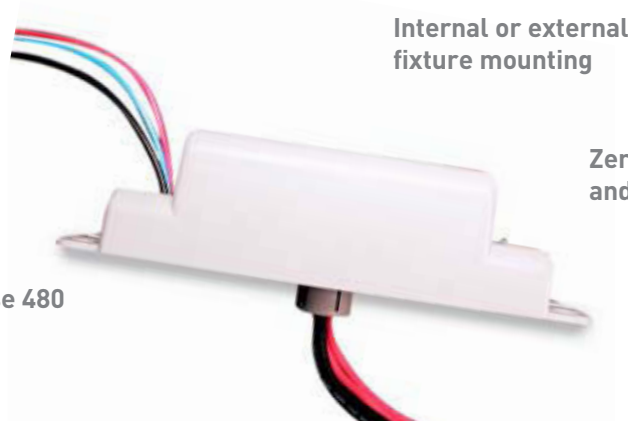
For a complete listing of Multibutton Low-voltage and Momentary Toggle Switches that will provide manual-on switching with the BZ-150, please refer to the product cut sheets in the section on Lighting Control Systems.

Installation Notes

- 1) All WattStopper power packs should be installed in accordance with state, local, and national electrical codes and requirements.
- 2) Power packs are designed to attach to existing or new electrical enclosures with .5" 125.40mmJ knockout (check electrical codes in your area).
- 3) Most applications require UL-listed, 18-22 AWG, 3-conductor, Class 2 cables for low-voltage wiring. For plenum return ceilings use UL-listed plenum-approved cables.

BZ-480 Two-Phase Power Pack

Fully self-contained transformer and relay



Internal or external fixture mounting

Zero crossing for reliability and increased product life

Switches two-phase 480 VAC loads

PROJECT

LOCATION/TYPE

Product Overview

Description

The BZ-480 is a versatile power pack designed to switch two-phase 480 VAC loads and provide 24 VDC operating voltage to WattStopper low voltage occupancy sensors and other control devices. The BZ-480 is offered in two different models with internal (BZ-480-I), or external (BZ-480-E) mounting abilities.

Operation

The BZ-480 power packs consist of a transformer and a high-current relay. The transformer has a primary input of 480 VAC. The secondary output, which provides the operating power for WattStopper occupancy sensors and other lighting control devices, is 24 VDC, 130 mA. This 130 mA output is available with the power pack's relay connected.

Mounting

The power packs can mount to any lighting fixture, wiring tray or junction box with 1/2" knockouts. The BZ-480-I is designed to mount inside of lighting fixtures, wiring trays, or junction boxes, while the BZ-480-E is designed to mount outside of them.

Applications

WattStopper BZ-480 power packs are designed to control 480 VAC two-phase loads with low voltage devices. Applications include warehouses, gymnasiums, parking structures and other industrial areas. The versatility of the BZ-480 with its mounting abilities offers a broad range of configurations to address different lighting control needs.

Features

- Switches two-phase 480 VAC loads and provides 24 VDC power
- Zero crossing for reliability and increased product longevity
- Fully self-contained transformer and relay
- Two options for mounting; internal or external of lighting fixtures, wiring trays and junction boxes
- Capable of switching up to a 6 amp load
- LED indicates status of relay or if there is an overcurrent

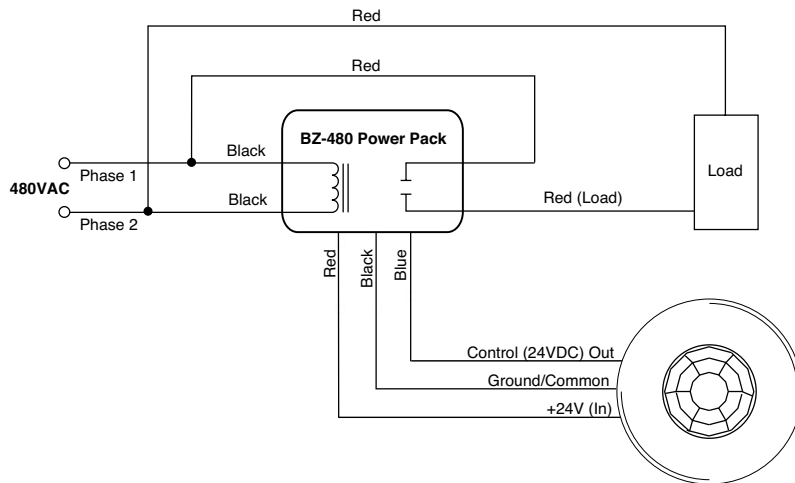


Specifications

- 480 VAC, 60 Hz
- Load ratings (isolated relay):
 - General 20A @ 120/277 VAC
 - Ballast 6A @ 480 VAC
 - Motor 1HP @ 120/240/480 VAC
- Output:
 - 150 mA @ 24 VDC (maximum without relay connected)
 - 130 mA @ 24 VDC (with relay connected)
- Control input requirements; 0.2 mA @ 24 VDC
- Operating temperature: 32°-131°F [0°-55°C]
- Operating humidity: 5-95% RH, non-condensing
- UL 94 V-0 rated plastic enclosure; units are dark grey
- Dimensions:
 - 6.7"(L) x 2.5"(W) x 1.6"(H)
 - 170.2 mm(L) x 63.5mm(W) x 40.6mm(H)
- UL and cUL listed
- Five year warranty

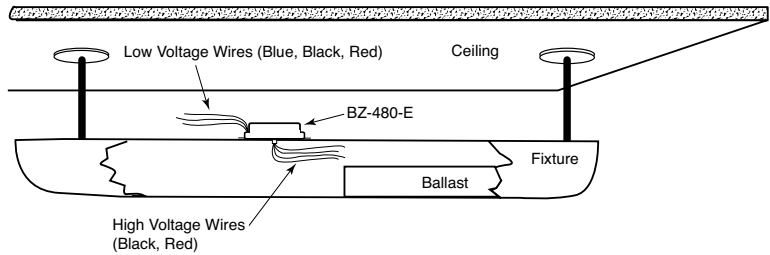
Wiring & Mounting

BZ Power Pack Wiring Diagram

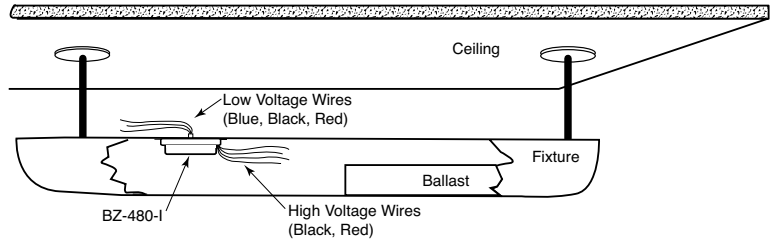


Mounting

BZ-480-E



BZ-480-I



Ordering Information

Catalog No.	Description/Type	Input Voltage	Load Ratings		Output
			Ballast (A)	Motor (HP)	
<input type="checkbox"/> BZ-480-E	Power Pack External Mount	480 VAC; 60 Hz	6	1	24 VDC; 150 mA*
<input type="checkbox"/> BZ-480-I	Power Pack Internal Mount	480 VAC; 60 Hz	6	1	24 VDC; 150 mA*

* 130mA with relay connected

B347D-P Power and Auxiliary Relay Packs

Fully self-contained transformer and relay

Snaps in for easy installation

UL 2043 Plenum Rated

Essential component for ceiling mounted occupancy sensor



PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper B347D-P Power Packs provide 24VDC operating voltage to all WattStopper 24VDC occupancy sensors and daylighting controllers. Auxiliary Relay Packs are similar to power packs, but only have an isolated relay and no transformer power supply.

Operation

B347D-P Power Packs consist of a transformer and high-current relay combined in one small, powerful package. The transformer has a primary high voltage input and a secondary, low voltage output (24 VDC, 114 mA with relay connected). The secondary voltage provides operating power to WattStopper sensors. When the occupancy sensors detect motion or daylighting sensors detect inadequate ambient light, they electrically close an internal circuit, which sends 24 VDC back to the Power or Auxiliary Relay Packs that control the lighting system.

Plenum Rated

The B347D-P Power Pack is UL 2043 plenum rated with teflon coated low voltage leads and plenum rated plastic. This means that the Power Packs do not need to be installed in the junction box, but can be installed in the plenum. They are housed in ABS, UL-rated 94V-0 plastic enclosures.

Applications

WattStopper Power and Auxiliary Relay Packs are designed to be flexible enough to control almost any lighting or HVAC load. For example, B347D-P Power Packs can control lighting circuits, self-contained air conditioners, pumps, fans, motors, VAV systems, motorized damper controls and setback thermostats. They are excellent for any application which requires high voltage switching through low voltage controls. By linking power packs and sensors, an almost unlimited number of configurations can be obtained.

Features

- Self-contained transformer relay system
- Available for 347 volt systems
- Capable of switching up to 20 Amps of electrical load (ballast)
- Low voltage leads are teflon coated for use in plenum applications
- Can be used as a low voltage switch for other applications or as stand-alone, low voltage switch
- 1/2 inch snap-in nipple attaches to standard electrical enclosures via 1/2 inch knockouts
- Installation in junction box not required
- Qualifies for ARRA-funded public works projects

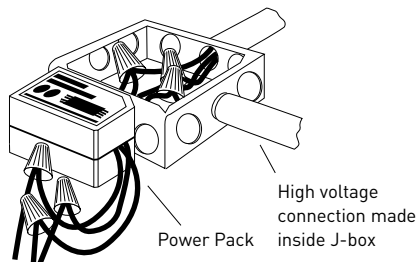


Specifications

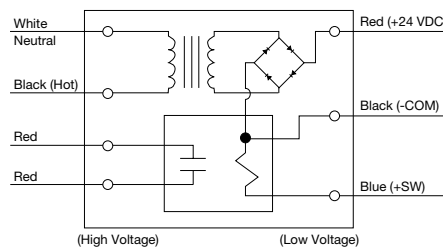
- Secondary voltage of 24 VDC
- Secondary output of 150 mA, 114 mA with relay connected
- Low voltage leads are rated for 300 volts
- UL-rated 94V-0 plastic enclosure
- UL 2043 plenum rated
- Dimensions: 1.7" x 2.91" x 1.62" (43.2mm x 73.9mm x 41.1mm) H x W x D with a 1/2" (12.7mm) snap-in nipple
- UL and cUL listed
- Five year warranty

System Layout

Power Pack Installation

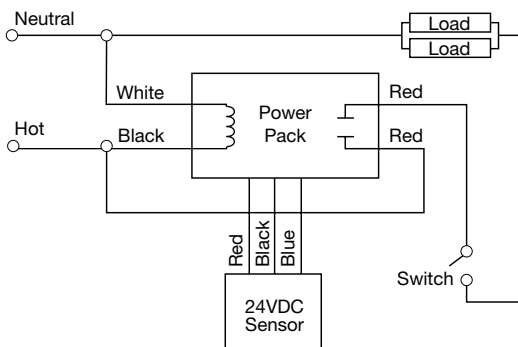


Power Pack Schematic

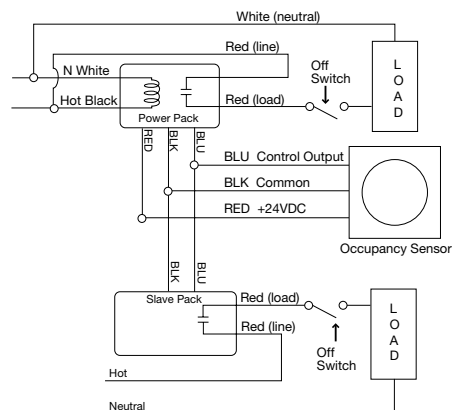


Wiring Diagrams

Power Pack with Ceiling Sensor



Auxiliary Relay Pack with Sensor



Ordering Information

Catalog No.	Description	Input Voltage	Load Ratings			
			Ballast(A)	Incan(A)	Motor(HP)	Output
<input type="checkbox"/> B347D-P	Power Pack	347 VAC; 60 Hz	15	-	-	24 VDC; 150 mA*
<input type="checkbox"/> S120/277/347E-P	Aux. Relay Pack	120/277/347 VAC; 60 Hz	20/20/15	13/-/-	1/-/-	
<input type="checkbox"/> S120/277/347E-P-U						
<input type="checkbox"/> S120/277/347E-P-FTA						

*Output is 150 mA before relay is connected and 114 mA after relay is connected. Power packs are white; auxiliary relay packs are black.

Installation Notes

1. All WattStopper power packs should be installed in accordance with state, local, and national electrical codes and requirements.
2. Power packs are designed to attach to existing or new electrical enclosures with 1/2 inch knockouts (check electrical codes in your area).
3. Most applications require UL listed, 18 AWG, 3-conductor, Class 2 cable for low voltage wiring. For plenum return ceilings use UL listed plenum-approved cables.



BD Din Rail Mounted Power Packs

DIN rail mounted

Zero crossing for reliability and increased product life

Hold-ON and hold-OFF inputs (BD-100E-P)



Fully self-contained transformer and relay

Manual-ON option (BD-100M)

120/277 VAC input
24 VDC/175 mA output

PROJECT
LOCATION/TYPE

Product Overview

Description

The BD-100 is a versatile, DIN rail mounted power pack supplying 24 VDC operating voltage to low voltage occupancy sensors and other lighting controls. The BD-100 is available in two models, the BD-100E-P with hold-ON and hold-OFF functions, and the BD-100M for manual-ON applications.

Operation

BD power packs consist of a transformer and a high-current relay. The transformer has a high voltage input of 120/277 VAC. The secondary output, which provides the operating power for occupancy sensors and lighting control devices, is 24 VDC, 175 mA. This 175 mA output is available with the power pack's relay connected. The power packs receive input from occupancy sensors, switches or light level sensors to switch lighting on and off. For example, when an occupancy sensor detects motion, it electronically closes an internal circuit which sends 24 VDC to the power pack. This closes the power pack relay and turns lights on. The BD-100M works with low voltage momentary switches for manual ON/OFF as well as automatic OFF control.

Features

- Self-contained transformer relay system
- LED indicates status of relay or if there is an overcurrent on the low voltage output
- Hold-ON and hold-OFF inputs integrate with lighting control panels, BMS and other building systems (BD-100E-P)
- Hold-OFF input can provide load shedding function (BD-100E-P)
- Hold-ON input enables method to override occupancy sensor and hold lighting ON (BD-100E-P)
- Zero crossing for reliability and increased product life
- Manual-ON inputs require a low voltage momentary switch (with an attached automatic control device) to provide manual ON/OFF and automatic OFF control (BD-100M)

DIN Rail

The BD can mount to any junction box or electrical housing fitted with a DIN rail. This means that the power pack is seated in a junction box by snapping it into place onto the DIN rail. Once attached, the BD-100 accepts line voltage on one side and low voltage on the other, keeping the two voltages separate.

Applications

BD-100E-P power packs control lighting circuits, self-contained VAV systems, and setback thermostats. The hold-OFF input can be used to perform load shedding. During a power alert or peak demand, a signal from a BMS or utility meter triggers the BD to shed non-critical lighting loads. The hold-ON input is ideal for retail and commercial facilities that want to hold certain lighting ON during normal business hours. After-hours, a time clock signals the BD to no longer hold lights ON, allowing occupancy sensors to resume control. The BD-100M is well suited to applications where users require manual ON/OFF control.

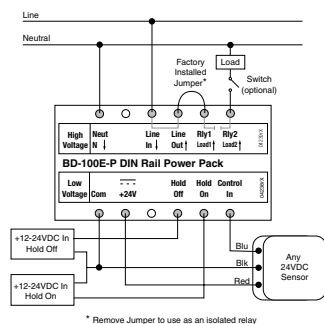


Specifications

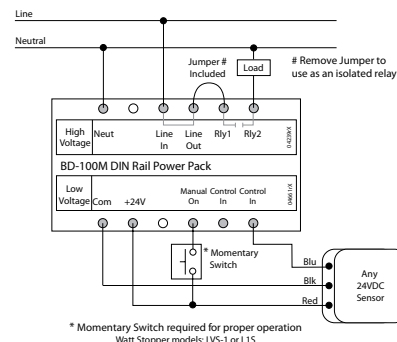
- 120/277 VAC; 50/60 Hz
- Max load ratings:
 - Ballast 20 A @ 120/277 VAC
 - Incandescent 20 A @ 120 VAC
 - Motor 1HP @ 120/240 VAC
- Output: 175 mA @24 VDC (with relay connected)
- Low voltage inputs: Control On +12-24 VDC; Manual ON +12-24 VDC
- Terminal torque: 4/428 inch-pound force 0.5Nm
- Operating temperature 32°-131°F (0°-55°C)
- UL 94 V0 rated plastic enclosure
- CE listed for 230 VAC applications
- Dimensions: 2.78" x 3.44" x 2.63" (71mm x 87mm x 67mm)
- UL and cUL listed
- Five year warranty

System Layout & Wiring

BD-100E-P Wiring Diagram

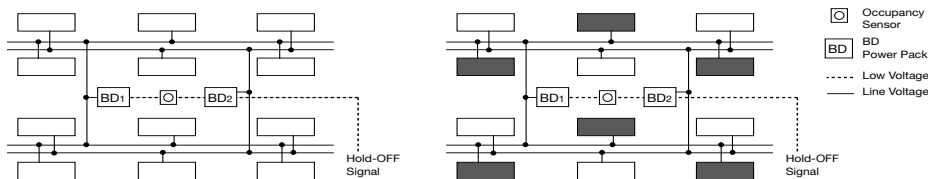


BD-100M Wiring Diagram



Hold-ON/ OFF Function

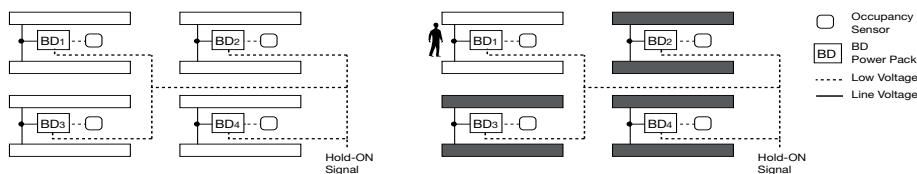
Hold-ON Retail Application



During store hours, a signal from a time clock to the BD holds lights on, regardless of occupancy.

After hours, the clock schedule cancels the hold on and occupancy sensor control takes over.

Load Shed (Hold-OFF) Application for Open Office Spaces



The occupancy sensor, connected to each BD, keeps all lights on when the space is occupied.

When the load shed command is given (by utility meter, BMS, etc.), lights connected to the BD2 are held off. Remaining lights, [BD1] are controlled by occupancy sensor.

Ordering Information

Catalog No.	Description	Input Voltage	Load Ratings			Output
			Ballast (A)	Incan. (A)	Motor (hp)	
<input type="checkbox"/> BD-100E-P	Power Pack	120/277 VAC; 50/60 Hz	20	20	1	24 VDC; 175 mA (relay connected)
<input type="checkbox"/> BD-100M	Power Pack	120/277 VAC; 50/60 Hz	20	20	1	24 VDC; 175 mA (relay connected)
Optional Switches: (Use of BD-100M requires use of 1 low voltage switch)						
<input type="checkbox"/> L1S*	Single Button switch, contract rating 25mA @ 50 VDC, max pilot load 10mA *Add to the end of catalog number: -2 Ivory, -4 Almond, -7 White, -9 Grey					
<input type="checkbox"/> LVS-1**	Momentary toggle switch, single-pole; double throw with center position rest, 3A, 24VAC/DC **Add to the end of catalog number: -W White, -I Ivory, -G Grey					

LC-100 Intelligent Power Pack

Two-relay output power pack that accepts signals from multiple control devices

•Dimming convenience with 0-10V ballasts

Daylighting control with photosensor

Dual voltage 120/277 VAC

Load shed dimming or ON/OFF switching

Tunes maximum light level output for greater energy savings potential



PROJECT
LOCATION/TYPE

Product Overview

Description

The LC-100 is a power pack with two relay outputs and two dimming channels delivering both switching and 0-10V dimming control to lighting loads. Signal inputs offer integrated operation with a range of control devices.

Operation

A dual voltage device capable of operating at either 120 or 277V, the LC-100 installs as a standard power pack, connecting to junction boxes in a ceiling or a location close to controlled loads. With 24VDC at 150mA available, it provides power to occupancy sensors, photocells, and other devices. Low voltage switch inputs give occupants ON/OFF switching and up/down dimming control of two independent lighting loads. Separate signaling inputs for occupancy sensors, time clocks and photocells allow shutoff and daylighting control while providing convenient scenarios (i.e., blink warning, manual on or auto on, hold on, on only) to meet control needs.

Dimming Control

When used with 0-10V controllable ballasts, the LC-100 provides dimming and ON/OFF control of up to 100 ballasts per dimming channel. Occupants can conveniently dim up/down and turn lighting ON/OFF using momentary low voltage switches. The load shed feature dims lighting to preset levels during peak demand periods to reduce energy consumption. Lighting maximum levels can also be set for greater energy savings.

Applications

The LC-100 integrates control of other devices to meet room-specific lighting control needs. It is ideal for compliance with bi-level switching, daylighting and lighting shutoff energy code provisions. Where load shedding is needed, the LC-100 can switch off non-critical lighting while leaving other lighting on. Or with controllable ballasts, it can dim lighting down to preset load "shed" levels.

Features

- Single package with relay outputs, dimming channels, power supply, and device inputs for simpler installation
- Two switch inputs accept three-wire momentary, two-wire momentary pushbutton, or maintained low voltage switches
- Hold-ON feature keeps lighting on during scheduled time, reverts to occupancy sensor control after hours
- Burn in timer prevents lamps from dimming for initial 100 hours for extended lamp life
- Pilot light output for status annunciation at switches
- Blink warning five minutes prior to shutoff
- Isolated relay contact for each relay output provides status
- Manual ON/Auto ON settings for convenience and energy savings
- After hour override adjustable to 30 minutes, 1 hour, 2 hours or 4 hours
- Works with the LS-301 dimming photosensor to provide closed loop dimming control
- Qualifies for ARRA-funded public works projects

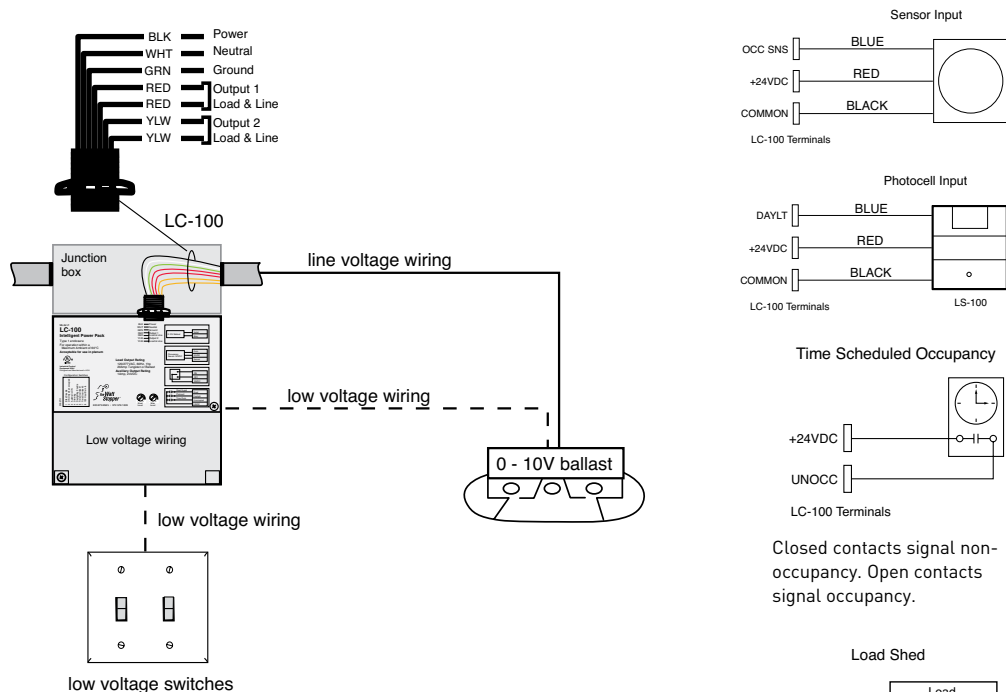


Specifications

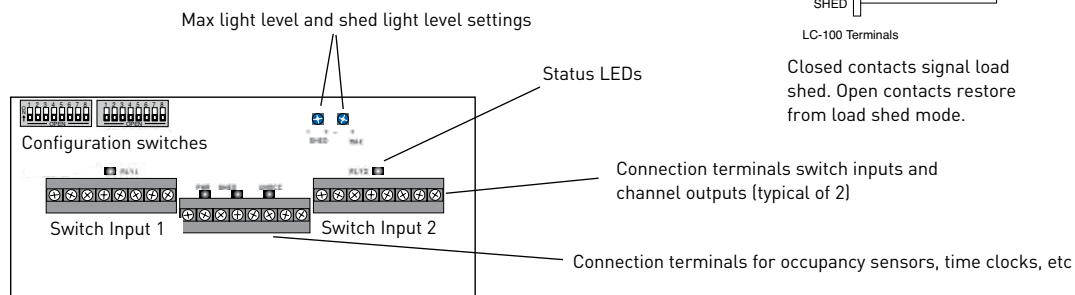
- 120/277 VAC voltage input, 50/60 Hz
- Two relay outputs rated 20 Amp 120V tungsten and ballast, 20 Amp 277V ballast
- Two isolated NO/NC relays rated 1 Amp @ 24VDC
- NEMA 1 enclosure; acceptable for use in plenum spaces
- Output power 150mA @ 24VDC with automatic overload protection
- Dual voltage input 120 or 277VAC @ 14 Watts maximum
- Switch wiring distances up to 1000 feet with 18 gauge wire
- Dimensions: 6.63" x 6.13" x 2.13" (168.4mm x 155.7mm x 54.1mm) with a 1/2 inch snap-in nipple
- UL and cUL listed
- Five year warranty

Wiring & Installation

LC-100 Wiring Connections, Inputs, and to Dimming Ballasts



LC-100 Wiring Connections



Catalog No.	Input Voltage	Load Ratings			Output
		Ballast (A)	Incan (A)	Motor (HP)	
<input type="checkbox"/> LC-100	120/277 VAC; 50/60 Hz	20	20	1*	24 VDC; 150 mA**

* 1 Hp rated at 120/250 VAC. ** Output is 150 mA with relays connected.

Ordering Information

Installation Notes

1. All WattStopper power packs should be installed in accordance with state, local, and national electrical codes and requirements.
2. Power packs are designed to attach to existing or new electrical enclosures with 1/2 inch knockouts. (Check electrical codes in your area.)
3. Low-voltage wiring should use stranded, 18-22 AWG, properly rated cable. Do not run low voltage Class 2 wiring with high voltage wiring. For plenum return ceilings use UL listed plenum-approved cables.

Special Power Packs & Supplies

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper has several power packs and power supplies that fill the needs of a variety of special applications. These products help to make lighting control installations more cost efficient and flexible.

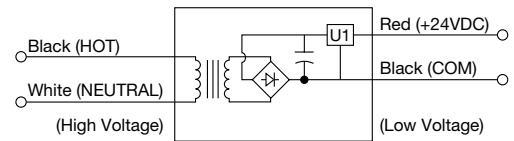
AT Power Supply

AT Power Supplies

The AT-120 and AT-277 power supplies provide up to 800 mA of 24 VDC to WattStopper occupancy sensors and control products. They contain a transformer and no relay. WattStopper power and/or auxiliary packs are needed to do the switching. The AT-120 and AT-277 are useful for applications with a large number of sensors such as open offices and warehouses.

AT Specifications & Wiring

- Up to 800 mA of 24 VDC power
- Secondary voltage of 24 VDC
- Housed in NEMA 1 enclosure



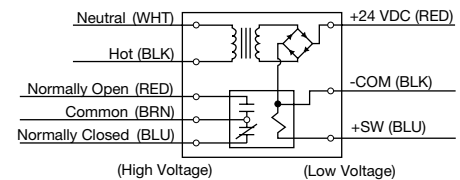
Form C Power Pack

Form C Power Packs

The Form C power packs contain a single pole, double-throw isolated relay with a normally open and normally closed output. These power packs can be used with a standard occupancy sensor to interface with HVAC or other systems. Special attention needs to be made to the load ratings as they vary and are significantly lower than standard power packs.

Form C Specifications & Wiring

- Up to 100 mA of 24 VDC power before relay is connected; 64 mA after relay is connected
- Secondary voltage of 24 VDC
- UL rated 94V-0 plastic enclosure with snap-in installation



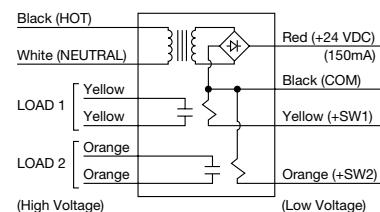
2 Relay Power Pack

2 Relay Power Packs

The WattStopper C-Series power packs contain 2 isolated relays. These power packs can be used where 2 circuits need to be controlled at the same point. They provide a convenient alternative to using 2 power packs thus reducing installation time and costs. They are also useful where installation space is limited.

2 Relay Specifications & Wiring

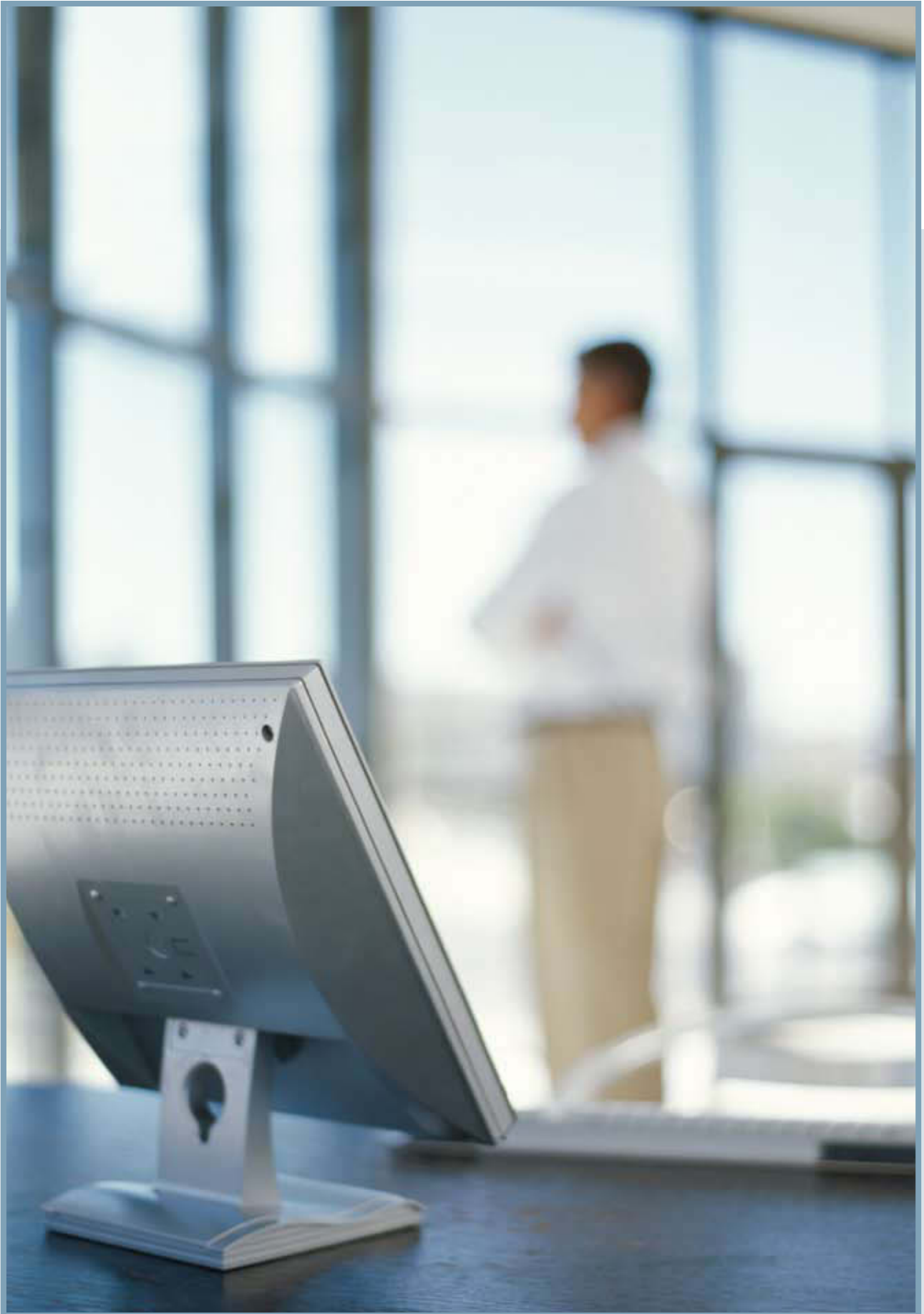
- Up to 150 mA of 24 VDC power before relays are connected; 114 mA after single relay is connected, 78 mA when both relays are connected
- Secondary voltage of 24 VDC
- Housed in 4" metal junction box



Ordering Information

Catalog No.	Description/Type	Input Voltage	Load Ratings			Output
			Ballast (A)	Incan (A)	Motor (HP)	
<input type="checkbox"/> AT-120	Power Supply	120 VAC, 60 Hz	-	-	-	24 VDC; 800 mA
<input type="checkbox"/> AT-277	Power Supply	277 VAC, 60 Hz	-	-	-	24 VDC; 800 mA
<input type="checkbox"/> A120C-P	Form C Power Pack	120 VAC, 60 Hz	8NO/5NC	5NO/3NC	1NO/.25NC	24 VDC; 100 mA*
<input type="checkbox"/> A277C-P	Form C Power Pack	277 VAC, 60 Hz	6NO/3NC	5NO/2.5NC	2NO/.5NC	24 VDC; 100 mA*
<input type="checkbox"/> C120E-P	2 Relay Power Pack	120 VAC, 60 Hz	20**	13**	1**	24 VDC; 150 mA
<input type="checkbox"/> C277E-P	2 Relay Power Pack	277 VAC, 60 Hz	20**	-	-	24 VDC; 150 mA

*Contains an isolated relay with normally open (NO) and normally closed (NC) contacts. **Rating per relay. Output shown is before relay connection



TS-400 Digital Time Switch



PROJECT
LOCATION/TYPE

Product Overview

Description

The IntelliSwitch TS-400 series digital time switches automatically turn lights off after a preset time. The simple pushbutton operation provides users with convenient time out lighting control without the nuisance of twist timers.

Operation

The TS replaces an existing wall switch. The TS-400 operates between 100 and 300 volts. Pressing the TS's on/off button turns lights on. The lights will remain on for the duration of the time-out setting which is adjustable from 5 minutes to 12 hours. Lights can be turned off before the time-out setting expires by pressing the on/off button. Also, the unit can be reset at any time by holding down the on/off button for 2 seconds. This will bring the timer back to its original time out setting and restart the countdown.

Time Scroll Overrides

The time scroll option allows users to temporarily override the time out setting without adjusting the settings. Time scroll is selected with the calibration button. With time scroll programmed to "UP", lights can be held on longer than the time out period. With time scroll programmed to down "DN", lights can be turned off sooner than the time out period. Pressing the on/off switch for more than 4 seconds causes the timer to scroll in the set direction throughout the possible time out settings.

Applications

The TS is an ideal lighting control choice in equipment rooms, storage areas, and closets.

Features

- Time-out settings range from 5 minutes to 12 hours for flexibility in fitting many applications
- Optional flash and beep warnings allow time to reset the switch if someone is present
- Time scroll option provides temporary override of the preset time out period
- Simple reset feature for returning the switch to its original preset time-out setting
- Electroluminescent back-lit LCD shows timer countdown
- Terminal style wiring simplifies installation
- Zero crossing reduces stress on the relay and increases product longevity
- Pushbutton programming gives the TS an easy set up process
- Setting the time-out for 2 hours and time scroll to down allows Title 24 compliance for using override switches
- Compatible with decorator wall plates
- Qualifies for ARRA-funded public works projects

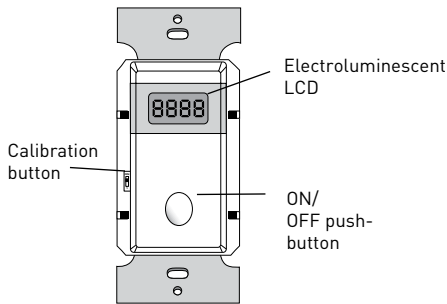


Specifications

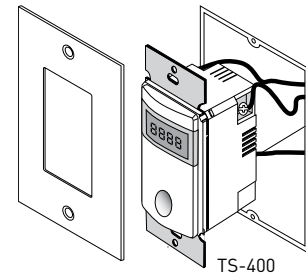
- TS-400: 120/277 VAC; 50/60 Hz
- Time-out adjustments range from 5 minutes to 12 hours (5 minute increments to 1 hour, then 15 minute increments to 12 hours)
- Optional visual warning: flashes lights at 5 minutes and 1 minute prior to time-out
- Optional audible warning: beeps every 5 seconds at 1 minute prior to time-out
- No minimum load requirement
- Compatible with all electronic ballasts and motor loads
- Dimensions: 2.66" x 1.79" x 1.76" (67.5mm x 45.5mm x 44.7mm)
- UL and cUL listed
- Five year warranty

Controls & Installation

Product Controls

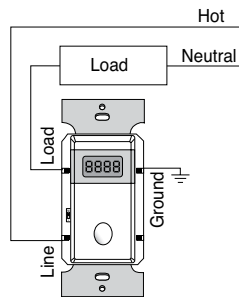


Installation

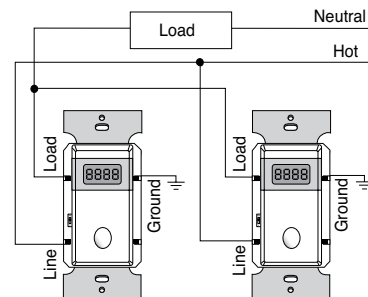


Wiring

TS-400 Single Level Lighting



TS-400 3-Way Lighting

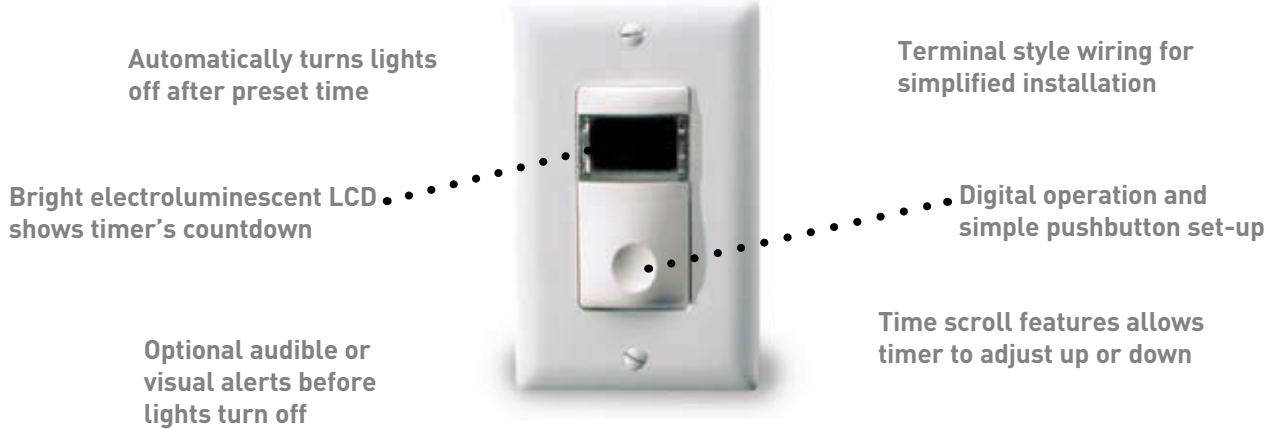


Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> TS-400-W	White	120 VAC; 50/60 Hz, or 277 VAC; 50/60 Hz	0-800 Watt ballast, or 0-1200 Watt ballast
<input type="checkbox"/> TS-400-W-U			
<input type="checkbox"/> TS-400-I	Ivory		
<input type="checkbox"/> TS-400-A	Lt. Almond		
<input type="checkbox"/> TS-400-B	Black		
<input type="checkbox"/> TS-400-G	Grey		

Order wall plate separately.

TS-400-24 Low Voltage Digital Time Switch



PROJECT
LOCATION/TYPE

Product Overview

Description

The IntelliSwitch TS-400 series digital time switches automatically turn lights off after a preset time. The simple pushbutton operation provides users with convenient time out lighting control without the nuisance of twist timers.

Operation

The TS-400-24 operates at 24 VDC/ VAC. Pressing the TS's on/off button turns lights on. The lights will remain on for the duration of the time-out setting which is adjustable from 5 minutes to 12 hours. Lights can be turned off before the time-out setting expires by pressing the on/off button. Also, the unit can be reset at any time by holding down the on/off button for 2 seconds. This will bring the timer back to its original time out setting and restart the countdown.

Time Scroll Overrides

The time scroll option allows users to temporarily override the time out setting without adjusting the settings. Time scroll is selected with the calibration button. With time scroll programmed to "UP", lights can be held on longer than the time out period. With time scroll programmed to down "DN", lights can be turned off sooner than the time out period. Pressing the on/off switch for more than 4 seconds causes the timer to scroll in the set direction throughout the possible time out settings.

Applications

The TS is an ideal lighting control choice in equipment rooms, storage areas, and closets. The switch can also be used as an HVAC override or to control heat lamps in hotel guest rooms. The low voltage TS-400-24 can switch loads that exceed the ratings of standard wall switches and can be used in locations where high voltage wiring in walls is prohibited. Also, when used with a WattStopper power pack, the TS-400-24 can control lighting and motor loads.

Features

- Time-out settings range from 5 minutes to 12 hours for flexibility in fitting many applications
- Optional flash and beep warnings allow time to reset the switch if someone is present
- Time scroll option provides temporary override of the preset time out period
- Simple reset feature for returning the switch to its original preset time-out setting
- Electroluminescent back-lit LCD shows timer countdown
- Terminal style wiring simplifies installation
- Zero crossing reduces stress on the relay and increases product longevity
- Pushbutton programming gives the TS an easy set up process
- Setting the time-out for 2 hours and time scroll to down allows Title 24 compliance for using override switches
- Compatible with decorator wall plates
- Qualifies for ARRA-funded public works projects

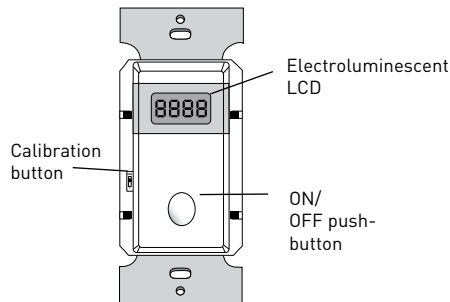


Specifications

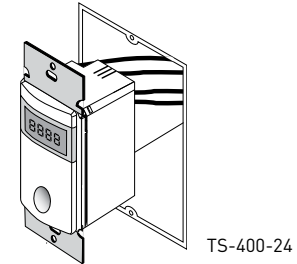
- TS-400-24: 24 VAC/VDC/VAC half-wave rectified input; current draw is 12 mA DC, 41 mA AC
- Time-out adjustments range from 5 minutes to 12 hours (5 minute increments to 1 hour, then 15 minute increments to 12 hours)
- Optional visual warning: flashes lights at 5 minutes and 1 minute prior to time-out
- Optional audible warning: beeps every 5 seconds at 1 minute prior to time-out
- TS-400-24 contains single-pole, double-throw isolated relay rated for 1A @ 30 VDC
- No minimum load requirement
- Compatible with all electronic ballasts and motor loads
- Dimensions: 2.66" x 1.79" x 1.76" (67.5mm x 45.5mm x 44.7mm)
- UL and cUL listed
- Five year warranty

Controls & Installation

Product Controls

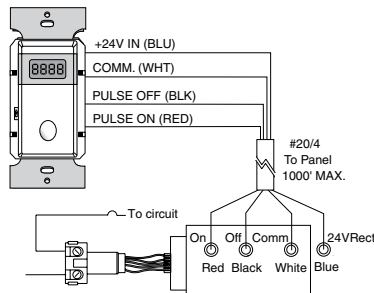


Installation

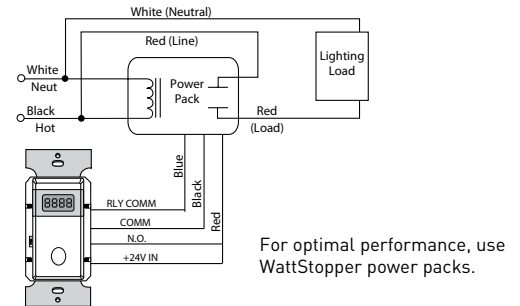


Wiring

TS-400-24 with Lighting Control Panel



TS-400-24 with Power Pack



Ordering Information

Catalog No.	Color	Voltage	Load Rating
<input type="checkbox"/> TS-400-24-W	White	24 VAC/VDC/VAC rect.	Current: 12 mA; DC / 41 mA AC
<input type="checkbox"/> TS-400-24-I	Ivory		
<input type="checkbox"/> TS-400-24-A	Lt. Almond		
<input type="checkbox"/> TS-400-24-B	Black		
<input type="checkbox"/> TS-400-24-G	Grey		

Order wallplates separately. The TS-400-24 works with WattStopper power packs.

HS Series Card Key Switches

Room key activated master switch for hotel guest room lighting

Line and low voltage models

30-second egress time



Facilitates energy savings in hotels, motels and boarding houses

Backlit card key slot for visibility in darkened rooms

Optional key fob for rooms that do not use a card key

PROJECT

LOCATION/TYPE

Product Overview

Description

The HS Series Card Key Switch turns electrical circuits on or off when a card key or HS-FOB Key Fob is inserted or removed from its slot.

Operation

Inserting a door entry card key or HS-FOB into the HS Card Key Switch energizes the controlled circuits and loads. Removing the card key initiates a 30-second time delay to allow safe egress from the hotel room. Once this time delay elapses, the power to the circuits is terminated. To restore power to the room's controlled circuits, reinsert the card key into the HS Card Key Switch.

Low and Line Voltage Models

The HS-100 is a low voltage unit with a normally open and normally closed isolated relay, allowing it to interface with third-party energy and lighting management control systems. Additionally, the HS-100 can connect to one or more WattStopper Power Pack(s). The HS-150 is a line voltage unit that serves as a master switch for a single guest room circuit.

Applications

HS Card Key Switches are ideal for guest rooms in hotels, motels, boarding houses, senior residences or similar applications with guest rooms. Once installed, they function as control devices located at the main entry door, controlling all permanently installed luminaires.

Features

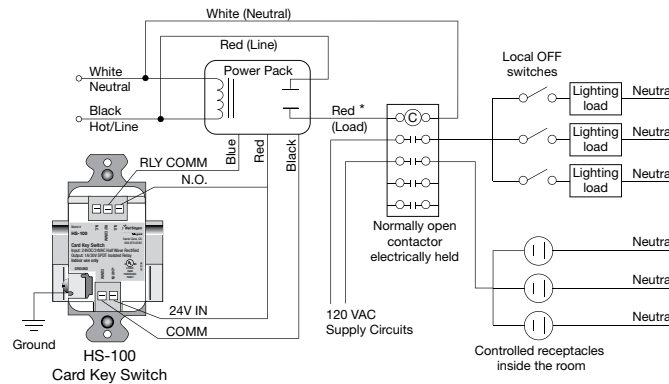
- Attractive low-profile styling
- Choice of five decorator colors
- Backlit card key slot provides visibility in darkened rooms
- 30-second egress time delay
- Zero crossing for reliability and increased product longevity (HS-150)
- HS-100 can connect with one or more WattStopper Power Packs
- Uses the same card key that unlocks the door
- Compatible with Building Automation Systems, Energy Management Systems, and Lighting Control Panels

Specifications

- HS-100: Input: 24VDC/24VAC Half Wave Rectified, Max. 25mA DC/10mA AC
Output: 1A/30VDC/VAC SPDT Isolated Relay
- HS-150: 120/277 VAC; 50/60Hz
Load rating @120VAC: 0-800W tungsten, 0-600W ballast, 500W compact fluorescent, 1/6hp
Load rating @277VAC: 0-1200W ballast
- Zero crossing (HS-150)
- Egress time delay: 30 seconds
- Compatible with building automation/energy management systems, lighting control panels and WattStopper power packs
- Dimensions: 2.63" x 1.69" x 1.88" (67.8mm x 42.9mm x 47.8mm) L x W x D
Accepts standard hotel card keys with dimensions of: 2.125"W x 3.375"H x 0.034"D (53.975mm x 85.725mm x 0.8636mm)
- UL and cUL listed
- Five year warranty

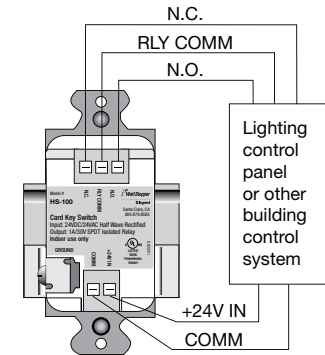
Installation & Wiring

HS-100 Wiring with Power Pack

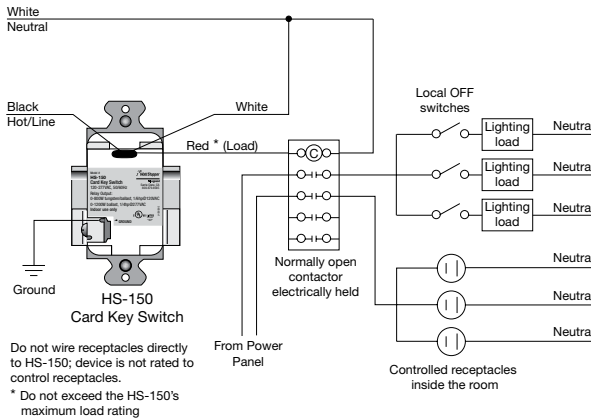


Do not wire receptacles directly to HS-100; device is not rated to control receptacles.
* Do not exceed the power pack's maximum load rating.

HS-100 with BAS or LCP

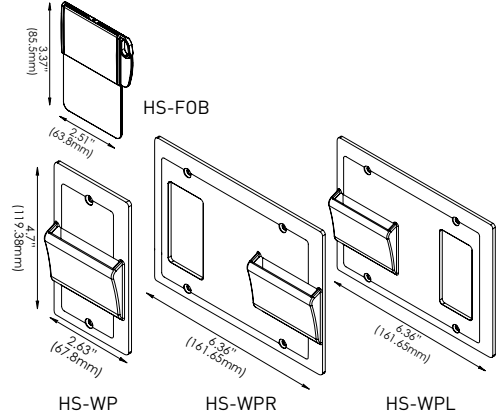


HS-150 Wiring



Do not wire receptacles directly to HS-150; device is not rated to control receptacles.
* Do not exceed the HS-150's maximum load rating

Cover Plates and Key Fob



Ordering Information

Catalog No.	Color	Description	Catalog No.	Color	Description
<input type="checkbox"/> HS-100-W	White	Low voltage Card Key Switch	<input type="checkbox"/> HS-150-W	White	Line voltage Card Key Switch
<input type="checkbox"/> HS-100-LA	Light Almond		<input type="checkbox"/> HS-150-LA	Light Almond	
<input type="checkbox"/> HS-100-I	Ivory		<input type="checkbox"/> HS-150-I	Ivory	
<input type="checkbox"/> HS-100-B	Black		<input type="checkbox"/> HS-150-B	Black	
<input type="checkbox"/> HS-100-G	Gray		<input type="checkbox"/> HS-150-G	Gray	
Accessories					
<input type="checkbox"/> HS-FOB-W	White	Optional Key Fob for guest rooms that are not equipped with card key locks	<input type="checkbox"/> HS-WPR-W	White	Cover plate for three-gang box with decorator switch option; card slot on the right
<input type="checkbox"/> HS-FOB-LA	Light Almond		<input type="checkbox"/> HS-WPR-LA	Light Almond	
<input type="checkbox"/> HS-FOB-I	Ivory		<input type="checkbox"/> HS-WPR-I	Ivory	
<input type="checkbox"/> HS-FOB-B	Black		<input type="checkbox"/> HS-WPR-B	Black	
<input type="checkbox"/> HS-FOB-G	Gray		<input type="checkbox"/> HS-WPR-G	Gray	
<input type="checkbox"/> HS-WP-W	White	Cover plate for single-gang box	<input type="checkbox"/> HS-WPL-W	White	Cover plate for three-gang box with decorator switch option; card slot on the left
<input type="checkbox"/> HS-WP-LA	Light Almond		<input type="checkbox"/> HS-WPL-LA	Light Almond	
<input type="checkbox"/> HS-WP-I	Ivory		<input type="checkbox"/> HS-WPL-I	Ivory	
<input type="checkbox"/> HS-WP-B	Black		<input type="checkbox"/> HS-WPL-B	Black	
<input type="checkbox"/> HS-WP-G	Gray		<input type="checkbox"/> HS-WPL-G	Gray	

One HS-WP included with each Card Key Switch



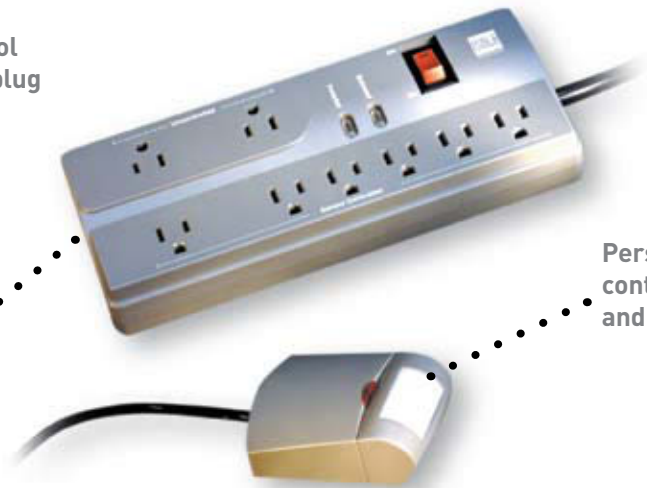
Isolé IDP-3050 Power Strip with Personal Sensor

Energy-saving control system for desktop plug load equipment

Six outlets are controlled by occupancy; two outlets are uncontrolled

Eight-outlet power strip with surge protection

Personal sensor signals controlled equipment on and off based on occupancy



PROJECT

LOCATION/TYPE

Product Overview

Description

The Isolé IDP-3050 is an energy-saving control system that provides maximum surge and noise suppression while keeping plug load equipment off when there is no occupancy. It consists of an eight-outlet power strip and a personal occupancy sensor.

Operation

The IDP-3050 turns plug load devices on and off based on occupancy. The personal sensor connects to the eight-outlet power strip with the attached cable. The power strip contains six outlets controlled by occupancy and two outlets that are uncontrolled. The IDP-3050 automatically turns all controlled devices on when the workspace is occupied, and off when the workspace has been unoccupied for the user-defined time delay. Uncontrolled devices remain on regardless of occupancy.

Surge Suppression

The power strip provides a high degree of surge suppression that protects connected equipment against threats like power surges, lightning strikes and voltage spikes. It features a resettable circuit breaker and two LEDs that indicate that the outlet is wired and grounded properly and the surge protection is functioning.

Application

The IDP-3050 is ideal for controlling task lighting and computer monitors. Additional devices for the controlled outlets include space heaters, fans and other equipment that can be turned off during unoccupied periods. Devices such as CPUs and fax machines should be plugged into the uncontrolled outlets. Applications include workstations, open office cubicles, offices and engineering stations.

Features

Power Strip

- Eight outlets; six controlled, two uncontrolled
- Surge and noise suppression protects desktop equipment
- Ground protected for safety; will not operate without a grounded outlet
- Two LEDs to indicate: 1) correct wiring and grounding; 2) surge protection is functioning
- Installation requires no hardwiring
- Flat offset plug for wire management
- One uncontrolled outlet and one controlled outlet are wall-transformer-enabled
- Plugs into a standard three-prong outlet

Personal Sensor

- Uses latest passive infrared (PIR) technology to detect occupancy
- User-adjustable time delay of 30 seconds to 30 minutes
- Multi-level Fresnel lens for superior occupancy detection
- 120° coverage, up to 300 square feet
- ASIC technology reduces components and enhances reliability
- Instantaneous response time



Specifications

Power Strip:

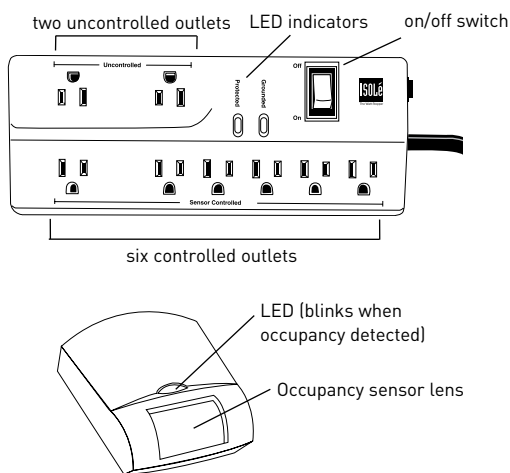
- Electrical rating: 120VAC, 12A, 50/60 Hz
- 12A dry contact relay
- Six-foot black cord
- Transformer provides power to sensor
- Mounts with screws or double-sided tape
- UL 1449 3rd Edition rating: 600V
- Circuit: High-energy, multistage hybrid
- Noise filtration: 0-25db (94.38%)
- Joule rating: 740 joules
- Maximum surge amperage: 48,000 Amps
- Protection modes: 500V L-N, 600V L-G, 600V N-G
- Response time: instantaneous
- Let-through voltage: 140V
- Initial clamping voltage: 200V
- UL and cUL listed
- Five year warranty

Personal Sensor:

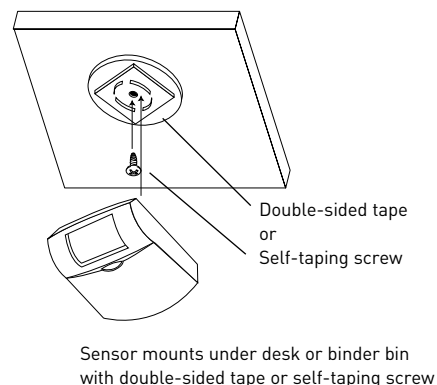
- Nine-foot connector cable
- Supply voltage: 12 VDC
- UL and cUL listed
- Five year warranty

Controls & Mounting

Product Controls

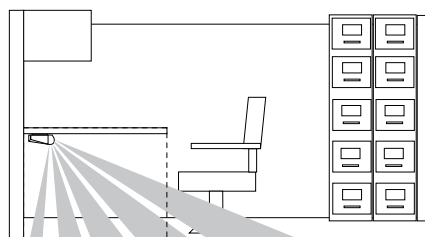


Personal Sensor Mounting

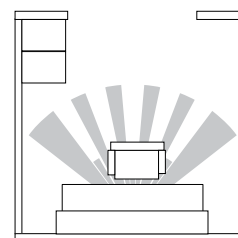


Coverage

Side Coverage Pattern



Overhead Coverage Pattern



Ordering Information

Catalog No.	Description
<input type="checkbox"/> IDP-3050-A	Eight-outlet power strip with personal sensor
<input type="checkbox"/> DI-110	Auto-on personal sensor
<input type="checkbox"/> CK1-1	20' extension cable w/single 1-1 connector (for single sensor and power strip)
<input type="checkbox"/> CK1-2	Two 10' extension cables w/duplex 1-2 connector (for multiple sensors and/or power strips)

Products are dark grey

EW Outdoor Motion Sensor

Optional model with lampholders

Isolated relay enables interface with security systems or other loads

Rated for use in temperature range of -40° to 130°F

Adjustable light level and time delay settings

Weatherproof and raintight for reliable performance

270 degree field of view



PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's EW outdoor motion sensors provide occupancy based control of outdoor lighting. Raintight and rated for -40°F to 130°F, EW sensors perform reliably in all weather conditions.

Operation

EW sensors operate at line voltage and can be mounted onto a standard, outdoor junction box. Utilizing advanced PIR technology, the sensors detect the difference between infrared energy in motion and the background space to turn lighting on when a person or vehicle enters the coverage area. After the area is vacated and the time delay elapses, lighting automatically turns off. The EW's dual PIR detectors and three level lens increase the detection density as well as the accuracy of motion detection.

Lampholders

For situations when a complete outdoor sensor package is desired, the EWF models include durable, polycarbonate lamp holders that accept PAR 20 or 38 lamps. They are UV and impact resistant and are impervious to weathering. The EWF features a unique dual-adjustment aiming system that allows the lamps to be angled and locked into position without the use of tools. The lamp holders' unique silicon seals allow them to be aimed above horizontal in damp or wet areas.

Applications

Applications for commercial settings include walkways, parking lots, dock lighting and warehouses. Typical uses outside a home include garages, backyards, entrance ways and porches.

Features

- Sensors can be mounted on walls, eaves, or ceilings for installation convenience
- 270° coverage
- Front rotates for easy coverage adjustment
- Precision, double-shot tooling with internal silicon gaskets prevents water and dust contamination
- No tools needed to aim or adjust lamp holders for speedier installation
- Optional override-ON to turn lights on remotely for the length of the time delay
- ON/OFF control based on daylight levels via adjustable light level setting
- Zero crossing circuitry reduces stress on the relay and results in increased sensor life
- ASIC enhances reliability and helps to eliminate false triggers
- Pulse Count Processing eliminates false triggers and provide RFI and EMI immunity
- Patented Voltage Drop Protection
- Solid state digital microprocessor offers increased reliability
- User-adjustable time delay from 12 seconds to 16 minutes

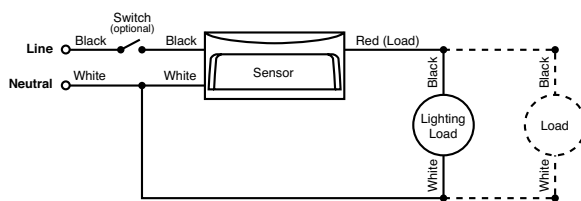


Specifications

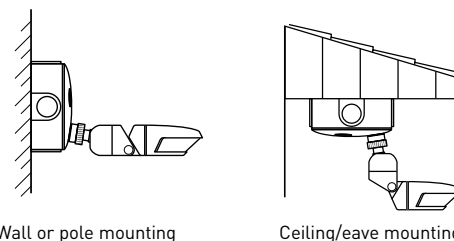
- 120 VAC or 277 VAC operation
- UL 773A rated raintight; UL 1571 rated for wet locations
- Operating temperature: -40° to 130°F (-40 to 54°C)
- Adjustable light level of 0.5 to 200 footcandles (5.4 - 2,152.8 lux)
- Isolated relay with N/O and N/C outputs; rated for 1 Amp @ 30 VDC/VAC (EW-200)
- 1/2" threaded nipple fits standard NEMA weatherproof fixture fitting
- Lamp holders use PAR 20 or 38 lamps, up to 150W each lamp*
- Compatible with all electronic ballasts and PL lamp ballast systems
- Sensor dimensions: 6.7" x 3.2" x 2.2" (170mm x 80mm x 55mm)
- UL and cUL listed
- Five year warranty

Wiring, Mounting & Installation

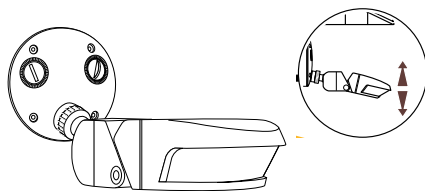
Wiring Diagram



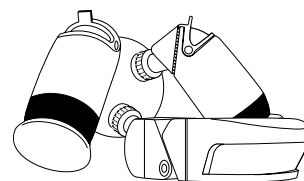
Mounting Diagrams



Installation & Positioning

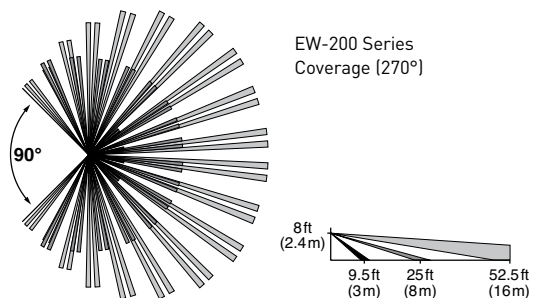


Sensor with Lampholders



Coverage

Coverage Pattern

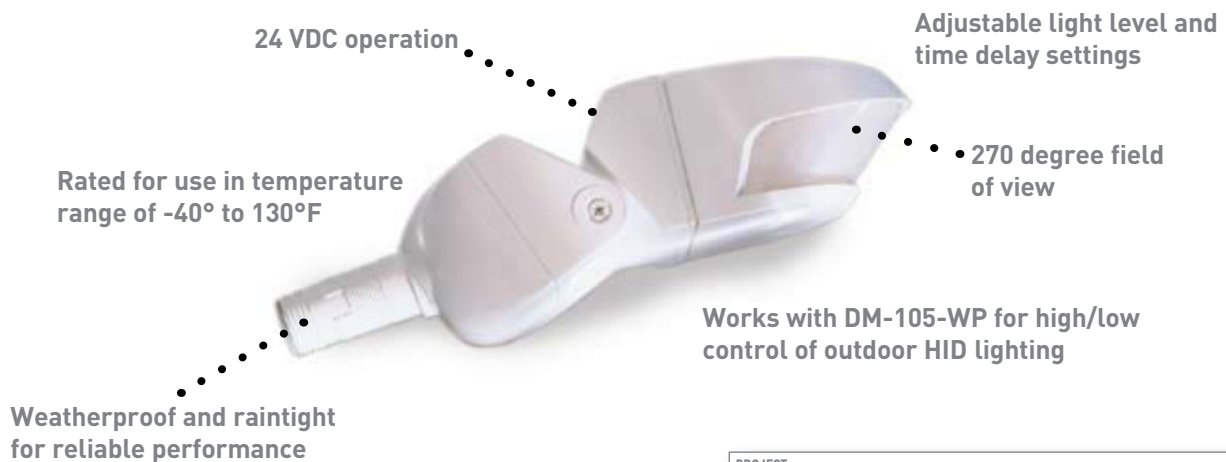


Ordering Information

Catalog No.	Color	Voltage	Load Rating	Coverage	Features
<input type="checkbox"/> EW-200-120-W	Arctic white	120 VAC; 60 Hz	0-1000 watt ballast, tungsten	270°	Isolated relay
<input type="checkbox"/> EW-200-120-G	Arch. grey				
<input type="checkbox"/> EW-200-277-W	Arctic white	277 VAC; 60 Hz	0-1000 watt ballast	270°	Isolated relay
<input type="checkbox"/> EWF-205-120-W	Arctic white	120 VAC; 60 Hz	0-1000* watt ballast, tungsten	270°	Lamp holders

*The sensors with lamp holders may use up to 300 watts for lamps even though they have a 0-1000 watt load rating

EW Low Voltage Outdoor Motion Sensor



PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's EW outdoor motion sensors provide occupancy based control of outdoor lighting. Raintight and rated for -40°F to 130°F, EW sensors perform reliably in all weather conditions.

Operation

EW sensors operate at 24 VDC and are mounted onto a standard, outdoor junction box. Utilizing advanced passive infrared (PIR) technology, the sensors detect the difference between infrared energy in motion and the background space to turn lighting on when a person or vehicle enters the coverage area. After the area is vacated and the time delay elapses, lighting automatically turns off. The EW's dual PIR detectors and three level lens increase the detection density as well as the accuracy of motion detection.

Applications

The low voltage EW sensors are ideal to use in conjunction with WattStopper DM-105-WP outdoor HID control module. Here, the EW allows the outdoor HID lighting to switch between high and low based on motion detection. Applications include walkways, parking lots, dock lighting and warehouses. When used with a power pack, the low voltage EW also provides an outdoor lighting control solution for areas where line voltage is not available or where the load is too large for a single line voltage sensor to handle.

Features

- Sensors can be mounted on walls, eaves, or ceilings for installation convenience
- 270° coverage pattern
- Front rotates for easy coverage adjustment
- Precision, double-shot tooling with internal silicon gaskets prevents water and dust contamination
- Optional override-ON to turn lights on remotely for the length of the time delay
- User-adjustable time delay from 12 seconds to 16 minutes
- Adjustable light level setting allows users to set the level at which lighting will turn on upon occupancy
- ASIC enhances reliability and helps to eliminate false triggers
- Pulse Count Processing eliminates false triggers and provide RFI and EMI immunity
- Includes hardware for mounting sensor to standard 4" round outdoor junction box

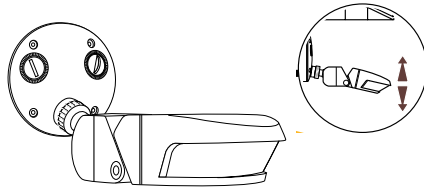


Specifications

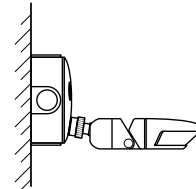
- Operating temperature range -40°F to +130°F
- UL 773A rated raintight
- 24 VDC operation
- 270° coverage
- Adjustable light level of 0.5 to 200 footcandles (5.4 - 2,152.8 lux)
- 1/2" threaded nipple fits standard NEMA weatherproof fixture fitting
- Sensor dimensions: 6.7" x 3.2" x 2.2" (170mm x 80mm x 55mm)
- Five year warranty

Wiring & Installation

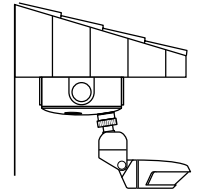
Installation & Positioning



Mounting Diagrams

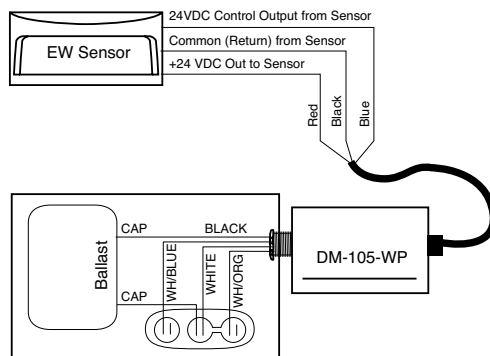


Wall or pole mounting

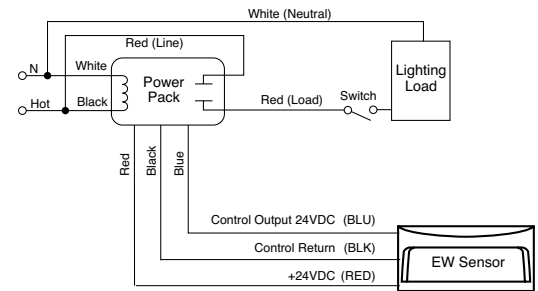


Ceiling/eave mounting

EW Wiring with DM-105-WP HID Control

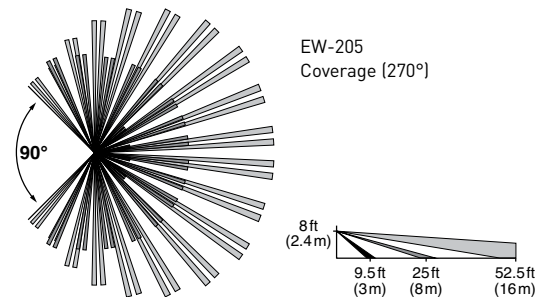


EW and Power Pack Wiring



Coverage

Coverage Pattern

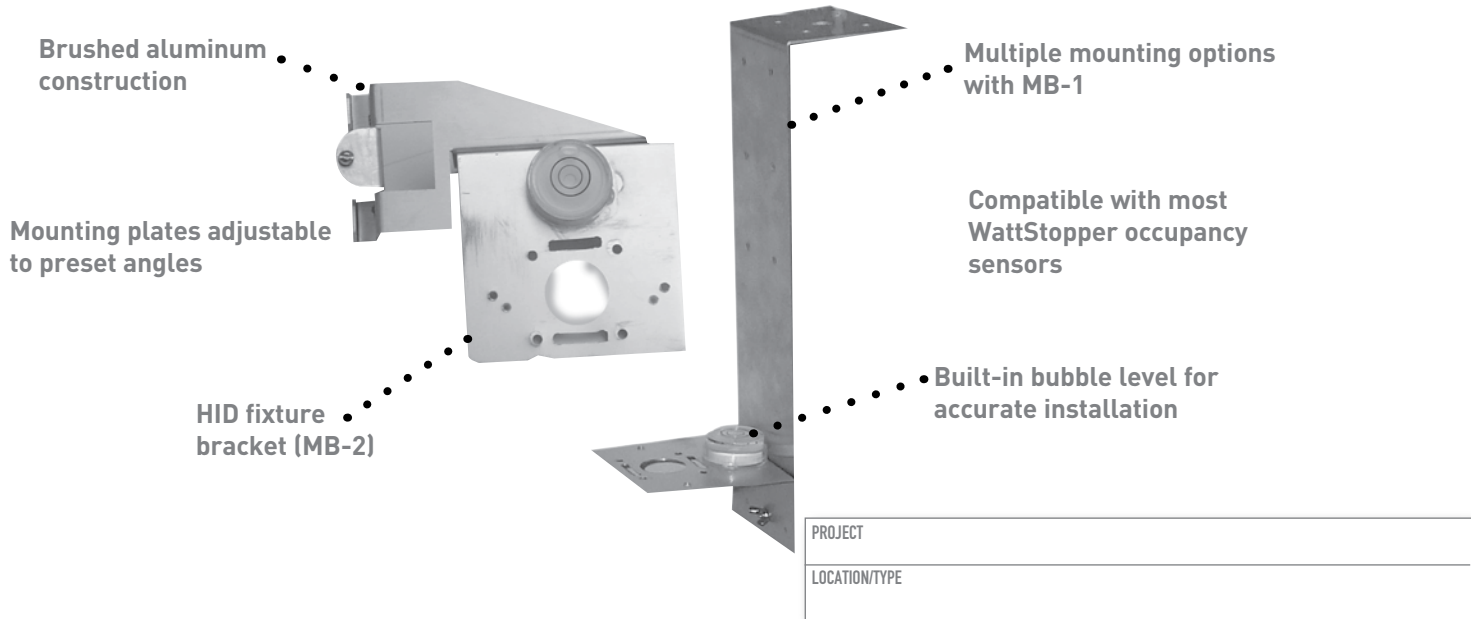


Ordering Information

Catalog No.	Color	Voltage	Current	Coverage
<input type="checkbox"/> EW-205-24-W	Arctic white	24 VDC	8 mA	270°
<input type="checkbox"/> EW-205-24-G	Arch. grey	24 VDC	8 mA	270°



MB Sensor Mounting Brackets



PROJECT
LOCATION/TYPE

Product Overview

Description

The MB-1 and MB-2 are durable mounting brackets used to install occupancy sensors in a variety of settings. Both brackets include adjustable mounting plates that allow sensor rotation to achieve the desired angle for optimal coverage. The brackets also include built-in bubble levels that afford the installer reliable guides to ensure the bracket is correctly positioned before adjusting the sensor. The MB-1 and MB-2 are constructed of aluminum with a clear powder coating finish.

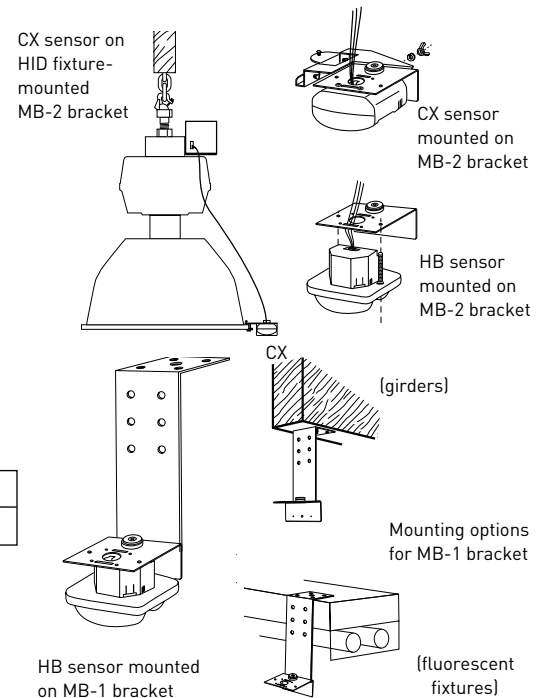
MB-2

With the MB-2, sensors can be attached directly to High Intensity Discharge (HID) fixtures, mounting to the bottom rim of the HID reflector bell and secured to the rim with three clamping screws. Sensors recommended for use with the MB-2 bracket include the CX, CI and HB sensors. The MB-2 includes a J-shaped bracket and a sensor mounting plate. The MB-2 also comes with extension wires that can be used, if needed, to connect the attached sensor to the DM HID controller.

MB-1

The MB-1 bracket enables users to mount sensors to a variety of structures, including fluorescent fixtures, walls, shelves, and girders. Among the many sensors compatible for use with the MB-1 bracket are the WPIR, CX, CI, and HB sensors. The MB-1 features an L-shaped bracket and a sensor mounting plate. When installed, this mounting plate can be rotated to direct the sensor toward the floor or along an aisle way at up to a 33° angle. In addition, the L-shaped bracket can be molded or reshaped to provide other mounting options.

Bracket Diagrams



Catalog No.	Description
<input type="checkbox"/> MB-1	L-Plate Industrial Mounting Bracket
<input type="checkbox"/> MB-2	J-Plate HID Mounting Bracket

Ordering Information

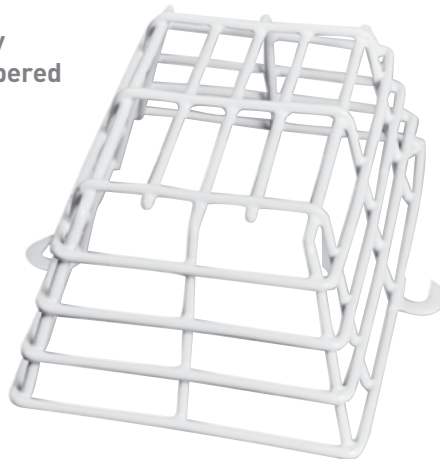


Protective Cage for Occupancy Sensors

Helps prevent occupancy sensors from being tampered with or damaged

Constructed from strong, durable coated steel wire

Simple installation



Product Overview

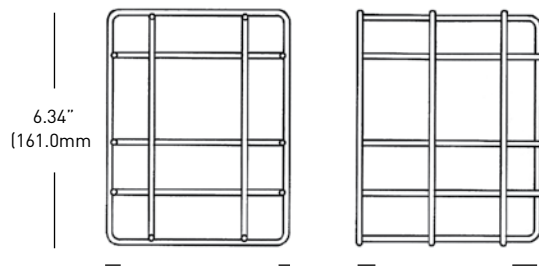
Description

WattStopper protective wire cages enclose our occupancy sensors in a safe cage that prevents the units from being tampered with or damaged. The cages use a strong, durable, web-like design and are constructed with 3/16" coated steel wire. They are ideal for installation in gymnasiums, racquetball courts, classrooms and other institutional facilities, or any area susceptible to vandalism. They are low in cost and simple to install. By protecting occupancy sensors from damage, they also reduce maintenance costs.

PROJECT
LOCATION/TYPE

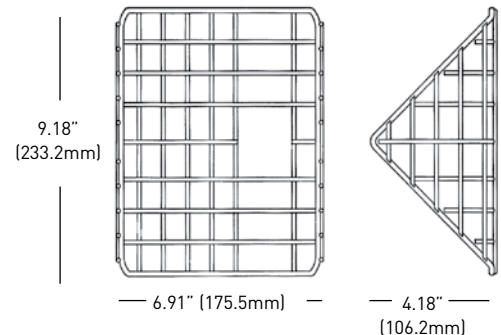
Specifications

WC-1



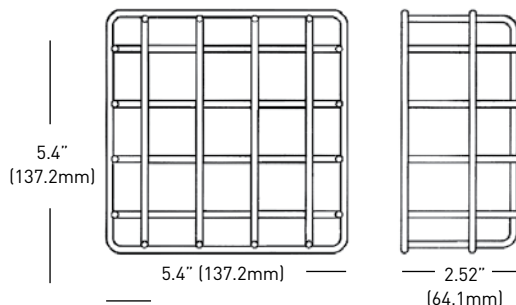
Fits: DT-200, CX-100, CB-100 for wall mounts

WC-2



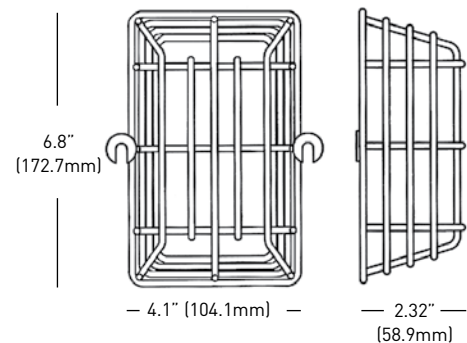
Fits: DT-200, CX-100, CB-100 for corner mounts

WC-3



Fits: W-500A, W-1000A, W-2000A, W2000H, WT, CI-200, WPIR, DT-300, UT-300, CI-300

WC-4



Fits: PW, UW, DW, WS, WN, WD, AS, TS

Catalog No.

<input type="checkbox"/> WC-1	<input type="checkbox"/> WC-2	<input type="checkbox"/> WC-3	<input type="checkbox"/> WC-4
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Ordering Information

IT-200 IntelliTimer® Pro Logger

Determines energy savings potential from occupancy sensor use

Adjustable light pipe observes lighting level

Logs when a space is occupied/vacant and when lighting is on/off



IT-ProSoft Software provides single-step data retrieval, storage, analysis, printing

Lithium battery with average life of 10 years

Small and lightweight for ease of use and portability

PROJECT
LOCATION/TYPE

Product Overview

Description

The IntelliTimer Pro (IT-200) is a revolutionary occupancy and light logger that establishes the energy saving potential when using occupancy sensors. With this versatile tool, spaces for lighting control use can be pinpointed and savings can be verified.

Operation

The IT-200 records a log entry every time there is a change in either the occupancy status or lighting status and stores a detailed history of these events for retrieval by PC. It utilizes passive infrared technology to detect occupancy. It observes the light level through a clear, plastic light pipe to determine if lights are on or off. The logger distinguishes artificial lighting from natural lighting to give accurate "lights-on" readings. To log data, a user places the logger so that its lens has a clear view of the workspace and the light-pipe aims towards the nearest light fixture.

Features

- Reports show graphs of occupancy and lighting and projects savings and statistical information
- Users set logging parameters for more accurate savings projection
- Powered by a lithium battery, with an extended life span of approximately ten years
- Small and lightweight for ease of use and portability
- Installs quickly and conveniently and requires no wiring
- IT-ProSoft 2.0 operates in six languages (English, French, German, Spanish, Swedish, and Norwegian) with appropriate currency/date/time formats, and energy and HVAC defaults
- Occupancy detection LED helps users confirm that logger is detecting motion in desired space
- Light level LED helps users set logger to identify the on and off lighting levels of different locations
- The LEDs work for a 60 second test period to preserve battery life

Software

Included with the IT-200 is IT-ProSoft 2.0 software. In a single keystroke or mouse click, users can retrieve, store, analyze, or print data reports. These reports can be directly exported to Microsoft Excel® for further analysis. IT-ProSoft also enables users to operate multiple units in multiple locations while ensuring that each logger's identity and logging site information will be correctly merged. Once the logged information is retrieved, the unit can be reset and used to log information at another test site. Users may group logging data from different areas and automatically receive separate reports by utilizing the IT-200's bookmarking feature.

Applications

The IT-200 offers a simple and cost-effective method of auditing any building space for wasted lighting. Since the logger is portable and battery operated, it is convenient to quickly move it from one location to download to a computer, and on to the next location for another logging session.



Specifications

InteliTimer Pro

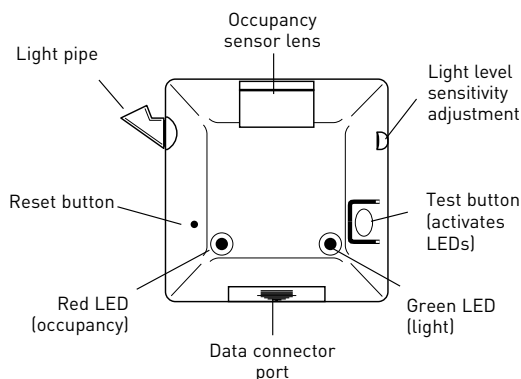
- Lithium battery operated. Average battery life ~ 10 years. Battery life indicator
- Test button activates LEDs for 60 seconds during which sensitivity is set and proper location for occupancy detection is verified
 - Red LED blinks during occupancy detection
 - Green LED blinks when lighting is detected
- Recessed reset switch
- Coverage up to 150 ft² (45.7m²)
- Stores a maximum of 4096 entries
- Stores site name to identify the area being monitored
- Connects to computer (PC) for data retrieval via serial connector cable
- Includes a serial to USB adapter for computers without serial ports

IT-ProSoft Software

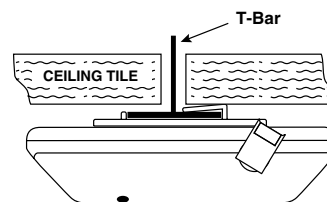
- Lists all log entries: entry number, date/time of entry, lighting status, occupancy status
- Users set logging parameters (energy cost/kWh, size of load, site name, sensor time-outs) for more accurate savings projection
- Reports show daily graphs of occupancy and lighting data, and lighting/occupancy analysis projecting savings and statistical information
- HVAC factor enables calculation of additional potential savings due to reduced HVAC load
- While connected, software can reset the logger in preparation for a new logging session
- Merge log capability combines outputs from multiple loggers monitoring a single location
- Compatible with Vista Business, Windows XP, 7 Pro, NT, 2000, 98 and 95
- Downloadable at www.wattstopper.com

Controls & Installation

Product Controls



T-bar Ceiling Installation



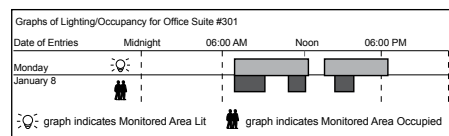
The IT-200 simply clips to a T-bar of a ceiling tile - no wiring is needed. For installation onto other surfaces, the unit comes with a flat bracket and double-stick tape.

Coverage & Software Reports

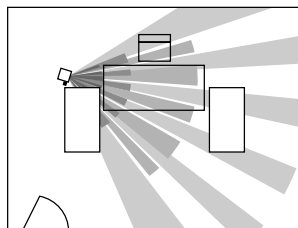
Logged Entries Report

Entries: 42	Cost/kWhr: \$0.080
From: Sun, Aug 14, 1995 at 12:00:00 PM	HVAC Adder: 15%
To: Thu, Aug 18, 1995 at 9:32:00 PM	Load Size: 180W
1 Sun, Aug 14, 1995 at 12:00:00 PM	Lights ON Occupied
2 Sun, Aug 14, 1995 at 2:25:00 PM	Lights ON Vacant
3 Mon, Aug 15, 1995 at 7:50:00 AM	Lights ON Occupied
4 Mon, Aug 15, 1995 at 10:15:00 AM	Lights ON Vacant
5 Mon, Aug 15, 1995 at 10:50:00 AM	Lights ON Occupied
6 Mon, Aug 15, 1995 at 12:15:00 PM	Lights OFF Vacant

Lighting & Occupancy Graph

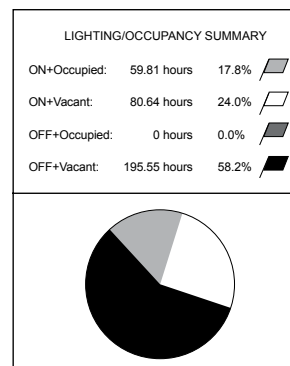


Office Placement Example



The IT-200 monitors an area of up to 150 ft² (13.9m²). The unit should be placed near the light source with the light pipe aimed at the light and the lens facing the occupant's main work area.

Lighting & Occupancy Graph



Ordering Information

Catalog No.	Description
IT-200	Occupancy and light logger with software for PC

All units are white





Versatile controls provide savings and peace of mind

In most households, lights are left on in empty rooms, wasting energy and money. WattStopper's controls automatically turn off lights, fans or spa equipment when they're not

needed, for savings and convenience. Selected controls can turn lights on for convenience or security.

It's easy to find just the right product for any residential application. WattStopper's vacancy sensors, occupancy sensors and time switches are engineered to meet the needs of homeowners throughout their properties, and comply with energy code requirements.



Table of Contents

- Using Lighting Controls **D3-D4**
- Product Overview **D5-D8**
- Applications **D9-D10**
- Product Matrix **D11-D12**
- Product Details **D13-D38**



Stop energy waste with lighting controls

The easiest and most cost effective way to **save energy at home** is to replace standard switches with vacancy sensors and time switches.

Vacancy Sensors

You turn the lights on. The sensor keeps them on as long as motion is detected, and then turns lights off automatically after a room has been vacated.

Convertible Occupancy Sensors

You turn the lights on, or reset the sensor to turn them on automatically when motion is detected. The sensor turns lights off automatically after a room has been vacated.



Countdown Time Switches

You turn the lights on for a selected period of time. The time switch turns them off automatically at the end of the countdown.

Astronomical Time Switch

You program the switch to turn lights on and off according to a schedule. The schedule can include set times, or times relative to dusk and dawn.

An on/off pushbutton on every device allows intuitive manual-off control at any time.

Energy Saving Potential	
Lighting controls save energy in every room of the house as well as outdoors.	
Bedrooms	40-50%
Bathrooms	40-50%
Closets	20-30%
Laundry room	30-40%
Garage	30-40%
Pantry	20-30%
Outdoor lighting	20-50%





New construction or retrofits

Sensors and time switches can be installed quickly and easily using new or existing wiring; multi-way sensors use the same traveler wires required by 3-way and 4-way switches. And, they can control most types of lighting, as well as motor loads such as fans.

Convenience and reliability

WattStopper controls require little or no ongoing adjustments or maintenance. With exceptionally reliable operation, these controls provide homeowners with years of trouble-free performance. All products are backed by a five year warranty.

Controls compliant with California's Title 24-2008 energy code

California requires the installation of high efficacy lighting unless approved lighting controls are installed. WattStopper can help you meet code in every room.

- Bathrooms, closets over 70ft², garages, laundry rooms and utility rooms — control must be a vacancy sensor providing manual-on control
- Other rooms — control may be a vacancy sensor or a dimmer
- Outdoor lighting — control may be an astronomic time switch

Color and styling

WattStopper controls feature low-profile switches in a choice of five decorator colors. Sturdy sensor lenses are color-matched to the rest of the device, and the switches fit standard decorator faceplates, so they can easily be ganged with other switches and controls. LED indicators make it easy to locate on/off buttons in the dark.



Black



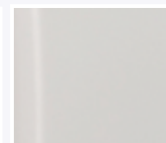
Ivory

Light
Almond

Almond



White





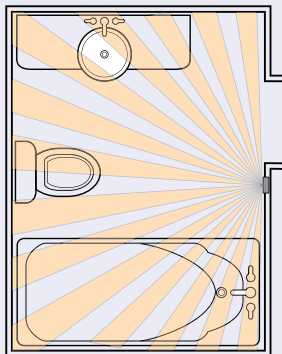
Vacancy sensors are perfect for most indoor applications

Vacancy sensors are the perfect lighting control choice for most spaces within a home. Residents can switch lights on or off as they are used to doing, but know that if they forget to turn lights off, the sensor will do so, preventing wasted energy and money.

WattStopper's family of sensors includes special features for different applications, and many sensors combine multiple features.

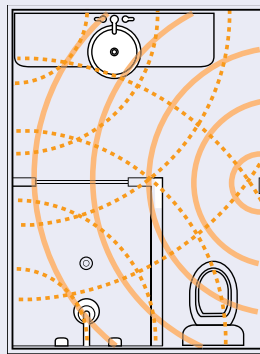


Passive infrared (PIR) sensing technology



PIR sensors detect heat in motion, and rely on an unobstructed view to operate effectively. Imagine the PIR coverage pattern emanating from a wall switch location. Will the sensor be able to see movement in the room? If not, use an ultrasonic sensor or a time switch.

Ultrasonic sensing technology



Ultrasonic sensors emit high frequency (40KHz) sound waves, and measure the changes in the returning waves in order to detect motion. They can sense around partitions such as shower stalls and shelving.



Multi-way control

Many sensors can be used for 3-way and 4-way switching applications. They provide full manual control from any location, and lights will remain on as long as one of the sensors detects motion. Multi-way sensors are perfect for large or unusually shaped spaces, and each sensor may be wired to a different lighting load. A momentary switch can be used for manual on/off control from secondary locations if additional sensors are not needed.

Dimming capability

Dimming saves energy while the lights are on, and lets residents set lighting to the most comfortable levels for different activities. Combining a dimmer with a sensor for automatic-off control is the ultimate energy saving solution.

Dual relays for two loads

Controlling two loads from one switch helps reduce wall clutter, and is also cost effective. Dual relay sensors are often used for control of bathroom lighting and fans.

Integral nightlight

Sensors with nightlights are soothing and can eliminate the need to turn lights on at night, especially in bedrooms and bathrooms. They help preserve night vision, and free up outlets that might otherwise be dedicated to nightlights.

Convertible sensors allow automatic-on operation

Manual-on operation saves more energy, and is recommended for most applications, but WattStopper's convertible occupancy sensors can be reconfigured for automatic-on. Automatic control is convenient for infrequently used rooms that people may enter with their hands full.

Light level sensing

Light level sensing can be enabled on sensors configured for automatic-on, and prevents lights from coming on if sufficient ambient light is already present. This way, energy isn't wasted by automatic operation in rooms with windows or skylights.



Time switches provide countdown on-times or scheduled control

Time switches are ideal for controlling outdoor lighting, spa equipment, garage lighting and lighting in storage areas or rooms that are hard for vacancy sensors to monitor.

WattStopper offers a selection of time switches with features designed for convenience, security and energy savings in a variety of applications.



Digital control

Digital time switches ensure precise control so that lighting is not accidentally turned on for a longer period than needed.

Audible and visual alerts

Programmable and astronomical time switches feature audible and visual warnings of an impending shutoff so occupants are not unexpectedly left in the dark. These alerts can be individually disabled.

Selectable on-times

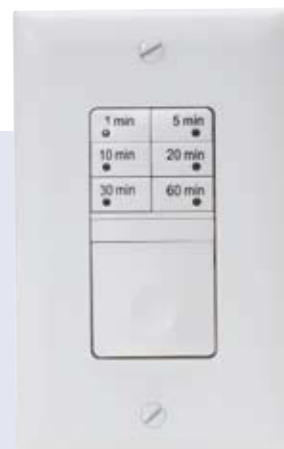
A preset time switch presents residents with a choice of six on-times from 1 to 60 minutes, and is ideal for most indoor spaces. Programmable and astronomical time switches allow longer on-times and are perfect for garages and outdoor lighting. The astronomical switch may also be used for entry hall lighting for security, so lights are on when residents return home.





Preset Countdown Time Switch

- Easy operation using dedicated buttons for factory-set on-times
- On-time options: 1, 5, 10, 20, 30, 60 minutes



Programmable Countdown Time Switch

- Programmable on-time: 5 minutes to 12 hours
- Push and hold switch to change on-time
- Backlit display shows countdown progress



Astronomical Time Switch

- Automatically switches lighting relative to dusk or dawn, or at selected times of day
- Activates lighting on selected days of the week
- Eight programmable control schedules





Save energy anywhere at home, inside or outdoors



Bedrooms

- Use manual-on sensors so lights won't turn on while someone's sleeping. **(CS-50)**
- Choose a sensor with a night light for the kids' rooms. **(RS-150BA-N)**
- To enhance ambiance, use a sensor with a dimmer. **(CD-250)**

Laundry rooms

- If you will often enter the room with your hands full, choose a convertible occupancy sensor that can be configured for automatic-on operation. **(RS-250)**
- Use a countdown time switch to keep lights on for a limited period of time. **(RT-50)**

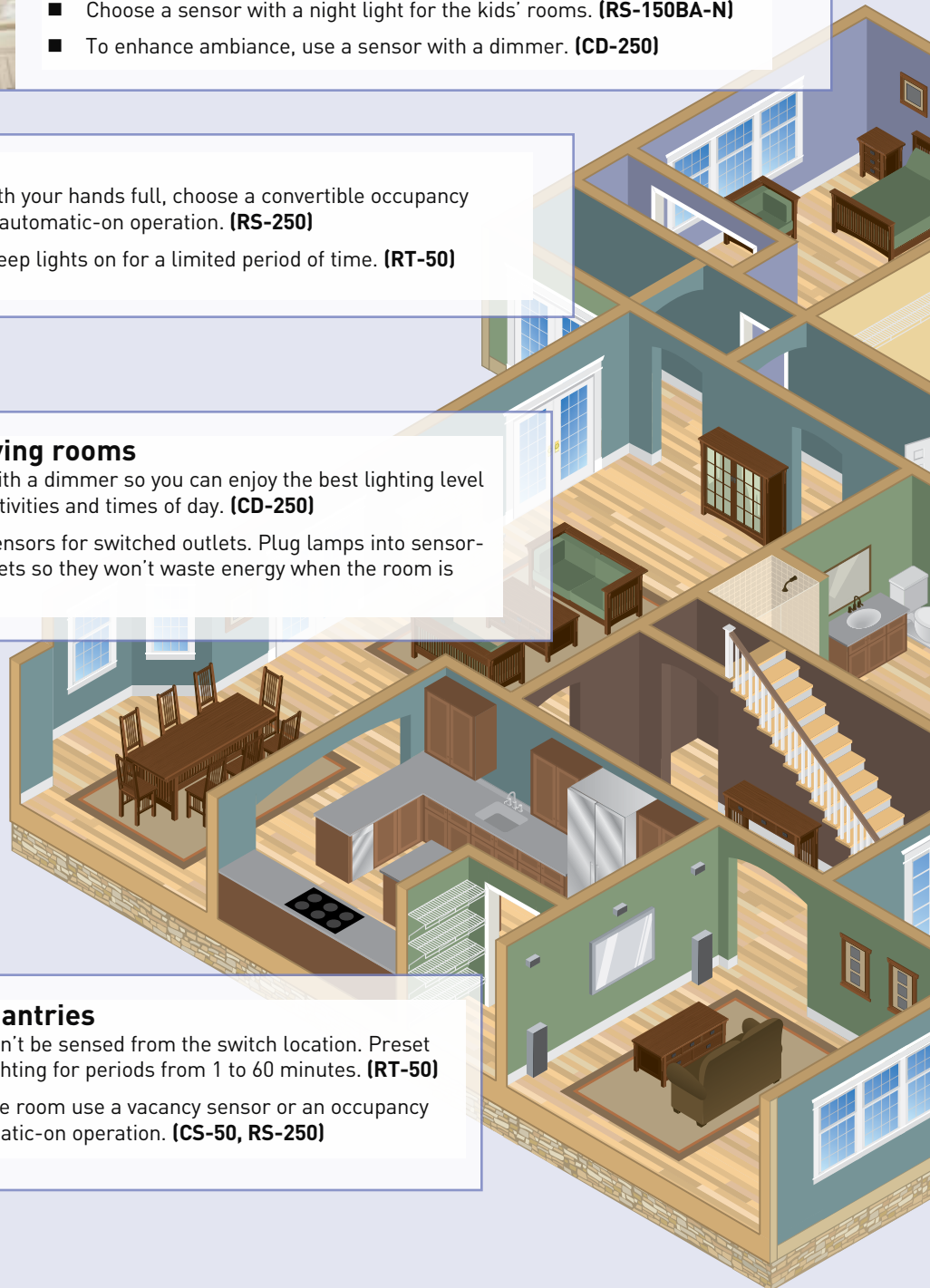


Family and living rooms

- Use sensors with a dimmer so you can enjoy the best lighting level for different activities and times of day. **(CD-250)**
- Use vacancy sensors for switched outlets. Plug lamps into sensor-controlled outlets so they won't waste energy when the room is empty. **(CS-50)**

Closets, storage rooms and pantries

- Use time switches for spaces that can't be sensed from the switch location. Preset countdown time switches activate lighting for periods from 1 to 60 minutes. **(RT-50)**
- If there is an unobstructed view of the room use a vacancy sensor or an occupancy sensor. Choose manual-on or automatic-on operation. **(CS-50, RS-250)**





Bathrooms

- Ultrasonic sensors can detect motion around partial obstructions, like shower stalls. **(CU-250)**
- For Jack and Jill bathrooms, pair a multi-way sensor with a momentary switch for control from two locations. **(CU-250 and RH-253)**
- Sensors with two switches provide independent control for a fan and lighting, or for overhead and vanity lighting. **(CS-350-N)**
- Use sensors with nightlights in bathrooms that will be used in the middle of the night. **(RS-150BA-N, CS-350-N)**

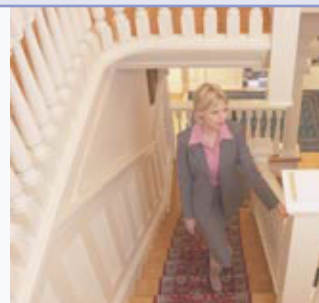
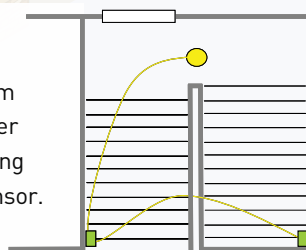


Garages, spas and outdoor lighting

- Use an astronomical time switch to turn lights on and off according to user programming. **(RT-200)**
- A programmable countdown time switch turns lighting on for a period of time from 5 minutes to 12 hours. **(RT-100)**







Hallways and stairwells

- Multi-way vacancy sensors detect movement and control the lights from multiple switch locations. If you prefer automatic-on operation use a dimming multi-way convertible occupancy sensor. **(CH-250, RD-250)**












Product Matrix

	Vacancy Sensors (Manual-on Operation Only)					
Model Number	CS-50  pages D13-14	RS-150BA-N  pages D15-16	CS-350-N  pages D17-18	CH-250  pages D19-20	CD-250  pages D21-22	CU-250  pages D23-24
Product Description	PIR Vacancy Sensor	PIR Vacancy Sensor w/ Nightlight	PIR Dual Relay Vacancy Sensor w/ Nightlight	PIR Multi-way Vacancy Sensor	PIR Dimming Multi-way Vacancy Sensor	Ultrasonic Multi-way Vacancy Sensor
Voltage	120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz
Load Rating	0-600W	0-600W	0-600W	0-600W	25-500W	0-600W
Neutral Wire		X	X	X	X	X
Load Type						
Incandescent	X	X	X	X	X	X
MLV	X	X	X	X		X
ELV	X	X	X	X		X
LED	X	X	X	X		X
Fluorescent	X	X	X	X		X
CFL	X	X	X	X		X
1/6 hp motor	X	X	X	X		X
Features*						
Coverage 180°, 600 sq. ft.	X	X	X	X	X	X
Time Delay:						
Fixed (30 minute)		X				
Adjustable	X		X	X	X	X
Multi-way Capability				X	X	X
Nightlight		X	X			
Light Level Sensor						
CA Title 24-2008 Compliant	X	X	X	X	X	X
Operation Mode:						
Manual-on only	X	X	X	X	X	X
Manual- or Auto-on						
Typical Applications						
	<ul style="list-style-type: none"> ■ Bedroom ■ Family/Living Room 	<ul style="list-style-type: none"> ■ Bedroom ■ Bathroom 	<ul style="list-style-type: none"> ■ Bathroom 	<ul style="list-style-type: none"> ■ Hallway ■ Stairwell ■ Jack & Jill Bathroom 	<ul style="list-style-type: none"> ■ Bedroom ■ Family/Living Room 	<ul style="list-style-type: none"> ■ Bathroom

* All products include zero-crossing circuitry for long life. No current leakage to load in off mode for safety (dimmers include air gap switch). All products are available in five colors and PIR sensors feature color matched lens.



Convertible Occupancy Sensors ⁽¹⁾ (Manual-on or Automatic-on)			Momentary Switch	Time Switches		
RS-250  pages D25-26	RH-250  pages D27-28	RD-250  NEW! pages D29-30	RH-253  pages D31-32	RT-50  pages D33-34	RT-100  pages D35-36	RT-200  NEW! pages D37-38
PIR Convertible Occupancy Sensor	PIR Multi-way Convertible Occupancy Sensor	PIR Dimming Multi-way Convertible Occupancy Sensor	Decorator Single Pole Momentary Switch	Preset Countdown Time Switch	Programmable Countdown Time Switch	Astronomical Time Switch
120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz	120VAC; 60Hz
0-600W	0-600W	25-500W	n/a	0-600W	0-600W	0-800W
X	X	X		X	X	X
X	X	X		X	X	X
X	X			X	X	X
X	X			X	X	X
X	X			X	X	X
X	X			X	X	X
X	X			X	X	X
Features*						
X	X	X				
X	X	X				
	X	X	X			
X	X	X				
						X
X	X	X	X	X	X	X
Typical Applications						
<ul style="list-style-type: none"> ■ Laundry Room ■ Closets 	<ul style="list-style-type: none"> ■ Hallway ■ Stairwell 	<ul style="list-style-type: none"> ■ Hallway ■ Stairwell 	<ul style="list-style-type: none"> ■ On/off control of multi-way sensor 	<ul style="list-style-type: none"> ■ Laundry Room ■ Closets ■ Storage Rooms 	<ul style="list-style-type: none"> ■ Garage ■ Spa ■ Outdoor Lighting ■ Wine Cellar 	<ul style="list-style-type: none"> ■ Outdoor Lighting ■ Spa ■ Garage ■ Entry Hall

(1) Not compliant with CA Title 24-2008. Use vacancy sensors for California applications.

CS-50 PIR Wall Switch Vacancy Sensor

Manual-on/automatic-off control

Two-wire sensor; no neutral connection

LED status indicator



Adjustable time delay

Compliant with California Title 24-2008

PROJECT

LOCATION/TYPE

Product Overview

Description

The CS-50 Passive Infrared (PIR) Vacancy Sensor provides automatic shutoff for single-pole lighting control applications in the home. It is engineered to comply with California's Title 24-2008 residential energy code.

Operation

The CS-50 operates as a manual-on sensor. Users must press the pushbutton to turn on lighting. The CS-50 employs PIR technology to sense the difference between the infrared energy from a person in motion and the background space. It keeps lighting on as long as motion is detected and provides automatic shutoff, following a user-selected time delay, when motion is no longer detected. Users may turn the lighting off manually.

Adjustable Time Delay

The CS-50 is shipped preset for a 30 minute time delay, and does not require any adjustment after installation. If desired, the time delay may be easily reduced to 25, 20, 15, 10 or 5 minutes or to 30 seconds. The time delay should be set relative to the anticipated duration of stay and level of activity in the room; 30 minutes for bedrooms and bathrooms and 5 to 10 minutes for pantries and laundry rooms.

Applications

The CS-50 is ideal for many residential applications where the switch location has an unobstructed line of sight of the room. It does not require a neutral wire in the switch box and may be used to switch lighting or fan motors.

Features

- Replaces single-pole switches
- Adjustable time delay, 30 seconds to 30 minutes
- If enabled, status indicator blinks when motion is detected
- Low-profile styling
- Choice of five decorator colors; lens is color-matched to device
- Operates most common types of residential lighting or fan motors
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates
- CA Title 24 compliant

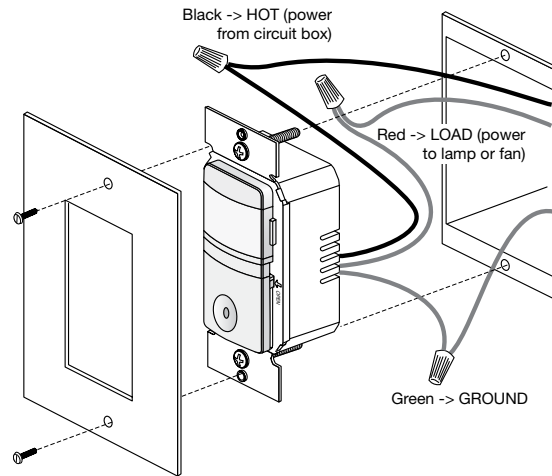


Specifications

- 120 VAC, 60 Hz
- Load ratings: 0-600 watt incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV) or electronic low voltage (ELV) or 1/6 hp motor
- Time delay settings: 30 seconds, 5, 10, 15, 20, 25, 30 minutes
- PIR coverage: 180°, 600 ft² (56 m²)
- LED to indicate motion detection
- 2.67" x 1.73" x 1.77" (68mm x 44mm x 45mm) L x W x D
- Operating conditions: 32-131°F (0-55°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five year warranty

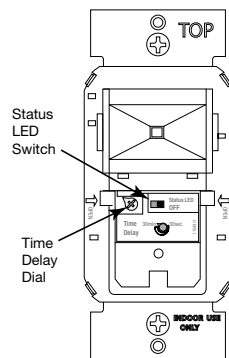
Installation & Wiring

Wiring Diagram



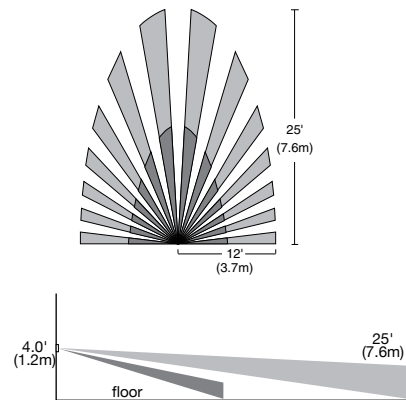
Adjustments & Coverage

Accessing Adjustments



Adjustment controls are located behind the front cover of the unit and are clearly labeled.

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating	Coverage
<input type="checkbox"/> CS-50-W	White	PIR Wall Switch Vacancy Sensor	120 VAC, 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV or 1/6 hp motor	180°, max. 600 ft ² (56m ²)
<input type="checkbox"/> CS-50-I	Ivory				
<input type="checkbox"/> CS-50-LA	Light Almond				
<input type="checkbox"/> CS-50-A	Almond				
<input type="checkbox"/> CS-50-B	Black				

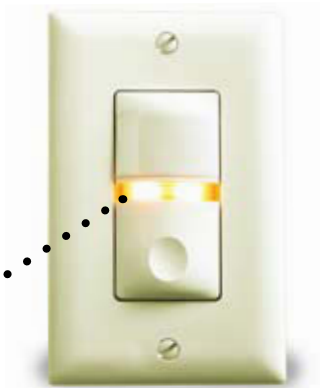
Order wall plate separately.

RS-150BA-N PIR Wall Switch Vacancy Sensor with Nightlight

Manual-on/automatic-off control

Fixed 30-minute time delay

Integral LED nightlight



Ideal for bathrooms

Compliant with California Title 24-2008

PROJECT

LOCATION/TYPE

Product Overview

Description

The RS-150BA-N Passive Infrared (PIR) Vacancy Sensor provides automatic shutoff for single-pole lighting control applications in the home. It is engineered to comply with California's Title 24-2008 residential energy code.

Operation

The RS-150BA-N operates as a manual-on sensor. Users must press the on/off pushbutton to turn on lighting. The RS-150BA-N employs PIR technology to sense the difference between the infrared energy from a person in motion and the background space. It keeps lighting on as long as motion is detected and provides automatic shutoff, following a 30-minute time delay, when motion is no longer detected. Users may turn the lighting off manually.

Integral Nightlight

The integral nightlight helps preserve night vision by providing low-level illumination when the connected lighting is off. The nightlight uses energy-efficient LEDs.

Applications

The RS-150BA-N PIR Vacancy Sensor requires no adjustment and is ideal for bathroom and bedroom applications where the switch location has an unobstructed line of sight of the room.

Features

- Replaces single-pole switches
- Fixed 30-minute time delay; no adjustment necessary
- Amber LED nightlight illuminates whenever connected load is off
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors; lens is color-matched to device
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates
- CA Title 24 compliant

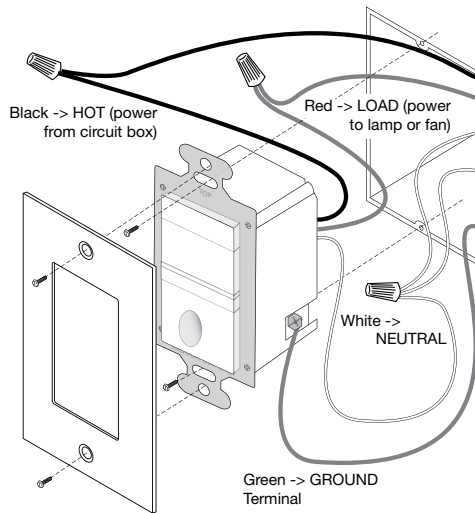


Specifications

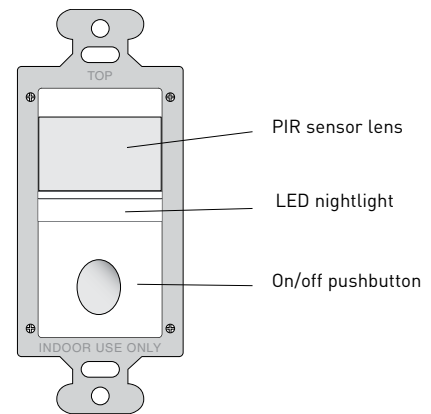
- 120 VAC, 60 Hz; neutral required
- Load ratings: 0-600 watt incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV) or electronic low voltage (ELV) or 1/6 hp motor
- Fixed time delay: 30 minutes
- PIR coverage: 180°, 600 ft² (56 m²)
- 2.63" x 1.69" x 1.88" (67.8mm x 42.9mm x 47.8mm) L x W x D
- Operating conditions: 32-131°F (0-55°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five-year warranty

Wiring & Controls

Wiring Diagram

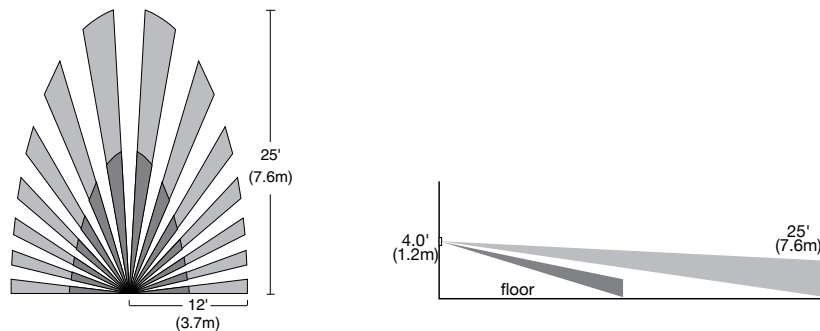


Product Controls



Coverage

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating	Coverage
<input type="checkbox"/> RS-150BA-N-W	White	PIR Wall Switch Vacancy Sensor with Nightlight	120 VAC, 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV or 1/6 hp motor	180°, max. 600 ft ² (56m ²)
<input type="checkbox"/> RS-150BA-N-I	Ivory				
<input type="checkbox"/> RS-150BA-N-LA	Lt. Almond				
<input type="checkbox"/> RS-150BA-N-A	Almond				
<input type="checkbox"/> RS-150BA-N-B	Black				

Order wall plate separately.

CS-350-N PIR Dual Relay Wall Switch Vacancy Sensor with Nightlight

Manual-on/automatic-off control of two separate loads

Adjustable time delay

Integral LED nightlight



Ideal for bathrooms

Compliant with California Title 24-2008

PROJECT

LOCATION/TYPE

Product Overview

Description

The CS-350-N Passive Infrared (PIR) Dual Relay Vacancy Sensor provides automatic lighting shutoff for applications that require separate switching of two loads. It is engineered to comply with California's Title 24-2008 residential energy code.

Operation

The CS-350-N operates as a manual-on sensor. Users must press one or both of the on/off pushbuttons to turn on the connected loads. The CS-350-N employs PIR technology to sense the difference between the infrared energy from a person in motion and the background space. It keeps the loads on as long as motion is detected and provides automatic shutoff, following a user-selected time delay, when motion is no longer detected. Users may turn the connected loads off manually.

Integral Nightlight

The integral nightlight helps preserve night vision by providing low-level illumination when the connected loads are off. The nightlight uses energy-efficient LEDs.

Applications

The CS-350-N PIR Dual Relay Vacancy Sensor is appropriate anywhere that manually-activated control of two loads from a single location is desired (e.g. in a bathroom to control the light and exhaust fan). By providing control of two loads from a single gang device, the CS-350-N helps reduce wall clutter.

Features

- Replaces standard switches for control of lighting and/or fans
- Contains two relays to control two independent lighting loads or circuits
- Adjustable time delay, 15 seconds to 30 minutes
- Amber LED nightlight illuminates whenever connected loads are off
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors; lens is color-matched to device
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates
- CA Title 24 compliant

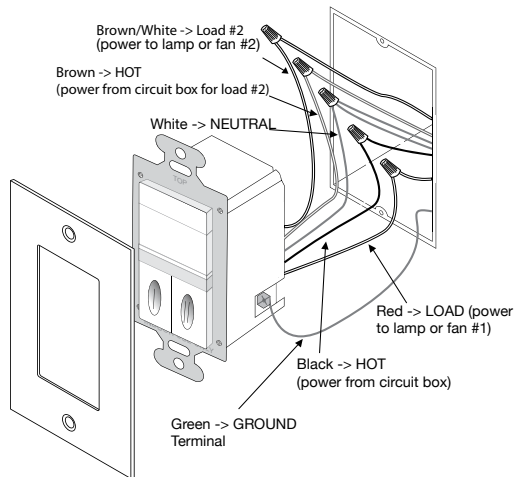


Specifications

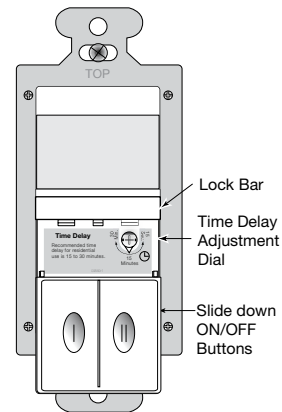
- 120 VAC, 60 Hz; neutral required
- Load ratings: 0-600 watt incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV) or electronic low voltage (ELV) or 1/6 hp motor
- Adjustable time delay from 15 seconds to 30 minutes
- PIR coverage: 180°, 600 ft² (56 m²)
- 2.63" x 1.69" x 1.88" (67.8mm x 42.9mm x 47.8mm) L x W x D
- Operating conditions: 32-131°F (0-55°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five-year warranty

Wiring & Controls

Wiring Diagram



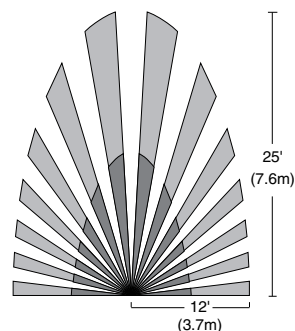
Product Controls



To access adjustment dial, gently pull the lock bar away from the switch face and slide the on/off buttons down.

Coverage

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating	Coverage
<input type="checkbox"/> CS-350-N-W	White	PIR Dual Relay Wall Switch Vacancy Sensor with Nightlight	120 VAC, 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV or 1/6 hp motor	180°, max. 600 ft ² (56m ²)
<input type="checkbox"/> CS-350-N-I	Ivory				
<input type="checkbox"/> CS-350-N-LA	Lt. Almond				
<input type="checkbox"/> CS-350-N-A	Almond				
<input type="checkbox"/> CS-350-N-B	Black				

Order wall plate separately.

CH-250 PIR Multi-way Wall Switch Vacancy Sensor

Manual-on/automatic-off control with multi-way capability

Adjustable time delay

Lighted pushbutton for visibility in darkened rooms



Ideal for hallways, stairwells and large rooms with multiple entrances

Compliant with California Title 24-2008

PROJECT

LOCATION/TYPE

Product Overview

Description

The CH-250 Passive Infrared (PIR) Multi-way Vacancy Sensor provides automatic lighting shutoff for applications in the home including those with multiple switch locations. It is engineered to comply with California's Title 24-2008 residential energy code.

Operation

The CH-250 operates as a manual-on sensor. Users must press the pushbutton to turn on lighting. The CH-250 employs PIR technology to sense the difference between the infrared energy from a person in motion and the background space. It keeps lighting on as long as motion is detected and provides automatic shutoff, following a user-selected time delay, when motion is no longer detected. Users may turn the connected load off manually.

Multi-way Operation

A CH-250 connected to other CH-250s and/or RH-253 Decorator Single Pole Momentary Switches provides true multi-way on/off control. An occupant simply presses the on/off pushbutton of any connected device to turn on the lighting. Lights remain on as long as one of the CH-250s continues to detect occupancy. The user may turn off the lighting by pressing the on/off button on any of the connected devices. If the room becomes vacant and lights are on, they will be switched off automatically following the time delay of the last CH-250 to detect occupancy.

Applications

CH-250s are appropriate for residential applications where the switch location has an unobstructed line of sight of the room. Multiple CH-250s are ideal for hallways, stairwells and large rooms with multiple entrances, as each sensor expands the coverage area.

Features

- Replaces single- or multi-pole switches
- Provides multi-way control when used with other CH-250s or RH-253s
- Adjustable time delay, 15 seconds to 30 minutes
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors; lens is color-matched to device
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates
- CA Title 24 compliant

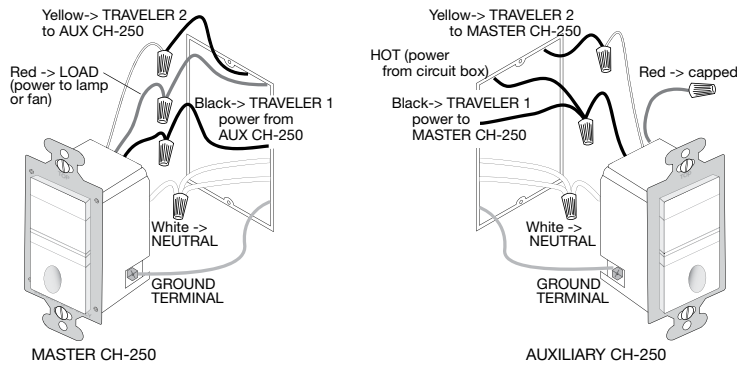


Specifications

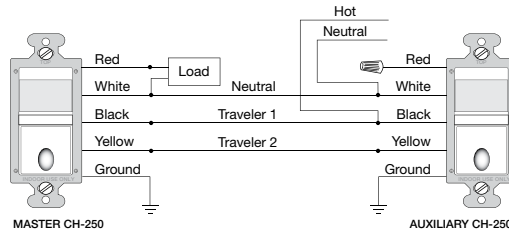
- 120 VAC, 60 Hz; neutral required
- Load ratings: 0-600 watt incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV) or electronic low voltage (ELV) or 1/6 hp motor
- Time delay settings: 15 seconds, 5, 15, 30 minutes
- PIR coverage: 180°, 600 ft² [56 m²]
- 2.67" x 1.73" x 1.77" [68mm x 44mm x 45mm] L x W x D
- Operating conditions: 32-131°F [0-55°C], 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five year warranty

Installation & Wiring

Wiring Diagrams

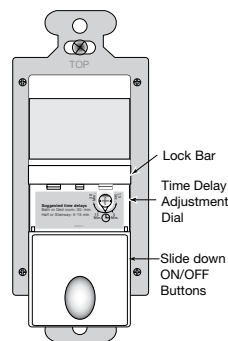


For single pole applications, cap off the yellow wire. Up to four multi-location sensors may be connected together. For details on connecting RH-253s for multi-location control, see the RH-253 cut sheet.



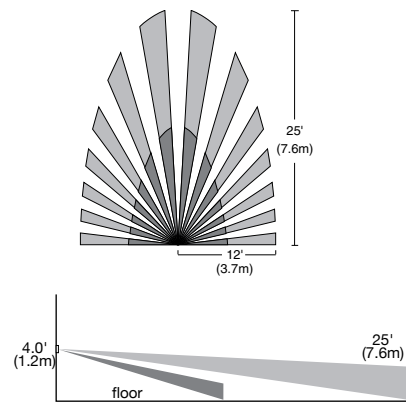
Controls & Coverage

Product Controls



To access adjustment dial, gently pull the lock bar away from the switch face and slide the on/off button down.

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Rating	Coverage
<input type="checkbox"/> CH-250-W	White	PIR Multi-way Wall	120 VAC, 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV lighting load or 1/6 hp motor load	180°, max. 600 ft ² [56m ²]
<input type="checkbox"/> CH-250-I	Ivory	Switch Vacancy			
<input type="checkbox"/> CH-250-LA	Light Almond	Sensor			
<input type="checkbox"/> CH-250-A	Almond				
<input type="checkbox"/> CH-250-B	Black				

Order wall plate separately.

CD-250 PIR Dimming Multi-way Wall Switch Vacancy Sensor

Manual-on/automatic-off control with full-range dimming and multi-way capability

Adjustable time delay

Lighted pushbutton for visibility in darkened rooms



Ideal for bedrooms, family rooms, dining rooms and living rooms

Compliant with California Title 24-2008

PROJECT

LOCATION/TYPE

Product Overview

Description

The CD-250 PIR Dimming Multi-way Vacancy Sensor provides preset dimming control and automatic lighting shutoff for applications in the home including those with multiple switch locations. It is engineered to comply with California's Title 24-2008 residential energy code.

Operation

The CD-250 operates as a manual-on sensor. Users must press the pushbutton to turn on lighting. Once lighting is on, the dimming level may be adjusted by pressing and holding the pushbutton. The CD-250 employs PIR technology to sense the difference between the infrared energy from a person in motion and the background space. It keeps lighting on as long as motion is detected and provides automatic shutoff, following a user-selected time delay, when motion is no longer detected. Users may turn the lighting off manually. The next time the CD-250 is turned on, the lighting will come on to the last light level.

Dimming and Multi-way Control

The CD-250 can dim incandescent loads from a minimum level of 10% to a maximum level of 100%. When the pushbutton is pressed and held, the CD-250 will fade the lights up and down in a continuous cycle until the pushbutton is released. The dimming direction may be reversed by momentarily releasing the pushbutton and then pressing it again.

Lighting may be controlled from multiple locations by connecting additional CD-250s and/or RH-253 Single Pole Momentary Switches. When additional CD-250s are connected, each device provides full on/off and dimming control. Connected RH-253s provide on/off control only.

Applications

The CD-250 is ideal for bedrooms, living rooms, dining rooms, family rooms and other residential areas requiring dimming control from one or more locations coupled with automatic shutoff. It helps homeowners maximize energy savings and enjoy the most pleasing light level for a given task.

Features

- Replaces single- or multi-pole switches or incandescent dimmers
- Provides multi-way control when used with other CD-250s or RH-253s
- Adjustable time delay, 15 seconds to 30 minutes
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors; lens is color matched to device
- Soft-start technology to prolong lamp life
- Air gap isolation switch for safe relamping
- Compatible with decorator wall plates
- CA Title 24 compliant

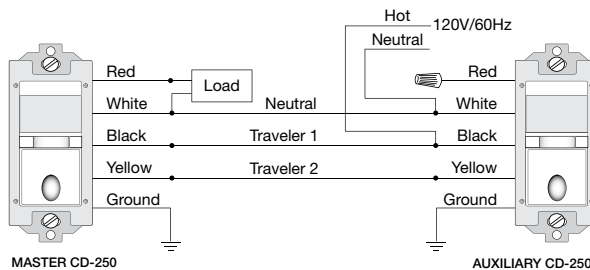
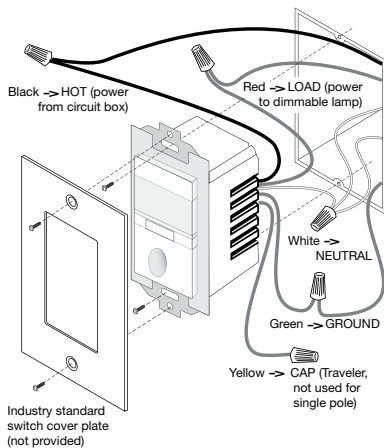


Specifications

- 120 VAC, 60 Hz; neutral required
- Operates incandescent lighting from 25-500W
- Time delay settings: 15 seconds, 5, 15, 30 minutes
- PIR coverage: 180°, 600 ft² [56 m²]
- 2.67" x 1.73" x 1.77" (68mm x 44mm x 45mm) L x W x D
- Operating conditions: 32-104°F (0-40°C), 95% RH, non-condensing; for indoor use only
- UL listed
- Five year warranty

Installation & Wiring

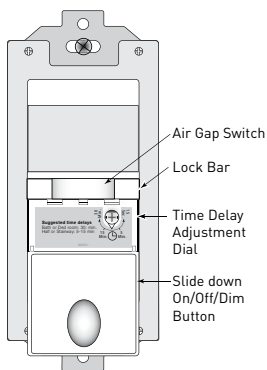
Wiring Diagrams



Up to four multi-location sensors may be connected together. For details on connecting RH-253s for multi-location control, see the RH-253 cut sheet.

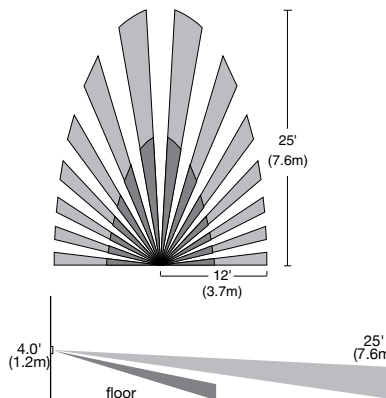
Controls & Coverage

Product Controls



To access adjustment dial, gently pull the lock bar away from the switch face and slide the on/off button down.

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating	Coverage
<input type="checkbox"/> CD-250-W	White	PIR Dimming	120 VAC, 60 Hz	25-500W incandescent lighting	180°, max. 600 ft ² [56 m ²]
<input type="checkbox"/> CD-250-I	Ivory	Multi-Way Wall			
<input type="checkbox"/> CD-250-LA	Light Almond	Switch Vacancy			
<input type="checkbox"/> CD-250-A	Almond	Sensor			
<input type="checkbox"/> CD-250-B	Black				

Order wall plate separately.



CU-250 Ultrasonic Multi-way Wall Switch Vacancy Sensor

Manual-on/automatic-off control with multi-way capability

Adjustable sensitivity and time delay

Lighted pushbutton for visibility in darkened rooms



Ideal for bathrooms, L-shaped rooms and spaces with obstructions

Compliant with California Title 24-2008

PROJECT
LOCATION/TYPE

Product Overview

Description

The CU-250 Ultrasonic Multi-way Vacancy Sensor provides automatic lighting shutoff for applications in the home including those with multiple switch locations. It is engineered to comply with California's Title 24-2008 residential energy code.

Operation

The CU-250 operates as a manual-on sensor. Users must press the pushbutton to turn on lighting. The CU-250 employs 40kHz high frequency ultrasound to sense motion within an enclosed space, and does not require a clear line of sight for proper operation. It keeps lighting on as long as motion is detected and provides automatic shutoff, following a user-selected time delay, when motion is no longer detected. Users may turn the connected load off manually.

Multi-way Operation

A CU-250 connected to other CU-250s and/or RH-253 Decorator Single Pole Momentary Switches provides true multi-way on/off control. An occupant simply presses the on/off pushbutton of any connected device to turn on the lighting. Lights remain on as long as one of the CU-250s continues to detect occupancy. The user may turn off the lighting by pressing the on/off button on any of the connected devices. If the room becomes vacant and lights are on, they will be switched off automatically following the time delay of the last CU-250 to detect occupancy.

Applications

CU-250s are ideal for bathrooms, L-shaped rooms, storage areas and other residential applications where the sensor may have an obstructed view of the covered area.

Features

- Replaces single- or multi-pole switches
- Provides multi-way control when used with other CU-250s or RH-253s
- Adjustable time delay, 15 seconds to 30 minutes
- Adjustable sensitivity
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates
- CA Title 24 compliant

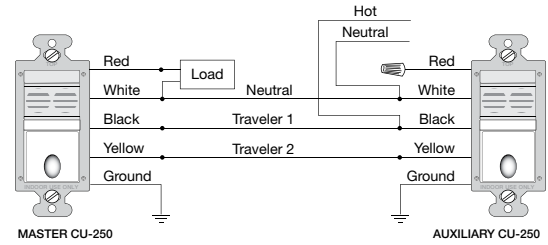
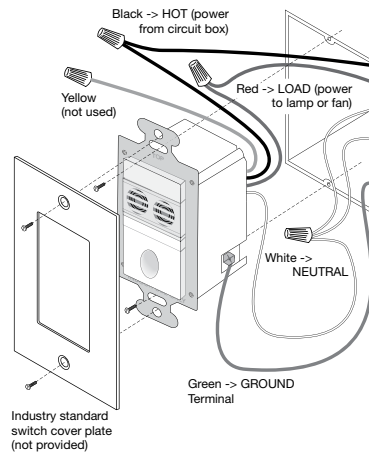


Specifications

- 120 VAC, 60 Hz; neutral required
- Load ratings: 0-600 watt incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV) or electronic low voltage (ELV) or 1/6 hp motor
- Time delay settings: 15 seconds, 5, 15, 30 minutes
- Coverage: 180°, 600 ft² (56 m²)
- 2.67" x 1.73" x 1.77" (68mm x 44mm x 45mm) L x W x D
- Operating conditions: 32-122°F (0-50°C); for indoor use only
- UL and cUL listed
- Five year warranty

Installation & Wiring

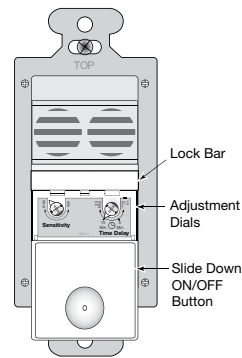
Wiring Diagrams



Up to four multi-location sensors may be connected together. For details on connecting RH-253s for multi-location control, see the RH-253 cut sheet.

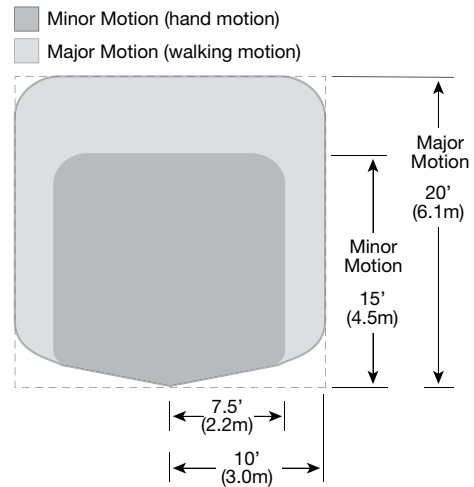
Controls & Coverage

Product Controls



To access adjustment dials, gently pull the lock bar away from the switch face and slide the on/off buttons down.

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Rating	Coverage
<input type="checkbox"/> CU-250-W	White	Ultrasonic Multi-way Wall Switch Vacancy Sensor	120 VAC, 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV lighting load or 1/6 hp motor load	180°, max. 600 ft ² (56m ²)
<input type="checkbox"/> CU-250-I	Ivory				
<input type="checkbox"/> CU-250-LA	Light Almond				
<input type="checkbox"/> CU-250-A	Almond				
<input type="checkbox"/> CU-250-B	Black				

Order wall plate separately.



RS-250 PIR Wall Switch Convertible Occupancy Sensor

Automatic-off control

Adjustable time delay

Lighted pushbutton for visibility in darkened rooms



Light level sensor for added energy savings when automatic-on operation is selected

Choice of manual-on or automatic-on operation

PROJECT
LOCATION/TYPE

Product Overview

Description

The RS-250 Passive Infrared (PIR) Convertible Occupancy Sensor provides automatic lighting shutoff for single-pole lighting control applications in the home. It offers optional automatic lighting activation.

Operation

The RS-250 operates either as a manual- or automatic-on sensor. When in manual-on mode, users must press the pushbutton to turn on lighting. The RS-250 employs PIR technology to sense the difference between the infrared energy from a person in motion and the background space. It keeps lighting on as long as motion is detected and provides automatic shutoff, following a user-selected time delay, when motion is no longer detected. Users may turn the lighting off manually.

Light Level Sensor

When automatic-on operation has been selected, the adjustable light level sensor may be set to prevent lights from turning on automatically if sufficient daylight is present.

Applications

The RS-250 is ideal for many residential applications where the switch location has an unobstructed line of sight of the room. It should be used in manual-on mode for bedrooms and bathrooms. Automatic-on mode may be selected for convenience in spaces such as laundry rooms or closets.

Features

- Replaces single-pole switches
- Adjustable time delay, 15 seconds to 30 minutes
- Lighted switch for visibility in darkened rooms
- If enabled, light level sensing prevents automatic-on when adequate daylight exists
- Low-profile styling
- Choice of five decorator colors; lens is color-matched to device
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates

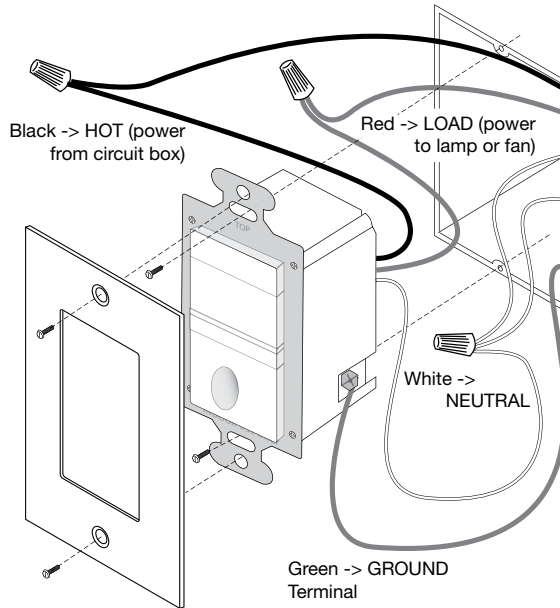


Specifications

- 120 VAC, 60 Hz; neutral required
- Load ratings: 0-600 watt incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV) or electronic low voltage (ELV) or 1/6 hp motor
- Adjustable time delay from 15 seconds to 30 minutes
- Adjustable light level setting from 10-150 fc (100-1500 lux) for daylight sensing
- PIR coverage: 180°, 600 ft² (56 m²)
- 2.67" x 1.73" x 1.77" (68mm x 44mm x 45mm) L x W x D
- Operating conditions: 32-131°F (0-55°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five year warranty

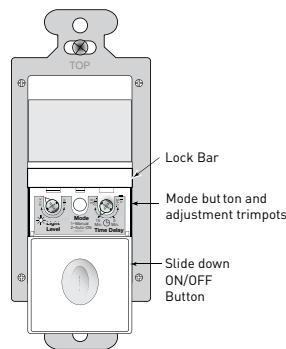
Installation & Wiring

Wiring Diagram



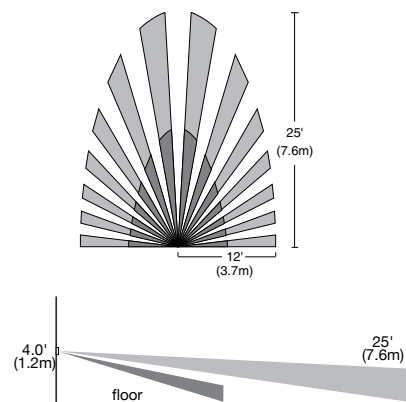
Controls & Coverage

Product Controls



To access adjustment dial, gently pull the lock bar away from the switch face and slide the on/off button down.

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Rating	Coverage
<input type="checkbox"/> RS-250-W	White	PIR Wall Switch	120 VAC, 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV lighting load or 1/6 hp motor load	180°, max. 600 ft ² (56m ²)
<input type="checkbox"/> RS-250-I	Ivory				
<input type="checkbox"/> RS-250-LA	Light Almond	Occupancy Sensor			
<input type="checkbox"/> RS-250-A	Almond				
<input type="checkbox"/> RS-250-B	Black				

Order wall plate separately.

RH-250 PIR Multi-way Wall Switch Convertible Occupancy Sensor

Automatic-off control with multi-way capability

Adjustable time delay

Lighted pushbutton for visibility in darkened rooms



Ideal for hallways, stairwells and large rooms with multiple entrances

Choice of manual-on or automatic-on operation

PROJECT

LOCATION/TYPE

Product Overview

Description

The RH-250 Passive Infrared (PIR) Multi-way Convertible Occupancy Sensor provides automatic lighting shutoff for applications in the home including those with multiple switch locations. It offers optional automatic lighting activation.

Operation

The RH-250 operates either as a manual- or automatic-on sensor. When in manual-on mode, users must press the pushbutton to turn on lighting. The RH-250 employs PIR technology to sense the difference between the infrared energy from a person in motion and the background space. It keeps lighting on as long as motion is detected and provides automatic shutoff, following a user-selected time delay, when motion is no longer detected. Users may turn the lighting off manually.

When automatic-on operation has been selected, the adjustable light level sensor may be set to prevent lights from turning on automatically if sufficient daylight is present.

Multi-way Operation

An RH-250 connected to other RH-250s and/or RH-253 Decorator Single Pole Momentary Switches provides true multi-way on/off control. An occupant simply presses the on/off pushbutton of any connected device to turn on the lighting. Lights remain on as long as one of the RH-250s continues to detect occupancy. The user may turn off the lighting by pressing the on/off button on any of the connected devices. If the room becomes vacant and lights are on, they will be switched off automatically following the time delay of the last RH-250 to detect occupancy.

Applications

RH-250s are ideal for residential applications where the switch location has an unobstructed line of sight of the room. Multiple RH-250s can be used for lighting control in hallways, stairwells and large rooms with multiple entrances, as each sensor expands the coverage area.

Features

- Replaces single- or multi-pole switches
- Provides multi-way control when used with other RH-250s or RH-253s
- Adjustable time delay, 15 seconds to 30 minutes
- Lighted switch for visibility in darkened rooms
- If enabled, light level sensing prevents automatic-on when adequate daylight exists
- Low-profile styling
- Choice of five decorator colors; lens is color-matched to device
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates

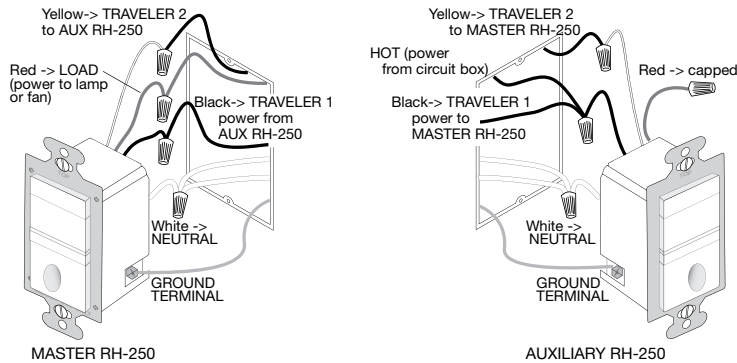


Specifications

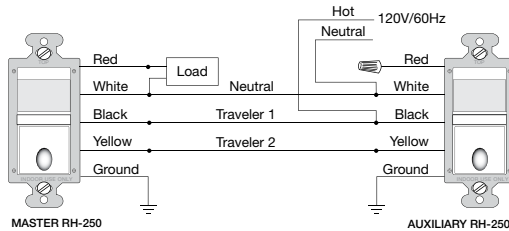
- 120 VAC, 60 Hz; neutral required
- Load ratings: 0-600 watt incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV) or electronic low voltage (ELV) or 1/6 hp motor
- Time delay settings: 15 seconds, 5, 15, 30 minutes
- Adjustable light level setting from 10-150 fc (100-1500 lux) for daylight sensing
- PIR coverage: 180°, 600 ft² (56 m²)
- 2.67" x 1.73" x 1.77" (68mm x 44mm x 45mm) L x W x D
- Operating conditions: 32-131°F (0-55°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five year warranty

Installation & Wiring

Wiring Diagrams

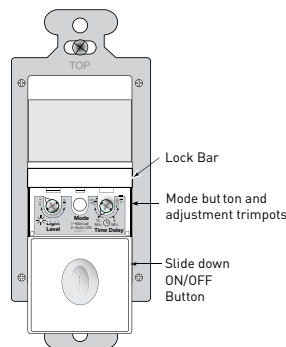


For single pole applications, cap off the yellow wire. Up to four multi-location sensors may be connected together. For details on connecting RH-253s for multi-location control, see the RH-253 cut sheet.



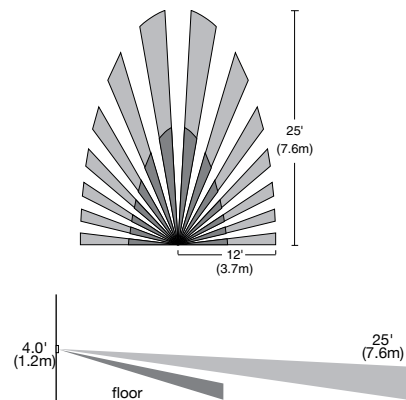
Controls & Coverage

Product Controls



To access adjustment dial, gently pull the lock bar away from the switch face and slide the on/off button down.

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Rating	Coverage
<input type="checkbox"/> RH-250-W	White	PIR Multi-way Wall Switch Convertible Occupancy Sensor	120 VAC, 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV lighting load or 1/6 hp motor load	180°, max. 600 ft ² (56m ²)
<input type="checkbox"/> RH-250-I	Ivory				
<input type="checkbox"/> RH-250-LA	Light Almond				
<input type="checkbox"/> RH-250-A	Almond				
<input type="checkbox"/> RH-250-B	Black				

Order wall plate separately.

RD-250 PIR Dimming Multi-way Wall Switch Convertible Occupancy Sensor

Automatic-off control with
full-range dimming and
multi-way capability

Adjustable time delay
and light level sensor

Lighted pushbutton for
visibility in darkened rooms



Ideal for bedrooms, family rooms,
dining rooms and living rooms

Choice of manual-on or
automatic-on operation

PROJECT

LOCATION/TYPE

Product Overview

Description

The RD-250 PIR Dimming Multi-way Convertible Occupancy Sensor provides preset dimming control, automatic lighting shutoff and optional automatic lighting activation.

Operation

The RD-250 operates either as a manual- or automatic-on sensor. When in manual-on mode, users must press the pushbutton to turn on lighting. Once lighting is on, the dimming level may be adjusted by pressing and holding the pushbutton. The RD-250 employs PIR technology to sense the difference between the infrared energy from a person in motion and the background space. It keeps lighting on as long as motion is detected and provides automatic shutoff, following a user-selected time delay, when motion is no longer detected. Users may turn the lighting off manually. The next time the RD-250 is turned on, the lighting will come on to the last light level.

When automatic-on operation has been selected, the adjustable light level sensor may be set to prevent lights from turning on automatically if sufficient daylight is present.

Dimming and Multi-way Control

The RD-250 can dim incandescent loads from a minimum level of 10% to a maximum level of 100%. When the pushbutton is pressed and held, the RD-250 will fade the lights up and down in a continuous cycle until the pushbutton is released. The dimming direction may be reversed by momentarily releasing the pushbutton and then pressing it again.

Lighting may be controlled from multiple locations by connecting additional RD-250s and/or RH-253 Single Pole Momentary Switches. When additional RD-250s are connected, each device provides full on/off and dimming control. Connected RH-253s provide on/off control only.

Applications

The RD-250 is ideal for bedrooms, living rooms, dining rooms, family rooms and other residential areas requiring dimming control from one or more locations coupled with automatic shutoff. It helps homeowners maximize energy savings and enjoy the most pleasing light level for a given task.

Features

- Replaces single- or multi-pole switches or incandescent dimmers
- Provides multi-way control when used with other RD-250s or RH-253s
- Adjustable time delay, 15 seconds to 30 minutes
- If enabled, light level sensing prevents automatic-on when adequate daylight exists
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors; lens is color matched to device
- Soft-start technology to prolong lamp life
- Air gap isolation switch for safe relamping
- Compatible with decorator wall plates

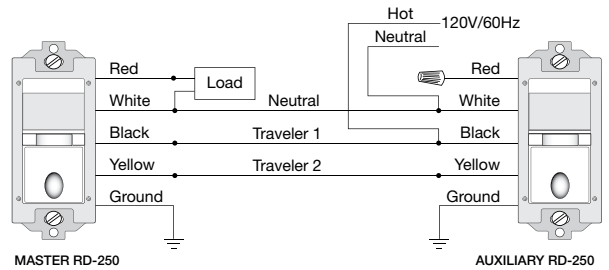
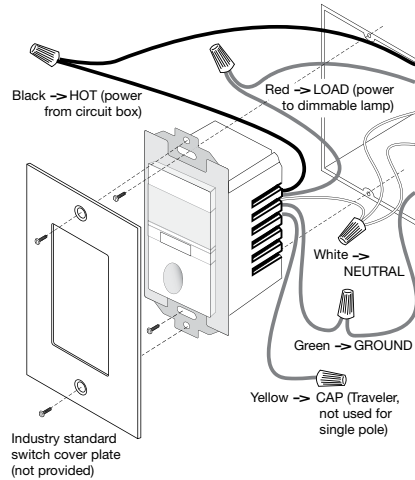


Specifications

- 120 VAC, 60 Hz; neutral required
- Operates incandescent lighting from 25-500W
- Time delay settings: 15 seconds, 5, 15, 30 minutes
- Adjustable light level setting from 10-150 fc (100-1500 lux) for daylight sensing
- PIR coverage: 180°, 600 ft² [56 m²]
- 2.67" x 1.73" x 1.77" (68mm x 44mm x 45mm) L x W x D
- Operating conditions: 32-104°F (0-40°C), 95% RH, non-condensing; for indoor use only
- UL listed
- Five year warranty

Installation & Wiring

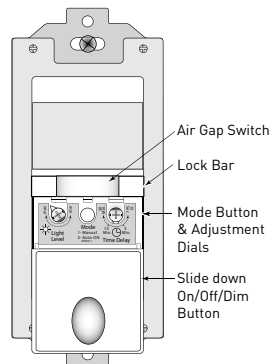
Wiring Diagrams



Up to four multi-location sensors may be connected together. For details on connecting RH-253s for multi-location control, see the RH-253 cut sheet.

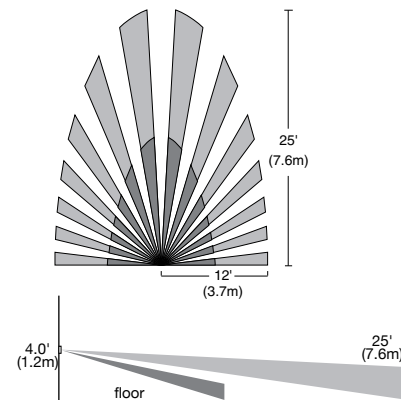
Controls & Coverage

Product Controls



To access adjustment dials, gently pull the lock bar away from the switch face and slide the on/off button down.

Coverage Pattern



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating	Coverage
<input type="checkbox"/> RD-250-W	White	PIR Dimming	120 VAC, 60 Hz	25-500W incandescent lighting	180°, max. 600 ft ² [56 m ²]
<input type="checkbox"/> RD-250-I	Ivory	Multi-Way Wall			
<input type="checkbox"/> RD-250-LA	Light Almond	Switch Convertible			
<input type="checkbox"/> RD-250-A	Almond	Occupancy Sensor			
<input type="checkbox"/> RD-250-B	Black				

Order wall plate separately.

RH-253 Decorator Single Pole Momentary Switch

On/off switch for multi-way operation of occupancy and vacancy sensors



Ideal for stairways, hallways, large spaces and bathrooms with multiple entrances

Permits control from up to four locations

PROJECT

LOCATION/TYPE

Product Overview

Description

The RH-253 is a single pole momentary switch for on/off control. It is typically used with multi-way occupancy and vacancy sensors for applications requiring multiple switch locations.

Operation

Users tap the switch to turn connected lighting on or off. The RH-253 provides true multi-way on/off control when connected to one or more CH-250, CU-250, CD-250, RH-250 or RD-250 wall switch sensors.

Applications

RH-253 switches provide economical control for residential three-, four- and multi-way lighting applications. Use RH-253s where additional sensor coverage is not needed, such as in a Jack and Jill bathroom.

Features

- Replaces three-way or four-way switches when used with multi-way sensors
- Works with CD-250, CH-250, CU-250, RD-250 and RH-250 sensors
- Low-profile styling
- Choice of five decorator colors
- Compatible with decorator wall plates

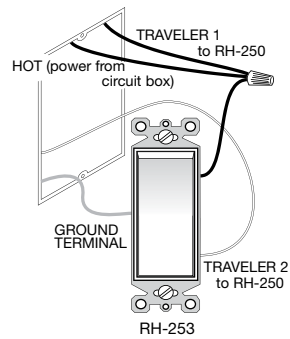


Specifications

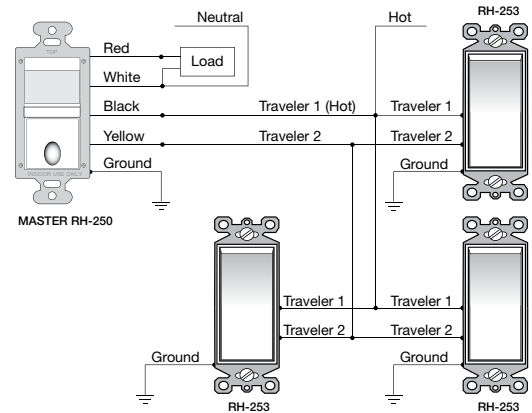
- 120 VAC, 60 Hz
- 2.67" x 1.73" x 1.77" (68mm x 44mm x 45mm)
L x W x D
- Operating conditions: 32-131°F (0-55°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five year warranty

Installation & Wiring

Installation



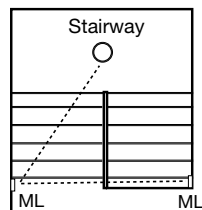
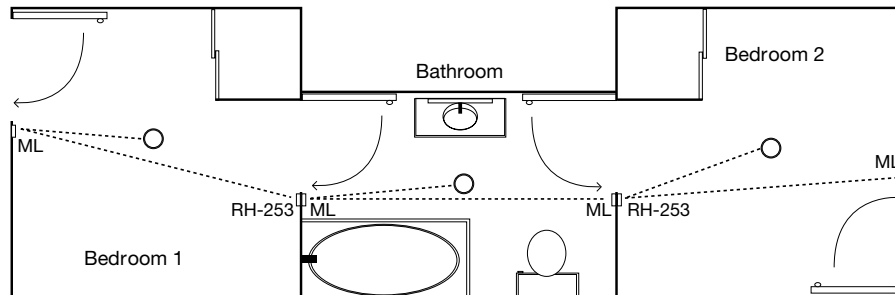
Wiring for Multi-way Sensor Operation



The RH-253 may be used with the RH-250, as shown in these drawings, or with a CH-250, CD-250, CU-250 or RD-250 multi-way sensor in place of the RH-250.

Applications

Bedroom, Jack & Jill Bathroom, and Stairway Applications



Key	
○	Surface mounted decorative incandescent fixture
□ ML	Represents multi-way sensor (CD-250, CH-250, CU-250, RD-250, or RH-250)
----	Represents connection between sensors and/or momentary switches

Ordering Information

Catalog No.	Color	Description	Voltage	Rating	Coverage
<input type="checkbox"/> RH-253-W	White	Decorator	120 VAC, 60 Hz	N/A	N/A
<input type="checkbox"/> RH-253-I	Ivory	Single Pole			
<input type="checkbox"/> RH-253-LA	Light Almond	Momentary Switch			
<input type="checkbox"/> RH-253-B	Black				

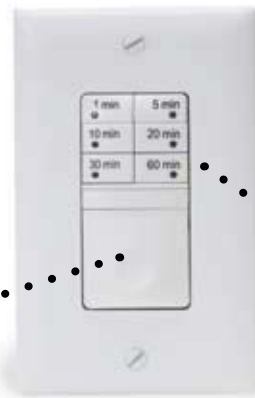
Order wall plate separately.

RT-50 Preset Countdown Time Switch

Pushbutton switch for automatic-off control

Easy operation and precise time countdown

Lighted switch for visibility in darkened rooms



Ideal for closets, laundry rooms, pantries and storage areas

Choice of six preset on-times from 1 minute to 60 minutes

PROJECT

LOCATION/TYPE

Product Overview

Description

The RT-50 Preset Countdown Time Switch automatically turns lighting or other loads off when the selected on-time expires. It replaces standard single-pole wall switches for energy savings throughout the home.

Operation

Users press one of the six preset buttons to turn connected lighting on for the corresponding period of time. After the time has elapsed, lighting is automatically turned off. Lights can be turned off before the countdown is complete by pressing the on/off button. Users may press the on/off button to turn lights on. The time switch will activate the preset that was last used, and the indicator light for that preset will turn on. To change the countdown, users press the desired preset button and the RT-50 will reset to that countdown interval.

Choice of On Times

The RT-50 will keep lighting on for 1, 5, 10, 20, 30 or 60 minutes. The digital on-time options provide precise control and help users avoid leaving lights on unnecessarily.

Applications

Countdown time switches are an ideal lighting control choice for areas in the home where wall switch vacancy or occupancy sensors may be inappropriate. The RT-50 preset time switch is recommended for controlling lighting in areas such as closets, laundry rooms, pantries and storage rooms.

Features

- Seven-button preset time switch
- Replaces single-pole switch
- Selectable on-time: 1, 5, 10, 20, 30, 60 minutes
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates

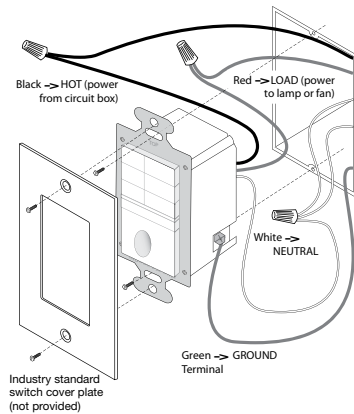


Specifications

- 120 VAC, 60 Hz; neutral required
- Load ratings: 0-600W incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV), electronic low voltage (ELV), and 1/6 Hp motor
- On-time options: 1, 5, 10, 20, 30, 60 minutes
- 2.63" x 1.69" x 1.88" (67.8mm x 42.9mm x 47.8mm) L x W x D
- Operating conditions: 32-131°F (0-55°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five year warranty

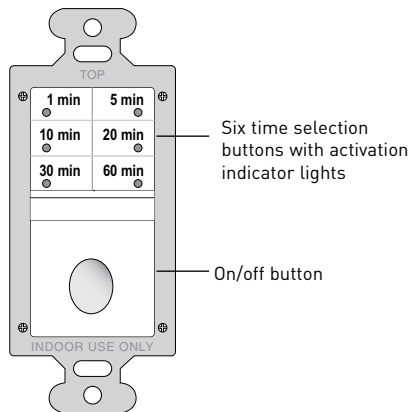
Installation & Wiring

Wiring Diagram



Controls

Product Controls



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> RT-50-W	White	Preset Countdown Time Switch	120 VAC; 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV, 1/6 Hp motor
<input type="checkbox"/> RT-50-I	Ivory			
<input type="checkbox"/> RT-50-LA	Lt. Almond			
<input type="checkbox"/> RT-50-A	Almond			
<input type="checkbox"/> RT-50-B	Black			

Order wall plate separately.

RT-100 Programmable Countdown Time Switch

Programmable switch for automatic-off control

Backlit display shows countdown in progress

Lighted switch for visibility in darkened rooms



Ideal for garages, outdoor lighting and spa control

Programmable on-time from 5 minutes to 12 hours

PROJECT

LOCATION/TYPE

Product Overview

Description

The RT-100 Programmable Countdown Time Switch automatically turns lighting or other loads off when the programmed on-time expires. It replaces standard single-pole wall switches for energy savings inside and outside the home.

Operation

Users turn connected lights on by pressing the on/off button, which activates the on-time programmed by the installer. If users want the lights to remain on for a different period of time, they simply press and hold the on/off button until the display shows the desired time. When the button is released, the lights will remain on for the newly selected on-time. After the time has elapsed, lighting is automatically turned off. Lights can be turned off before the countdown is complete by pressing the on/off button.

Programmable Options

The on-time can be programmed for 5 to 55 minutes (in 5-minute increments) or 1 to 12 hours (in 15-minute increments). It is typically set for the period of time the connected load normally needs to remain on. Other programming options include enabling or disabling audible and visible shutoff warnings.

Applications

Countdown time switches are an ideal lighting control choice for areas in the home where a wall switch vacancy or occupancy sensor may be inappropriate. The RT-100 programmable time switch is recommended for applications, including garages, outdoor lighting and spas, where users will benefit from real time feedback of the countdown time remaining as well as audible and visible warnings of impending shutoff.

Features

- Programmable countdown time switch
- Replaces single-pole switch
- Adjustable on-time from 5 minutes to 12 hours
- Optional audible beep and/or visible light flash warnings before automatic off
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates

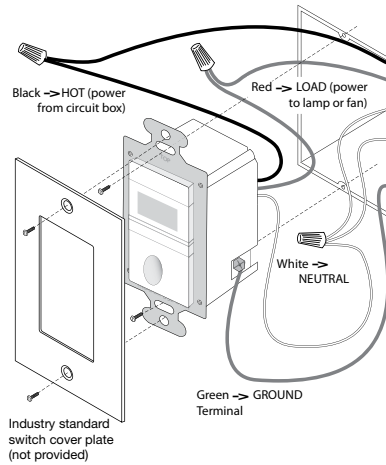


Specifications

- 120 VAC, 60 Hz; neutral required
- Load ratings: 0-600W incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV), electronic low voltage (ELV), and 1/6 Hp motor
- Adjustable on-time from 5-55 minutes (5-minute increments) to 1-12 hours (15-minute increments)
- 2.63" x 1.69" x 1.88" (67.8mm x 42.9mm x 47.8mm) L x W x D
- Operating conditions: 32-104°F (0-40°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five year warranty

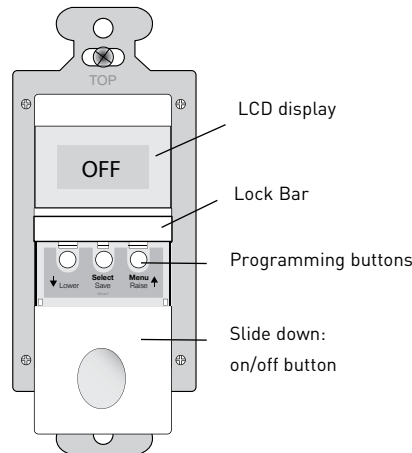
Installation & Wiring

Wiring Diagram



Controls

Product Controls



To access RT-100 setup buttons, gently pull the Lock Bar away from the switch face and slide the on/off button down.

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> RT-100-W	White	Programmable Countdown Time Switch	120 VAC; 60 Hz	0-600W incandescent, LED, fluorescent, CFL, MLV, ELV, 1/6 Hp motor load
<input type="checkbox"/> RT-100-I	Ivory			
<input type="checkbox"/> RT-100-LA	Lt. Almond			
<input type="checkbox"/> RT-100-A	Almond			
<input type="checkbox"/> RT-100-B	Black			

Order wall plate separately.

RT-200 Astronomical Time Switch

Turns lights on and off relative to dusk or dawn, or at selected times of day

Bright OLED display for clear viewing from a wide angle

Activates lighting on selected days of the week



Ideal for outdoor lighting, spa control and entry halls

Includes eight programmable control schedules

Compliant with California Title 24-2008

PROJECT

LOCATION/TYPE

Product Overview

Description

The RT-200 Astronomical Time Switch automatically turns lighting or other loads on and off according to user programming. It replaces standard single-pole wall switches for energy savings and security inside and outside the home.

Operation

Users can manually turn the connected load on or off by pressing the on/off button. Prior to automatic operation, the local longitude, latitude, time and date must be entered into the time switch. The user can then program up to eight schedules to automatically turn the connected load on and off at the desired times. If lighting has been turned on manually prior to a scheduled on-time, it will remain on until the next scheduled off-time, or until turned off manually. If enabled, an audible beep and/or a visible flash warn of an impending automatic off-time.

On/off Programs

Each of the eight automatic control programs includes user selectable day(s) of operation and on and off times. Day(s) of operation choices include: everyday, weekdays, weekends, a selected day or no days, to deactivate the program. On- and off-time choices include: specific time of day, or up to 99 minutes before or after dusk or dawn.

Applications

The RT-200 Astronomical Time Switch is an ideal control choice for both outdoor and indoor lighting as well as spas. The astronomic clock function saves energy by automatically making daily adjustments to on- and off-times as the days become longer or shorter, so lighting is only turned on when it is needed. Both the astronomic and scheduling functions provide security to homeowners by automatically turning lighting on to make the home feel inviting and to provide a lived-in look.

Features

- User programmable wall switch for astronomical and scheduled control
- Replaces single-pole switch
- Optional audible beep and visible light flash warnings before automatic off
- 72 hour power failure memory
- Lighted switch for visibility in darkened rooms
- Low-profile styling
- Choice of five decorator colors
- Operates most common types of residential lighting
- Relay-based switching
- No current leakage to load in off mode for safety
- Compatible with decorator wall plates
- CA Title 24 compliant

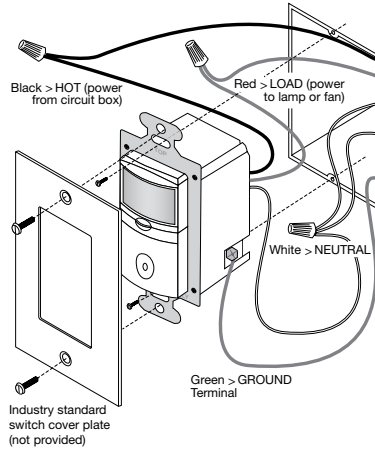


Specifications

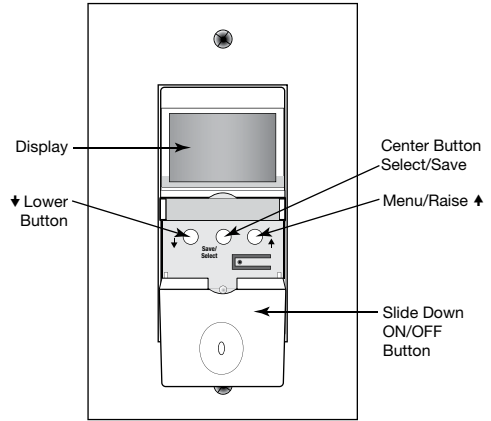
- 120VAC, 50/60 Hz; neutral required
- Load ratings: 0-800W incandescent, LED, fluorescent, compact fluorescent (CFL), magnetic low voltage (MLV), electronic low voltage (ELV), and 1/6 Hp motor
- 8 programmable schedules for on/off times on selected days of the week
- 170° OLED display
- 2.63" x 1.69" x 1.88" (67.8mm x 42.9mm x 47.8mm) L x W x D
- Operating conditions: 32-122°F (0-50°C), 95% RH, non-condensing; for indoor use only
- UL and cUL listed
- Five year warranty

Installation & Controls

Wiring Diagram

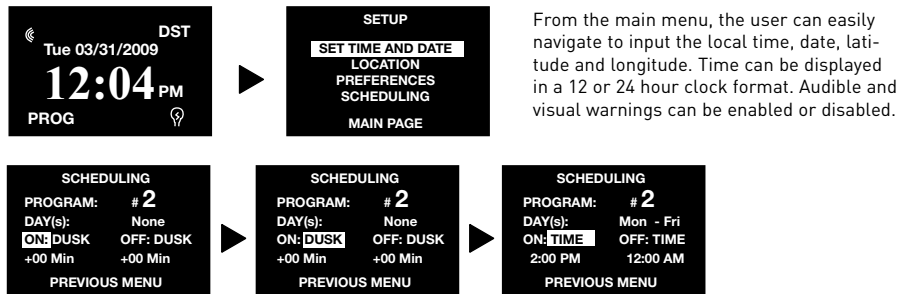


Product Controls



Programming

Data Entry and Program Options



Optional settings for each of the eight programs include:

- Day(s) of week:
- None (program off)
 - All (seven days)
 - Monday-Friday
 - Weekends
 - Specific day of week
- On-time:
- Specific time
 - Up to 99 minutes before or after dusk
- Off-time:
- Specific time
 - Up to 99 minutes before or after dawn

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> RT-200-W	White	Astronomical Time Switch	120 VAC; 50/60 Hz	0-800W incandescent, LED, fluorescent, CFL, MLV, ELV, 1/6 Hp motor load
<input type="checkbox"/> RT-200-I	Ivory			
<input type="checkbox"/> RT-200-LA	Lt. Almond			
<input type="checkbox"/> RT-200-A	Almond			
<input type="checkbox"/> RT-200-B	Black			

Order wall plate separately.





Fixture-integrated, high bay occupancy sensors, and HID controllers offer energy savings and reliable performance

WattStopper offers convenient, reliable occupancy-based light fixture control with extensive options. Now you can

choose just the features you need and rely on easy installation and setup to make retrofit projects a snap.

**...broadest
selection of
fixture-integrated
control products**

We've engineered our fixture integrated (FS), our high bay (HB) sensors and HID controllers for optimal performance. So even in the most challenging applications, such as wet and outdoor environments, effective lighting control

provides energy savings you can count on.

Superior sensitivity to walking motion and high performance circuit design make WattStopper sensors more technologically advanced than any other leading brand.



Table of Contents

Fixture Occupancy Sensor Overview	E3
Designing and Applying High Bay Sensors	E4
Designing and Applying Fixture Mount Sensors	E5-E6
HID Controller Overview	E7-E8
Designing and Applying HID Controllers	E9-E12
Product Details	E13-E50



Helping you put a stop to energy waste

With nearly every facility now using some energy-saving strategies, retrofitting lighting fixtures by installing fixture-specific occupancy sensors and HID controllers makes good economic sense. With individual fixture control, facilities can substantially improve energy performance by implementing simple control strategies such as automatic off or high/low control. For remodel projects, facilities seeking LEED certification, or EAct tax incentives, maximizing energy performance through fixture-integrated control is ideal.

Benefit your business in many ways:

- Provide energy savings by reducing lighting usage.
- Comply with energy codes such as ASHRAE 90.1, IECC and other state codes with more strict guidelines.
- Enhance 'green' building practices, such as LEED, for greater sustainability.

WattStopper offers a broad selection of fixture-integrated control products. From fixture-mounted sensors to those for high bay fixtures, bi-level HID or daylighting control for fixture mounts, WattStopper is a name you rely on for consistent performance, reliability and service.



Energy
Savings

Code
Compliance

Sustainability



Designing and Applying High Bay Sensors

High Bay Occupancy Sensors

Innovation is what WattStopper does best. We designed our high bay (HB) sensors with sensitivity and time delay controls located right on the front of the sensor for convenient adjustment. A range of lens choices offers application flexibility. Compatible with all electronic ballasts and including an LED occupancy detection indicator for easy coverage verification, the HBs feature push-in chase nipples and flying leads to simplify installation. These sensors also feature flexible mounting options, such as direct surface fixture mounting or mounting via a convenient extender module that snaps together to protect wiring while simplifying installation.



WattStopper PIR High Bay Sensors work in a variety of high mount applications including indoor wet and outdoor wet locations, warehouses, gymnasiums and parking structures.

In warehouses, for an example, an HB mounted to a rafter or high bay will control the lighting between shelves, so that lighting in unoccupied areas will turn off or turn to a lower level.



Designing and Applying Fixture Mount Sensors

Fixture Mount Sensors

Our FS fixture sensors utilize either passive infrared (PIR) or ultrasonic technology and are available in both line and low voltage models. Other daylighting models control lighting in response to daylight contributions in the space. These choices enable you to make the right choice for your needs. The FS sensors' modular plug system utilizes an RJ45 connector for flexibility and ease of use.

Common building spaces such as copy rooms, hallways, storage areas, task lighting, open offices, even outdoor spaces, are ideal for occupancy-based control. With an FS sensor placed in the fixture, users can save hours of wasted energy each day.



TIP!

For a full explanation of the difference between the PIR and ultrasonic sensing technologies employed in these products, please see page C5.



Fixture-Mount Nightlight Controller

Provide energy efficient occupancy-based control in bathroom vanity fixtures with the HN Fixture Mount Nightlight Controller. Available with either ultrasonic or PIR technology to meet your needs, you can save hours of unnecessary energy waste while incorporating an LED nightlight for added comfort and safety.

Ideal for hotels and assisted living facilities, the nightlight feature provides a safe, low level of light so guests need not turn general lighting on. In addition to the increased energy savings, guests experience less disruption to a good night's sleep.

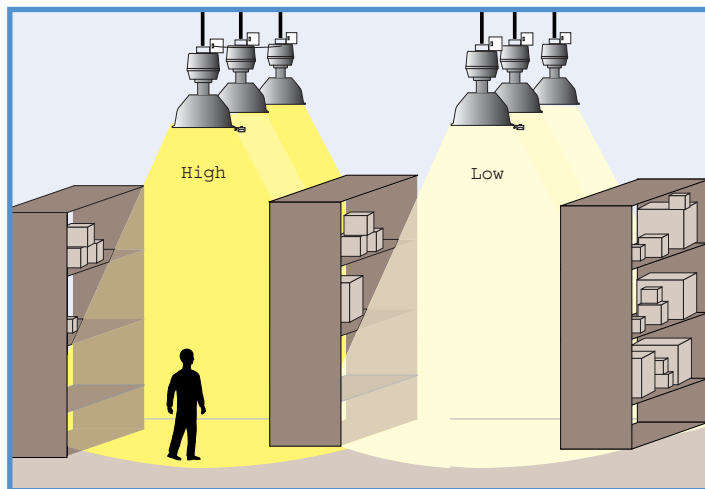




Bi-level HID Control Overview

High Intensity Discharge (HID) fixtures offer energy efficient lighting. Now you can save up to 50% more on energy costs by switching HIDs to low whenever they're not needed.

DM bi-level controls switch HID lighting between high and low-based on signals from controlling devices — occupancy sensors, time switches, daylighting controllers, or lighting control panels. When used with a high bay occupancy sensor, for example, a DM will switch lights to low during times of vacancy, then back to full output when a person enters the area.

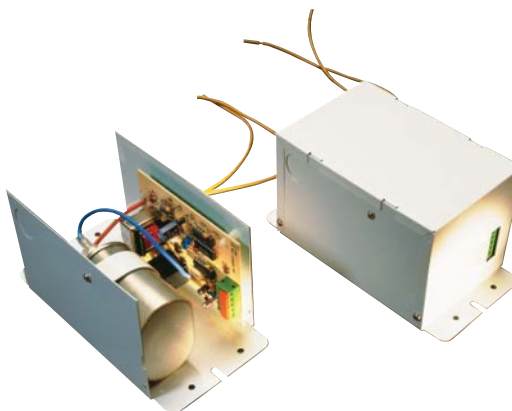


A DM-100 switches lights to high when an occupant enters the area. Lights in the adjacent aisle remain on low.

Retrofitting Existing HID Fixtures

Retrofit existing HID installations with the **DM-100**. It includes:

- Capacitor and controller housed in the same enclosure for quick and easy installation
- Multi-zone control capability — connect DM-100s to multiple controlling devices in a variety of configurations for customized control of each space

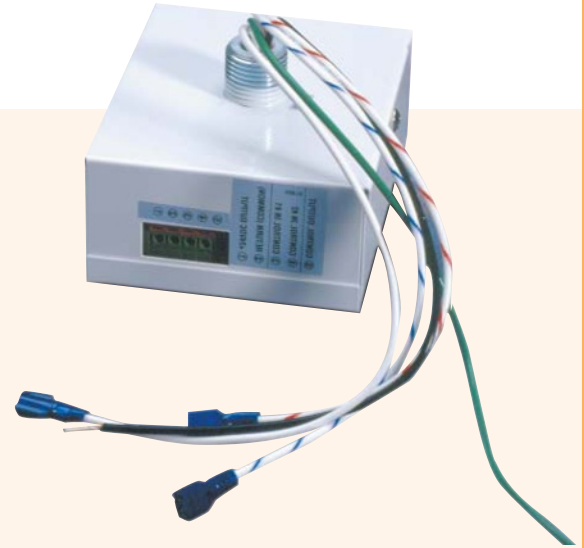




New Construction Utilizing HID's

Ideal for factory or field installation, the **DM-105** is perfect for interior applications:

- Attaches to uninstalled fixtures and requires a bi-level capacitor (may be supplied by WattStopper)
- Mounts directly on HID fixture for easy installation



Outdoor HID Control

Featuring all the functionality of our DM-105, the **DM-115-WP** offers reliable HID control for a variety of exterior applications:

- Housed in a weatherproof enclosure
- Ideal for use with low voltage outdoor motion sensors
- Suitable for wet and damp applications
- Mounts to uninstalled fixtures and requires a bi-level capacitor (may be supplied by WattStopper)





Designing with Bi-level HID Controls

In designing an HID lighting control project, there are three basic steps:

1. Select the appropriate DM product for your HID lighting.
2. Choose the optimal control device(s) to signal the DM modules.
3. Implement the control method.



1. Select the DM Module

For existing interior HID fixtures:

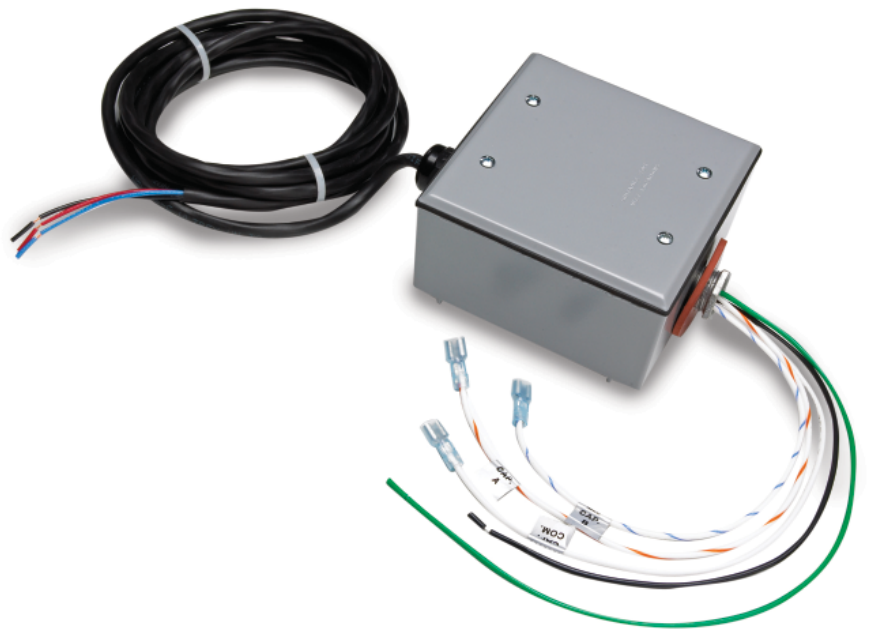
- DM-100

For new fixtures or installation by fixture manufacturer:

- DM-105

For outdoor use:

- DM-115-WP





2. Choose the Control Device

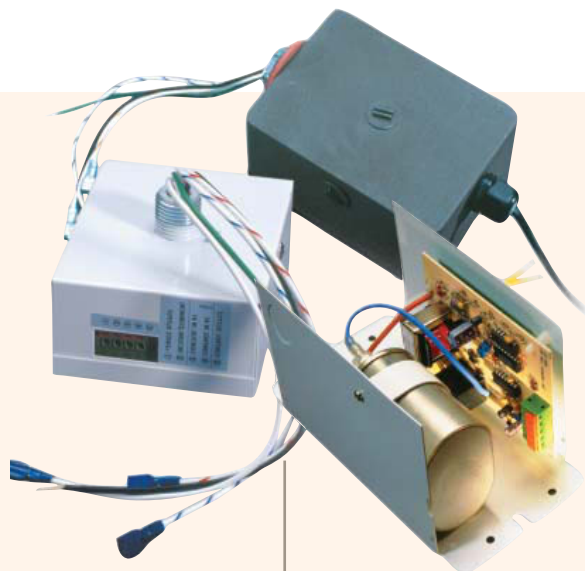
While the range of potential control devices is great, the following important factors may influence the selection of a particular control:

- ### ■ Device Mounting Height

Since many facilities utilize HID fixtures at elevated mounting heights greater than 15 feet, take care to select occupancy sensors that maintain optimal effectiveness at elevated mounting heights. Choose high bay sensors specifically engineered for such applications, or a different control device altogether, such as a lighting control panel.

- ### ■ Occupancy Traffic Patterns

Keep in mind the ways occupants move through a space, particularly in warehouses, where main and side aisleways are often used with different frequency. These distinct areas would benefit by being controlled as individual zones via occupancy sensors.



Occupancy Sensors



Daylighting Controls



Time Switches



Lighting Control Panels



Outdoor Sensors





Designing with Bi-level HID Controls

■ Ambient Light Levels

Daylight via skylights, loading docks or windows offers the opportunity for high/low control.

■ Fixture Locations

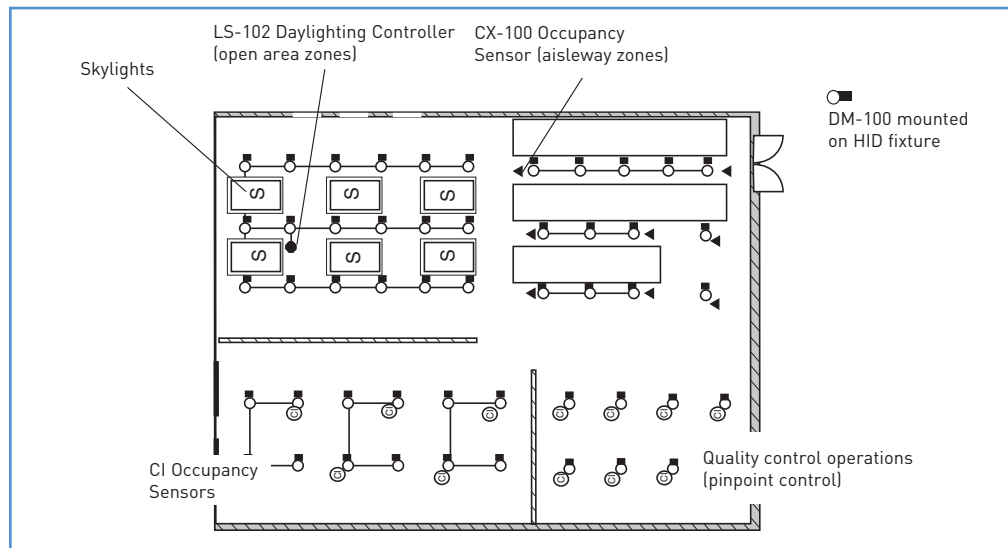
Warehouse fixtures (i.e., shelving, HID fixtures themselves) may impact control device selection, since some occupancy sensors require an unobstructed line-of-sight view for effective detection. In such cases, alternative control devices such as time switches at the end of aislesways or the use of a lighting control panel would be preferred.

■ Outdoor Locations

Generally, outdoor applications require the use of occupancy sensors due to the inability to run wiring, the use of multiple lamps per pole, and the nature of traffic patterns. Typically, each pole will use one to four sensors as well as one to four DM-115-WPs. The latter will be linked together to control that pole base's lamps in concert. In addition, when designing HID



control in outdoor applications, take the time to carefully analyze projected traffic patterns. For instance, areas near exits and entrances will require more pinpoint control because occupancy in those areas can change rapidly and unexpectedly.

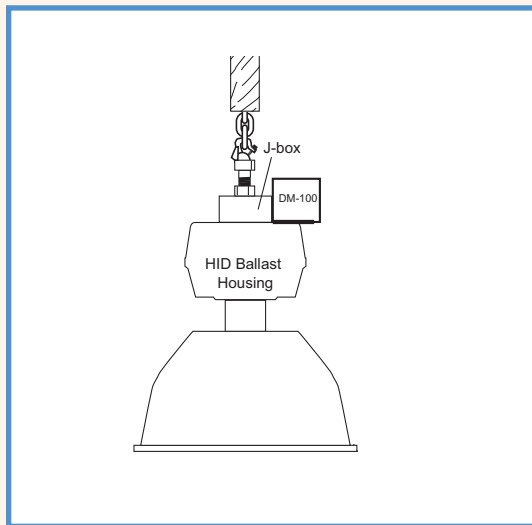




3. Implement the Control Method

Single Control System

- one-to-one

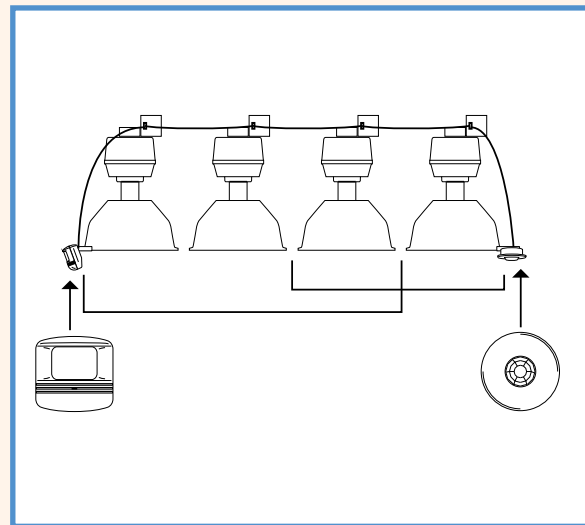


Good for:

- areas where occupancy and traffic patterns change quickly
- in parking garages, near turns on ramps, near elevators

Coverage Control

- link multiple HID fixtures with DMs together under control of single device



Good for:

- providing uniform light level for areas with common activity levels
- aisleways, perimeter areas with daylight contribution



HB3x0-Lx High Bay Line Voltage Passive Infrared Occupancy Sensor

Integrated occupancy sensor and lens device

Lens choices for mounting between 20-40 feet

Easy mounting with snap-in mounting hardware



Line voltage for direct connection to load

PROJECT
LOCATION/TYPE

Product Overview

Description

The HB350B-L1, HB350B-L3, HB350B-L4, HB340B-L1, HB340B-L3 and HB340B-L4 High Bay Passive Infrared (PIR) Occupancy Sensors consist of two components. These components were developed to work as a convenient system and include both sensor and lens modules. HB3x0B-Lx PIR occupancy sensors are designed for automatic lighting control in warehouses and other indoor high bay spaces. The lenses are specifically engineered to provide reliable coverage from a wide range of mounting heights.

Operation

The HB3x0B-Lx series occupancy sensor is designed to mount directly to an industrial T5 or T8 light fixture and control the load in the fixture. It can be wired to control all ballasts in the fixture, or to control half of the ballasts to provide high/low lighting control. When motion is detected within the sensor's coverage area, the relay in the sensor closes, and lighting loads are automatically turned on. When motion is no longer detected for the duration of the time delay setting, the relay opens and the lighting load is turned off. The sensor's sensitivity and time delay settings are factory preset at "normal" and 15 minutes, respectively, which are suitable for most high bay applications.

Features

- LED indicator of occupancy detection for easy verification of coverage
- Easy front access to DIP switches for time and sensitivity adjustments
- Easy mounting using knockout at end of fluorescent high bay luminaire
- Hardware choices for adjustability or static mount
- Multi-cell, multi-tier Fresnel lenses
- Asymmetric and 360° coverage lens choices
- Compatible with all program start ballasts
- Durable materials for optimal performance in challenging indoor high bay settings
- Zero crossing circuitry reduces stress on relay and extends sensor life
- Detection signature analysis eliminates false triggers; provides immunity to RFI and EMI
- ASIC technology reduces components and enhances reliability
- Pulse Count Processing eliminates false offs without reducing sensitivity
- Recyclable
- Qualifies for ARRA-funded public works projects



Product Overview (cont.)

Different Coverage Patterns

The HB3x0B-Lx sensor is a one-piece, self-contained line voltage unit with a 1/2" threaded nipple for attaching to junction boxes and conduit hubs, and to the end of fixtures. Three lens choices are available, to provide coverage for different applications, facilitating sensor use at various mounting heights and locations. Sensitivity and time delay adjustments are set using DIP switches located behind the lens.

Applications

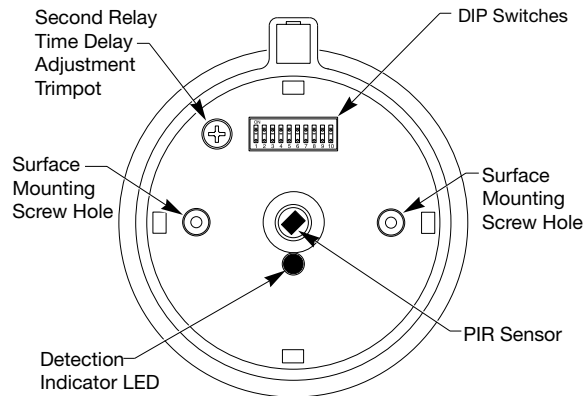
The high bay occupancy sensor is an innovative product engineered specifically for indoor locations. The product is ideal for a range of high bay applications, such as warehouses, distribution centers, gymnasiums, and other high bay indoor spaces. An optional HB Extender Module provides additional mounting flexibility.

Specifications

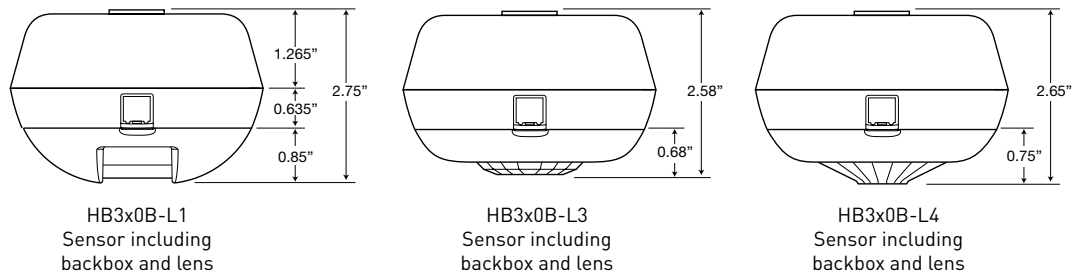
- HB350B-Lx:
 - 0-800W Ballast, tungsten @ 120 VAC
 - 0-1200W Ballast @ 277 VAC, 1/6 hp motor
- HB340B-Lx:
 - 0-1200W Ballast, tungsten @ 347 VAC
 - 0-1200W Ballast, tungsten @ 480 VAC
- Adjustable time delay (15 seconds - 30 minutes; factory preset at 15 minutes)
- Operating conditions: Temperature 32-158°F (0-70°C); Humidity 20-90%, non-condensing
- Indoor use only
- Materials: ABS, flame retardant, UV resistant, impact resistant
- Five year warranty
- UL and cUL listed

Sensor Components & Dimensions

Sensor Controls



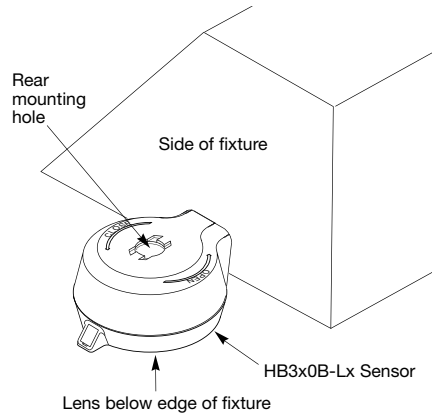
Dimensions





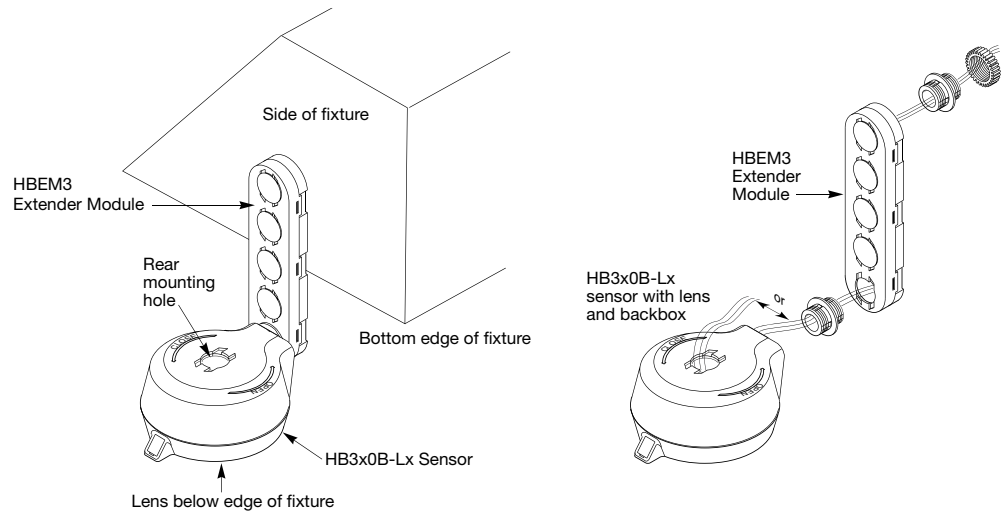
Mounting and Installation

Direct Mounting to Fixture



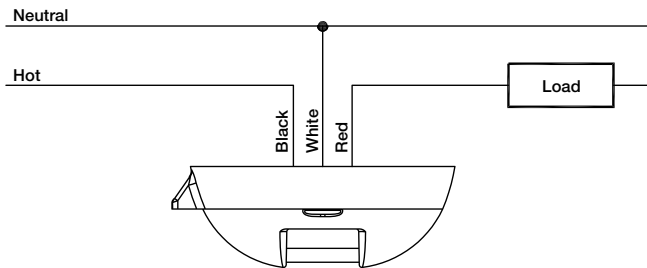
The sensor should be positioned below the fixture edge and away from fluorescent lamps so that lamp heat does not affect the sensor.

Mounting Using the Extender Module

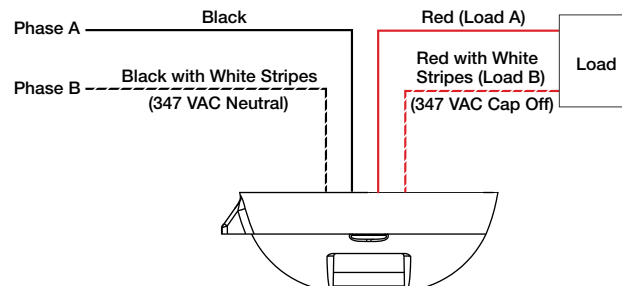


Wiring & Connections

HB350B-Lx wiring



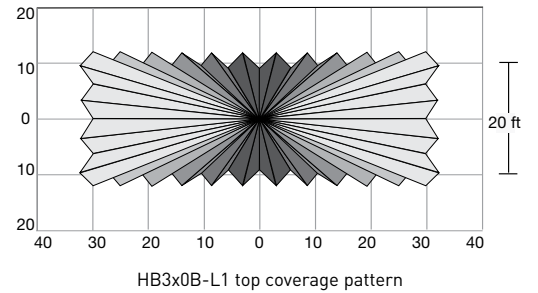
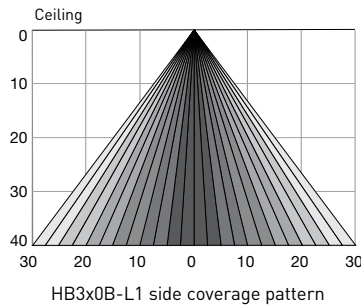
HB340B-Lx wiring



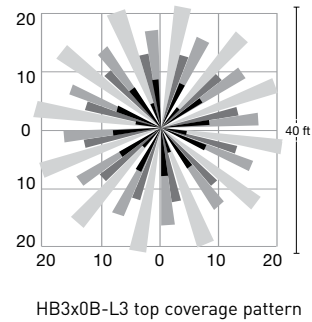
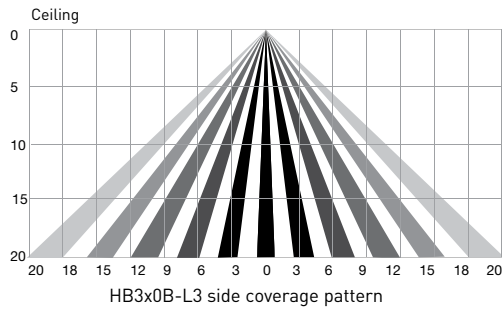


Coverage

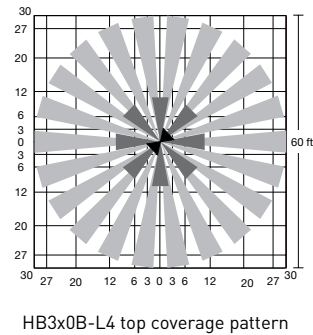
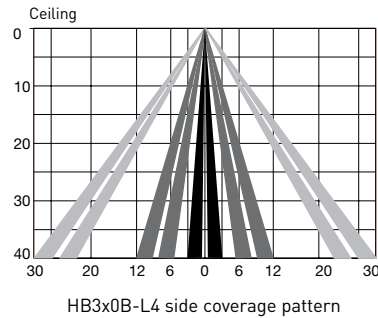
Lens Choices



The HB3x0B-L1 is designed to detect walking motion when mounted at 40' above the floor. When mounted at 40', in optimal conditions, the lens has a 60' linear detection range.



The HB3x0B-L3 has a high density lens that covers a 40' diameter area from a 20' height.



The HB3x0B-L4 is designed for mounting at a height of 40'. Its coverage area can be up to 60' in diameter when mounted at 40'.

Ordering Information

Catalog No.	Color	Description	Voltage	Coverage Area
<input type="checkbox"/> HB350B-L1	White	High Bay Occupancy Sensor with Lens & Backbox	120/277 VAC	60' linear coverage from 40' height
<input type="checkbox"/> HB350B-L3	White	High Bay Occupancy Sensor with Lens & Backbox	120/277 VAC	40' diameter coverage from 20' height
<input type="checkbox"/> HB350B-L4	White	High Bay Occupancy Sensor with Lens & Backbox	120/277 VAC	60' diameter coverage from 40' height
<input type="checkbox"/> HB340B-L1	White	High Bay Occupancy Sensor with Lens & Backbox	347/480 VAC	60' linear coverage from 40' height
<input type="checkbox"/> HB340B-L3	White	High Bay Occupancy Sensor with Lens & Backbox	347/480 VAC	40' diameter coverage from 20' height
<input type="checkbox"/> HB340B-L4	White	High Bay Occupancy Sensor with Lens & Backbox	347/480 VAC	60' diameter coverage from 40' height
<input type="checkbox"/> HBEM3	White	High Bay Extender Module		



HB3x0W-Lx High Bay Passive Infrared Occupancy Sensors for Wet Locations

IP65 rated for wet locations



Lens choices for mounting between 20-40 feet

Multiple mounting options for easy installation

Line voltage for direction connection to load

PROJECT
LOCATION/TYPE

Product Overview

Description

The HB350W-L3, HB350W-L4, HB340W-L3 and HB340W-L4 High Bay Passive Infrared (PIR) Occupancy Sensors for Wet Locations consist of a sensor and a lens module. These components are designed to work as a convenient system. HB3x0W-Lx occupancy sensors are designed for automatic lighting control in warehouses and other medium and high bay wet location applications. Different models offer a choice of coverage patterns for a range of applications.

Operation

The HB3x0W-Lx occupancy sensors are designed to mount to a light fixture and control one load in that fixture. They can be wired to control all ballasts in the fixture, or to control half of the ballasts, providing high/low lighting control. When motion is detected within the sensor's coverage area, the relay in the sensor closes, and lighting loads are automatically turned on.

Operation (continued)

When motion is no longer detected for the duration of the time delay setting, the relay opens and the lighting load is turned off. The sensor's sensitivity and time delay settings are factory preset at "normal" and 15 minutes, respectively, which are suitable for most high bay applications. However, if the values need to be adjusted for specific applications, they can be easily changed using the DIP switches on the unit.

Wet Location Rating

Featuring a unique gasketed construction, the sensors carry the IP65 rating for wet locations. The IP65 rating means the sensors are protected against dust and low-pressure jets from all directions. In wet indoor or outdoor environments, the sensors will operate reliably with this level of protection.

Features

- IP65 rated and UL244A and UL508 for use in wet indoor and outdoor locations
- Easy mounting using extender module mounting accessory
- Line voltage for direct connection to load
- Compatible with all program start ballasts
- Multi-cell, multi-tier, 360° Fresnel lenses
- Lenses sealed and gasketed
- Lens choices for mounting between 20 and 40 ft.
- Polycarbonate, flame retardant, UV resistant, impact resistant
- Recyclable
- Qualifies for ARRA-funded public works projects



Product Overview (cont.)

Modular Design

The HB3x0W-Lx system includes a self-contained, line voltage sensor module with a 1/2" threaded nipple for attaching to wet location junction boxes and conduit hubs, and to the end of a fixture. It also contains a lens module that provides 360° coverage. Different coverage patterns are available by selecting the different lens options. Sensitivity and time delay adjustments are set using DIP switches located behind the lens.

Applications

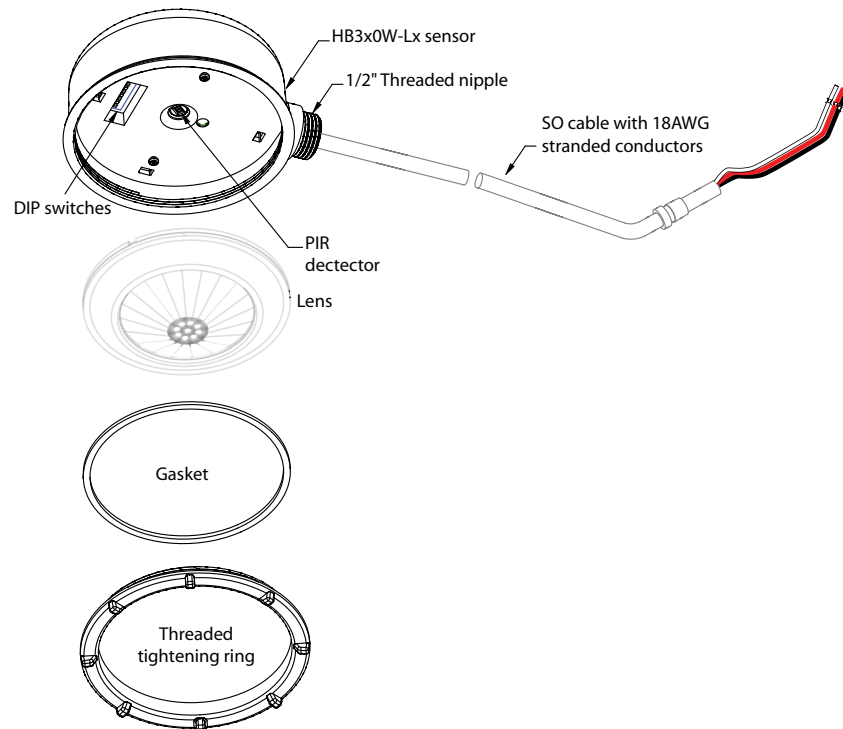
Engineered specifically for wet locations, the HB3x0W-Lx is ideal for a range of indoor and outdoor spaces such as nurseries and greenhouses, food processing facilities, parking garages, and industrial facilities. An optional HB Extender Module provides additional mounting flexibility.

Specifications

- HB350W-L3 and HB350W-L4: 120/277 VAC, 60 Hz Load @ 120 VAC 0-800W Ballast/Tungsten Load @ 277 VAC 0-1200W Ballast, 1/6 Hp
- HB340W-L3 and HB340W-L4: 347/480 VAC, 60 Hz Load @ 347 VAC 0-1200W Ballast Load @480 VAC 0-1200W Ballast
- Factory preset 15-minute time delay
- Operating temperature: -40-158°F (-40-70°C)
- Operating Humidity: 20-90%, non-condensing
- Maximum Dew Point: 85°F (29°C)
- UL and cUL listed
- UL rated raintight (UL244A and UL508)
- IP65 rated
- Lens choices for mounting between 20 and 40 feet

Sensor Components

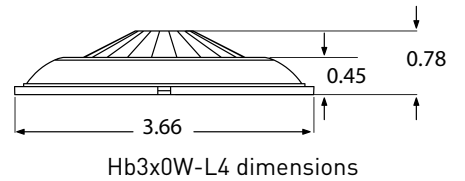
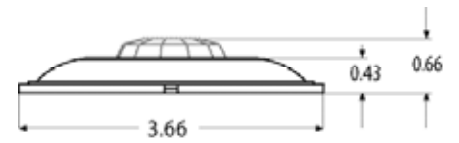
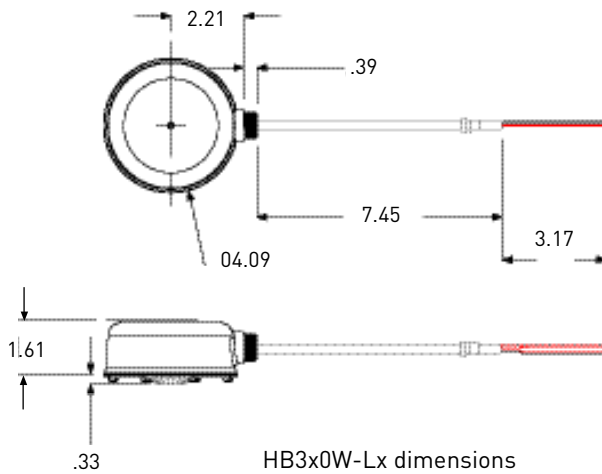
Sensor and Lens Components and Assembly



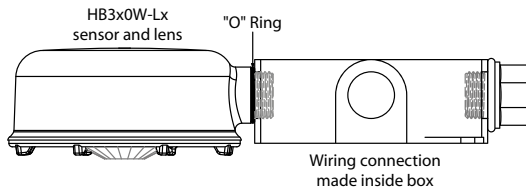


Assembly & Mounting

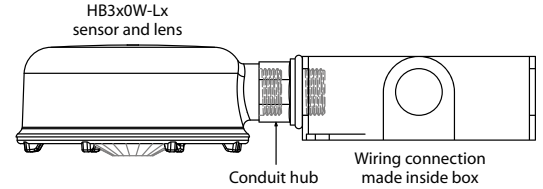
Dimensions



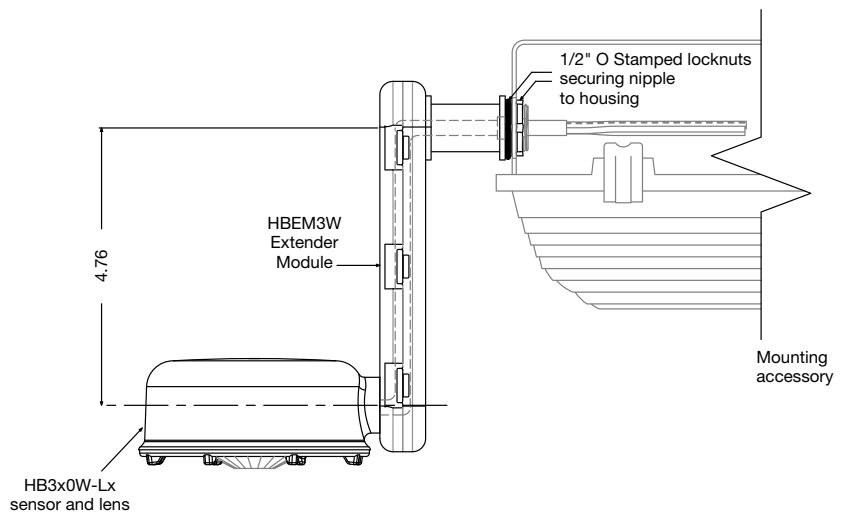
Mounting Direct to J-box



Mounting to J-box using Conduit Hub



Mounting Using an HBEM3W Extender Module Accessory

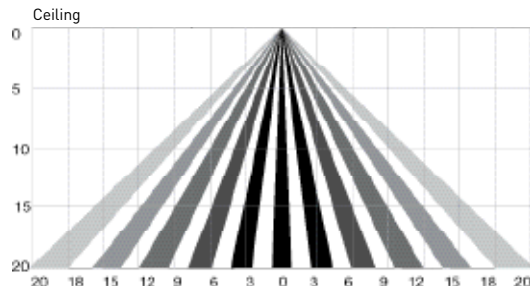


The 1/2" chase nipple facilitates mounting through fixture knockouts, or attaching to threaded J-boxes or conduit hubs. An accessory bag with an O-ring and two locknuts is available to accommodate various mounting needs. Mount the sensor so that the fixture does not obstruct the field of view.

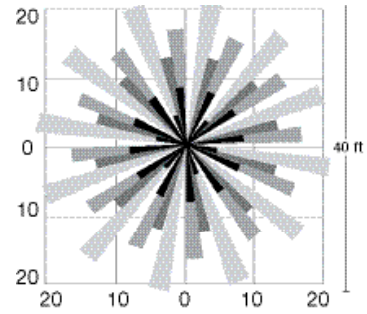


Coverage

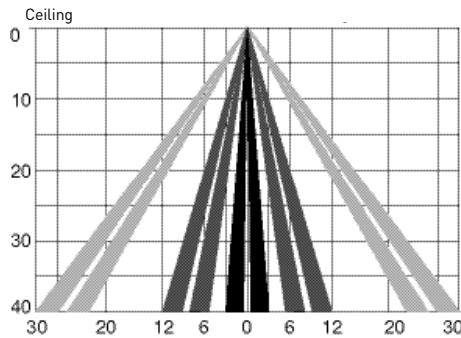
Lens Choices



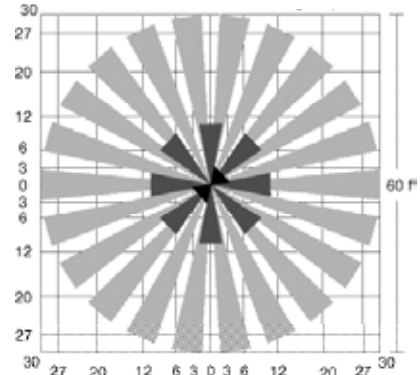
The HB3x0W-L3 side coverage pattern.



The HB3x0W-L3 top coverage pattern.



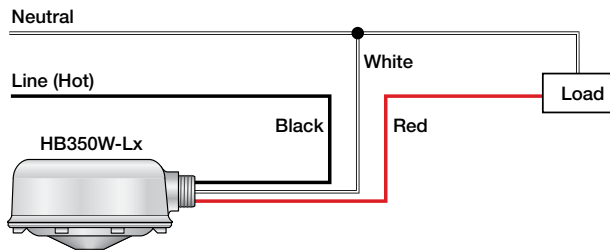
The HB3x0W-L4 side coverage pattern.



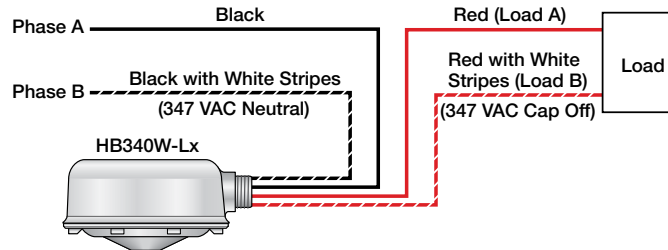
The HB3x0W-L4 top coverage pattern.

Wiring & Connections

Wiring for HB350W-Lx



Wiring for HB340W-Lx



Ordering Information

Catalog No.	Color	Description	Lens
<input type="checkbox"/> HB350W-L3	White	120/277 VAC Sensor System	Wet location 360° lens, 40' diameter coverage from 20' height
<input type="checkbox"/> HB350W-L4	White	120/277 VAC Sensor System	Wet location 360° lens, 60' diameter coverage from 40' height
<input type="checkbox"/> HB340W-L3	White	347/480 VAC Sensor System	Wet location 360° lens, 40' diameter coverage from 20' height
<input type="checkbox"/> HB340W-L4	White	347/480 VAC Sensor System	Wet location 360° lens, 60' diameter coverage from 40' height
<input type="checkbox"/> HBEM3W	White	Extender Module Wet Location	



High Bay Extender Module

Adjustable snap-on extender module



Snap-on chase nipples facilitate easy side or back-mount installations

PROJECT
LOCATION/TYPE

Product Overview

Description

The HBEM3 Extender Module attaches a High Bay (HB) Occupancy Sensor Module to the side of a fixture. With the extender module attached, the HB sensor can be adjusted up or down to ensure its view is not blocked by the fixture.

Mounting

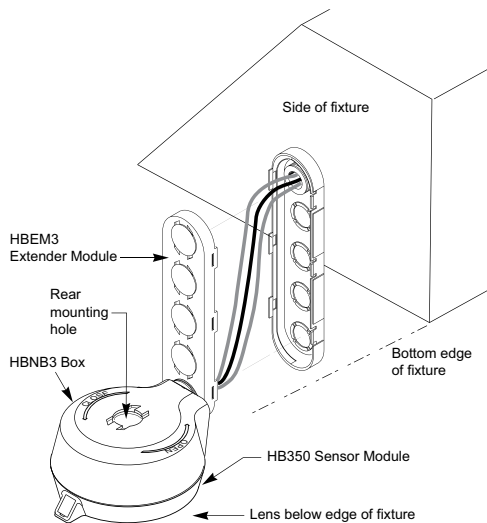


Illustration shows standard only, not wet location model.

Connections

The HBEM3 includes two chase nipples. The short end of the chase nipples snap into the HBEM3 or other plastic connection box. The long end of the longer chase nipple fits into a metal fixture with a standard knockout. If the fixture wall does not exceed 1mm (0.04") in thickness, the nipple snaps into the knockout securely and the internal nut (included) is not necessary. The included nut should always be used if the fixture wall is thicker than 0.04" (1mm).

Specifications

- Connects to metal or plastic fixtures via included snap-in chase nipples
- Snaps together to protect sensor and fixture wires
- Maximum Extension: 4.75" (120mm)
- Inner Diameter: 0.63" (16mm)
- Threaded Outside Diameter: 0.82" (20mm)
- Overall Length:
0.88" for connection to plastic fixture
1.24" for connection to metal fixture

Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> HBEM3	White	Extender module with 2 chase nipples and nuts: one short (0.88") for connection to plastic, one long (1.24") for connection to metal and one plastic knockout cap
<input type="checkbox"/> HBEM3W	White	Extender module Wet Location with 2 chase nipples and nuts: one short (0.88") for connection to plastic, one long (1.24") for connection to metal and one plastic knockout cap

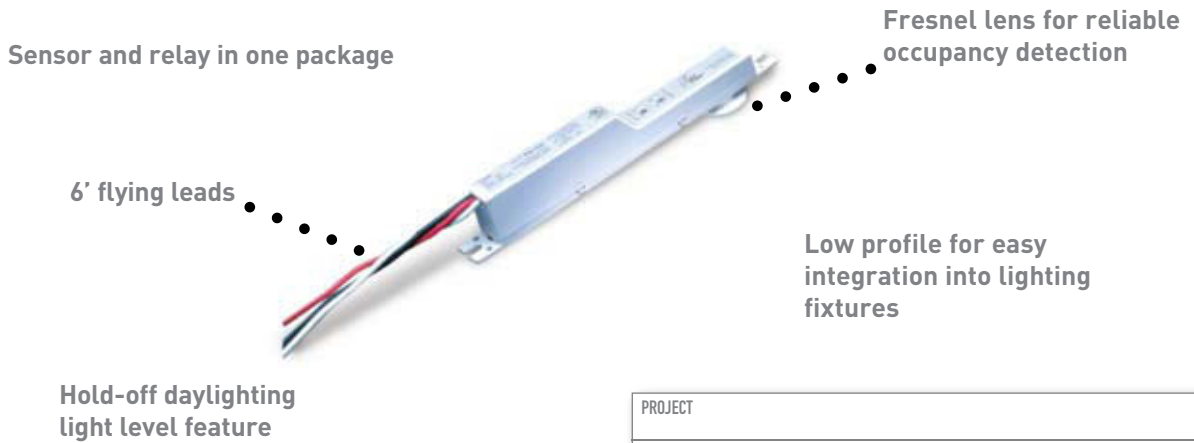
PLEASE NOTE: 1. When preparing P.O., order parts as separate line items (e.g., HB350-Lx, HBEM3)
2. Parts ship separately.

Qualifies for ARRA-funded public works projects.





FS-155/FS-155-1 Line Voltage PIR Fixture Integrated Occupancy Sensors



PROJECT
LOCATION/TYPE

Product Overview

Description

The FS-155/FS-155-1 Line Voltage Passive Infrared (PIR) Sensors control lighting based on occupancy. They are designed with a low-profile, architecturally pleasing appearance to easily integrate into a wide range of lighting fixtures or a customized housing. Both provide a sensor and relay in one package, and their integrated photosensor holds off connected loads when enough daylight is available to provide additional energy savings. Both the FS-155 and FS-155-1 are equipped with 6' flying leads.

Operation

The FS-155 and FS-155-1 operate at 120/277 VAC to control lighting based on occupancy. Utilizing the latest PIR technology, which detects the difference between infrared energy in motion and the background space, they automatically turn the lights off after the defined area is vacated and the adjustable time delay (30 seconds to 30 minutes) has elapsed. An integrated photosensor will hold off the lights for additional energy savings if there is 10-120fc of ambient light where the sensor is installed.

Applications

The FS-155 provides coverage up to 100 square feet and the FS-155-1 up to 400 square feet, both in a 360° coverage pattern when mounted at 8'. Both work well where relay and sensor are required in one package, and they both can provide additional energy savings by utilizing their incorporated photosensor to hold off the lights when there is 10-120 fc of ambient light at the sensor's point of installation. The distinctive mounting option of these models make them suitable for controlling desktop task lighting. They are also well-suited to control in cubicles and small offices.

Features

- Sensor and relay in one package
- Hold-off daylighting when placed in areas with 10-120 fc of ambient light
- Includes 6' flying leads for simplified installation
- Adjustable time delay
- RoHS compliant

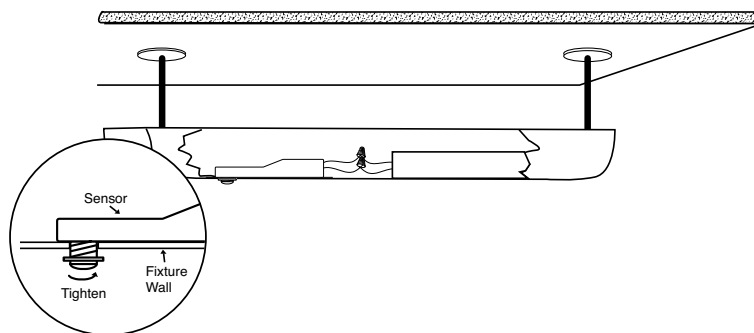


Specifications

- 120/277VAC, 60Hz
- Load Req. @120: 0-800W ballast or tungsten
- Load Req. @277: 0-1200W ballast
- Adjustable time delay (30 seconds to 30 minutes)
- Hold-off daylighting level, adjustable from 10-120 fc
- Operating temperature 32-131°F (0-55°C)
- Dimensions:
 - lens housing: 0.5" (12.7mm) diameter
 - lens collar 1" (25.4mm) diameter
 - sensor body 7.1" x .87" x .67" (181mm x 22mm x 17mm)
- UL and cUL listed
- Five year warranty

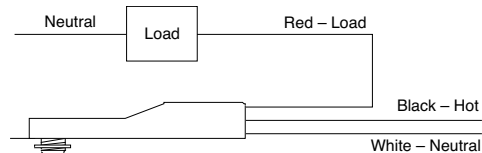
Mounting and Installation

Installing the FS-155/FS-155-1

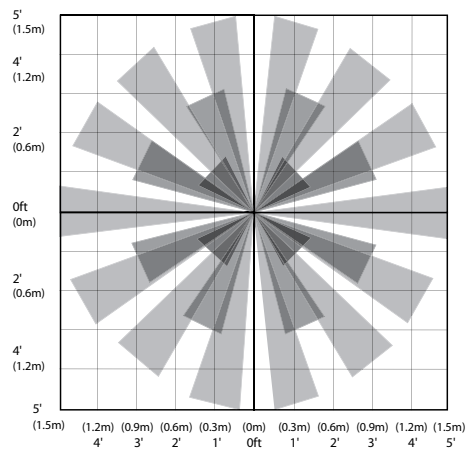


Wiring & Coverage

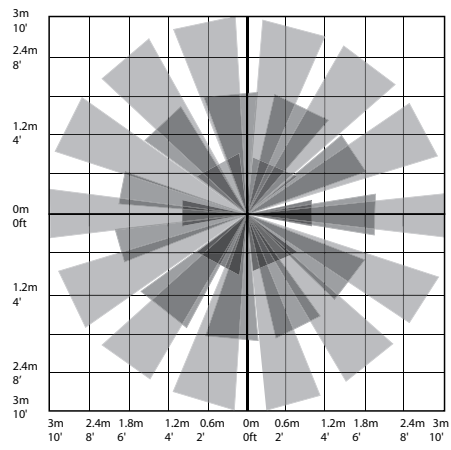
Line Voltage Wiring



Coverage Patterns @ 8' Mounting Height



FS-155



FS-155-1

Ordering Information

Catalog No.	Description
<input type="checkbox"/> FS-155	Line Voltage PIR Fixture Sensor; 120/277 VAC, 12 foot diameter coverage
<input type="checkbox"/> FS-155-1	Line Voltage PIR Fixture Sensor; 120/277 VAC, 18 foot diameter coverage



FS-205 Low Voltage PIR Fixture Integrated Occupancy Sensor

Modular plug system streamlines installation

Occupancy sensor that integrates into lighting fixtures

Turn lights on and off based on occupancy

Compact lens gives unobtrusive appearance in even the smallest fixtures

Hold off daylighting light level feature



PROJECT
LOCATION/TYPE

Product Overview

Description

The FS-205 Low Voltage Passive Infrared (PIR) Fixture Sensor controls lighting based on occupancy. It is designed with a low-profile, architecturally pleasing appearance to easily integrate into lighting fixtures or a customized housing. The modular plug-in system utilizes an RJ45 connector on a low-voltage 6-ft. cord for installation flexibility, and to quickly link to a remote-mounted power pack.

Operation

When connected to an FS-PP Power Pack, the FS-205 sensor operates at 24 VDC to detect occupancy. Utilizing the latest PIR technology to detect the difference between heat emitted from the human body in motion and the background space, the FS sensor signals the FS-PP to close its relay and turn on the connected load. After the defined area is vacated and the adjustable time delay (30 seconds to 30 minutes) has elapsed, the sensor signals the FS-PP to open its relay and turn off the connected load.

Hold-off Daylighting

The hold-off daylighting light level feature provides additional energy savings. Once the lights turn off after the time delay has elapsed, this feature holds lighting off upon new occupancy if there is sufficient ambient light available (adjustable from 10-120 fc).

Applications

The FS-205 provides a 360° coverage pattern for up to 200 square feet when mounted at 8 feet. The sensor works well in a small office, cubicle or utility room. The FS-205 is little enough to be easily integrated into even the smallest housings when zonal control of direct/indirect fixtures is required.

Features

- Low-voltage 6-ft. whip with an RJ45 connector for easy installation
- Small footprint fits easily in fixtures
- Adjustable time delay (30 seconds to 30 minutes)
- Fresnel lens for accurate detection patterns
- LED indicator of occupancy detection for easy verification of coverage
- Hold-off daylighting control
- RoHS compliant

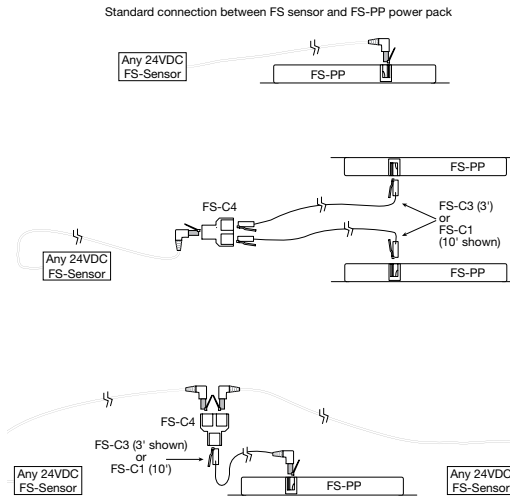


Specifications

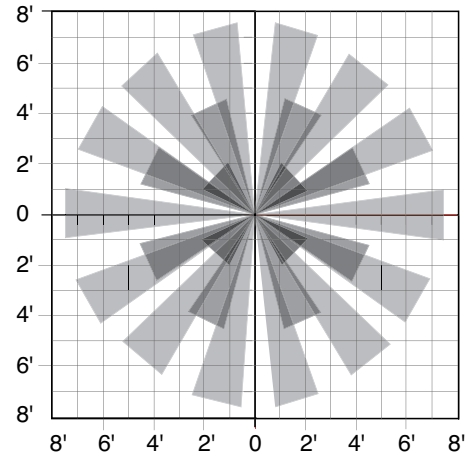
- 24 VDC
- Coverage pattern at 8 ft.: 16' (487.7cm) diameter
- Adjustable time delay (30 seconds to 30 minutes)
- Hold-off daylighting light level, adjustable from 10-120 fc
- Operating temperature 32-131°F (0-55°C)
- Dimensions:
 - throat: 0.75" (19mm) diameter
 - lens collar: 1.12" (28.5mm) diameter
 - lens pipe: .38" (9.7mm)
 - sensor body: 1.12" x 1.38" x .5" (28.5mm x 35mm x 12.7mm)
- UL and cUL listed
- Five year warranty

Wiring & Coverage

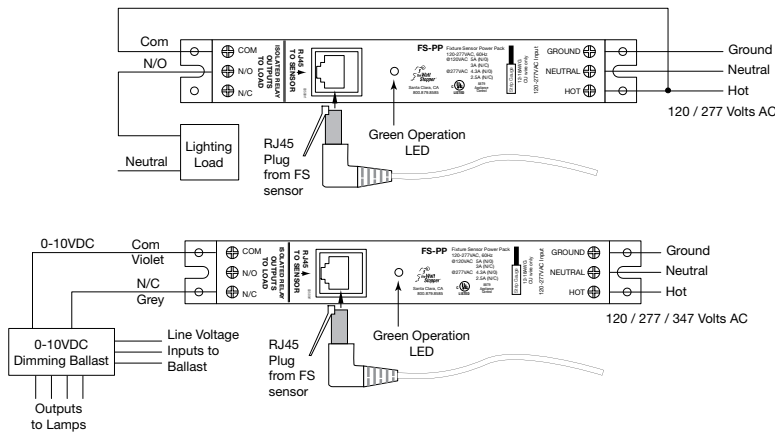
FS Low Voltage Wiring



Coverage Pattern @ 8 ft Mounting Height



FS-205 and FS-PP Wiring Diagram



Ordering Information

Catalog No.	Description	Load Capacity
<input type="checkbox"/> FS-205v2	Low Voltage PIR Low Profile Fixture Occupancy Sensor, 24 VDC	Current Consumption 6.5mA
<input type="checkbox"/> FS-PPv2	Fixture Power Pack 120/277/347 VAC; 60Hz	70mA @ 24 VDC
<input type="checkbox"/> FS-C1	10' (3.048m) cable with shielded RJ45 male connectors at each end	
<input type="checkbox"/> FS-C1-20	20' extension cable with shielded RJ45 male connectors at each end	
<input type="checkbox"/> FS-C2	6" (15.24cm) cable with 3 flying leads at one end and shielded RJ45 male connector on other end	
<input type="checkbox"/> FS-C2-J	RJ45 override jumper	
<input type="checkbox"/> FS-C3	3' (0.914m) cable with shielded 90° male RJ45 on one end and shielded straight male RJ45 on other end	
<input type="checkbox"/> FS-C4	Shielded RJ45 splitter with female to dual female receptacles	
<input type="checkbox"/> FS-C5	Shielded RJ45 male to male coupler	
<input type="checkbox"/> FS-C6	24" cable with 90° RJ45 connector and 3 flying leads	

NOTE: The FS-205 Low Voltage Sensor requires an FS-PP or other WattStopper Power Pack (ordered separately) to operate.



FS-505/FS-505C Low Voltage Ultrasonic Fixture Integrated Occupancy Sensors



PROJECT
LOCATION/TYPE

Product Overview

Description

The FS-505 and FS-505C Low Voltage Ultrasonic Fixture Sensors control lighting based on occupancy. They are designed with a low-profile, architecturally pleasing appearance to easily integrate into a wide range of lighting fixtures or a customized housing. The sensors' modular plug-in system utilizes an RJ45 connector and 3' cord for flexibility and ease of use.

Operation

When connected to an FS-PP Power Pack, the FS-505 Series sensors use high frequency (40 kHz) ultrasonic technology to sense motion within a space and automatically turn lights on even when the sensor has no direct line of sight to occupants. After the area is vacated and the time delay has elapsed, the sensors automatically turn the lights off. Ultrasonic detection operates by transmitting sound waves throughout an area and measuring the speed at which they return. Movement increases the return frequency, which triggers occupancy.

The FS-505 Series sensors provide functions for testing, overriding the fixture 'ON' and a 72-hour lamp burn-in mode.

Applications

Typical applications for the FS-505 Series sensors include open office cubicles, offices, conference rooms, restrooms and hallways. This technology also provides superior detection in hard surfaced areas, such as stairwells and hallways.

For a large rectangular detection area with ceiling-mounted fixtures, the FS-505C provides excellent coverage. For specialized applications such as stairwells, the elongated coverage pattern of the FS-505 is ideal.

The FS-505 can provide bi-level lighting control in fixtures that have bi-level or dimming ballasts, resulting in up to 66% energy savings for fixtures that are on 24-hours a day, seven days a week, while still providing enough light for safety and egress.

Features

- Ultrasonic technology (40Khz)
- Compact design for installation in low-profile fixtures
- 24 VDC
- Three modes: override, burn-in and test modes



Specifications

FS-505 Low Voltage Ultrasonic Fixture Sensor



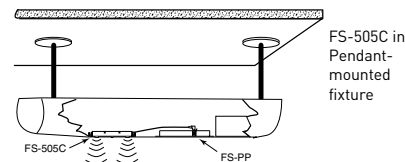
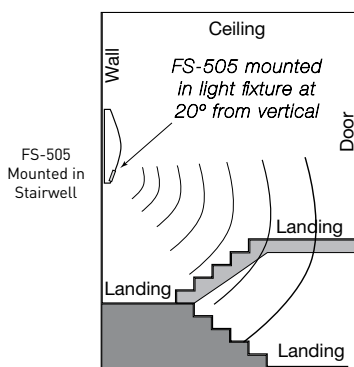
Voltage	24VDC
Current Consumption	43mA
Power Supply	FS-PP Fixture Power Pack
Time Delay	5-30 minutes
Coverage at 8' ht.	24' (731.5cm) diameter
Operating Temp	32-131°F (0-55°C)
Color	White
Dimensions*	5.2" x 1.25" x .62" (132.4mm x 32.2mm x 15.7mm)

FS-505C Low Voltage Ultrasonic Fixture Sensor



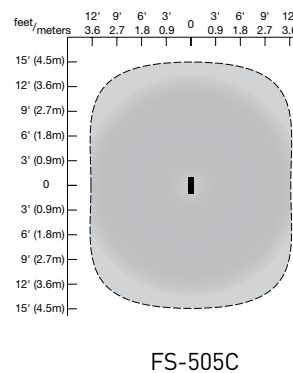
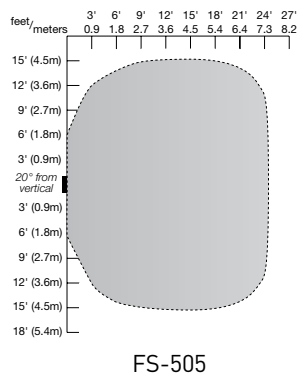
Voltage	24VDC
Current Consumption	43mA
Power Supply	FS-PP Fixture Power Pack
Time Delay	5-30 minutes
Coverage at 8' ht.	30' x 24' (457.2 x 365.7cm)
Operating Temp	32-131°F (0-55°C)
Color	White
Dimensions*	5.2" x 1.25" x .62" (132.4mm x 32.2mm x 15.7mm)

Applications

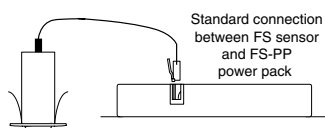


Wiring & Coverage

Coverage Patterns @ 8 ft Mounting Height



FS Low Voltage Wiring Example



Ordering Information

Catalog No.	Description
<input type="checkbox"/> FS-505	Low Voltage Ultrasonic Fixture Occupancy Sensor for Stairway Applications; 24 VDC fixture mount
<input type="checkbox"/> FS-505C	Low Voltage Ultrasonic Fixture Occupancy Sensor for Open Areas; 24 VDC fixture mount
<input type="checkbox"/> FS-PPv2	Fixture Power Pack 120/277 VAC; 60Hz

NOTE: All FS Low Voltage Sensors require an FS-PP or other WattStopper Power Pack (ordered separately) to operate.



FS-305/FS-355 Low and Line Voltage Indoor/Outdoor Fixture Integrated Occupancy Sensors

Low-profile fixture-integrated sensor

Multiple lens choices

Adjustable time delay



IP65 rated for indoor and outdoor wet locations

Line and low voltage models

Daylighting light level feature

PROJECT
LOCATION/TYPE

Product Overview

Description

The FS-305 and FS-355 are PIR occupancy sensors that turn lighting on and off automatically based on occupancy. The models are slim, low-profile devices designed for installation inside the bottom of either an indoor or outdoor lighting fixture body. The FS-305 is a low voltage model, while the FS-355 is a line voltage model.

Operation

The FS-305/FS-355 consist of two components, a sensor and a lens. Four lens choices provide flexibility for varying mounting heights. When occupancy is detected within the sensor's coverage area, the sensor signals lighting to turn on automatically. When occupancy is no longer detected and the time delay has elapsed, lighting automatically turns off. Either model can be wired to control all loads in a fixture, or to provide hi/low control of LED arrays. Both models provide a light level daylighting feature. In the FS-305, the light level feature holds lights off, while in the FS-355, the feature turns lights off if the load is already turned on and adequate daylight exists.

Wet Location Rating

The FS-305/FS-355 sensors feature the IP65, UL244A and UL508 ratings for indoor or outdoor wet locations when fully assembled and installed with FS-LxW lenses. To obtain this rating, the sensor underwent extremely rigorous testing. The IP65 rating means the sensors are totally protected against dust and low-pressure jets from all directions when installed in an IP65 lighting fixture.

Applications

FS-305/FS-355 sensors are ideal for damp or wet indoor or outdoor locations. They are suitable for use in parking garages, parking lot luminaires, as well as any outdoor application when installed in a UL-rated outdoor fixture.

Features

- Adjustable time delay from 30 seconds to 30 minutes
- Fixed sensitivity optimized for FS-LxW lens coverages
- RoHS compliant
- Light level daylighting feature from 10-120 fc
- IP65 and UL 244A and 508 rated (when fully assembled and installed with FS-L2W, FS-L3W, or FS-L4W lenses)
- Four interchangeable lenses (FS-L2W, FS-L3W, FS-L4W, FS-L6) for mounting between 8' and 40' (ordered separately)

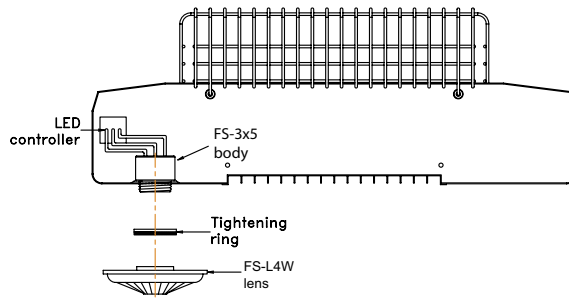


Specifications

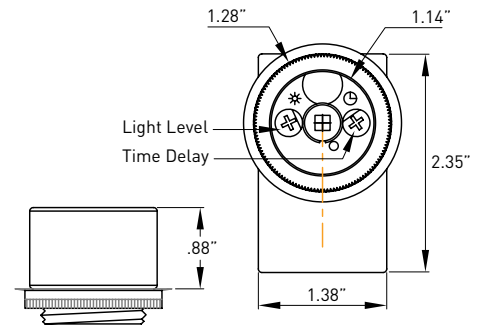
- FS-355 - 120-277 VAC; 60Hz Load @120 VAC 0-800W ballast or incandescent - Load @277 VAC 0-1200W ballast
- FS-305 - 12-24 VDC (requires FS-PP power pack for operation)
- Light level daylighting feature (10fc-120 fc)
- Operating temperature: -40-131°F (-40-55°C)
- Storage temperature: -40-176°F (-40-80°C)
- Operating Humidity: 20-90%
- Weight: 1.5 oz (42.52 grams)
- Five year warranty
- IP65, UL244A and UL508 rated
- UL and cUL listed

Settings, Dimensions & Mounting

Mounting

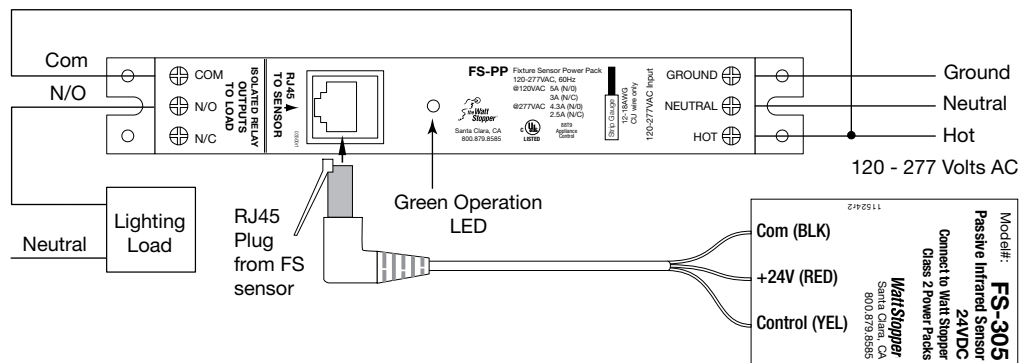


Dimensions and Settings

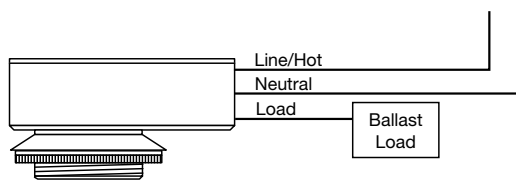


Wiring & Connections

FS-305 Wiring



FS-355 Line Voltage Wiring



Ordering Information

Catalog No.	Color	Description	Input Voltage
<input type="checkbox"/> FS-305	White	Fixture mount, passive infrared occupancy sensor	12-24 VDC
<input type="checkbox"/> FS-305-RC	White	Fixture mount, passive infrared occupancy sensor with RJ45 connection	12-24 VDC
<input type="checkbox"/> FS-355	White	Fixture mount, passive infrared occupancy sensor	120/277 VAC, 60Hz
<input type="checkbox"/> FS-355E	White	Fixture mount, passive infrared occupancy sensor	230 VAC, 50Hz
<input type="checkbox"/> FS-PPv2	White	Power Pack, 120/277/347 VAC; 60 Hz	
<input type="checkbox"/> FS-C2	White	Connector cable, 6" cable with 3 flying leads at one end and a shielded RJ45 male connector on other end	



FS-Lx Lenses for Passive Infrared Fixture Integrated Occupancy Sensors

Four interchangeable lenses for FS-3x5 fixture sensors

Mounts easily onto sensor component from fixture exterior



Coverage choices for mounting heights between 8-40 feet

PROJECT
LOCATION/TYPE

Product Overview

Description

FS-LxW lenses work with the FS-305/FS-355 occupancy sensors to turn lights on and off automatically based on occupancy. Four lens choices provide flexibility for varying mounting heights.

Operation

The lenses mount onto the sensor body from the exterior of the fixture, threading onto the FS-305/FS-355 threaded collar. Four 360° lens choices provide coverage at 8, 20, and 40 foot mounting heights. The FS-L2W provides maximum coverage of 48' diameter mounted at eight feet, the FS-L3W provides maximum coverage of 40' diameter mounted at 20 feet, and the FS-L4W provides coverage of 60' diameter mounted at 40 feet. The FS-L6 provides maximum coverage of 20' diameter mounted at eight feet.

Wet Location Rating

When fully assembled and installed, the FS-305/FS-355 sensors and FS-LxW lenses are IP65 and UL 244A and 508 rated. To obtain this rating, the device underwent extremely rigorous testing. The IP65 rating means the device is totally protected against dust and low-pressure jets from all directions.

Applications

FS-305/FS-355 sensors with FS-LxW lenses are ideal for damp or wet indoor or outdoor locations. They are suitable for use in parking garages and in parking lot luminaires. When equipped with the FS-L6 lens, the sensor provides superior coverage in any dry indoor application.

Features

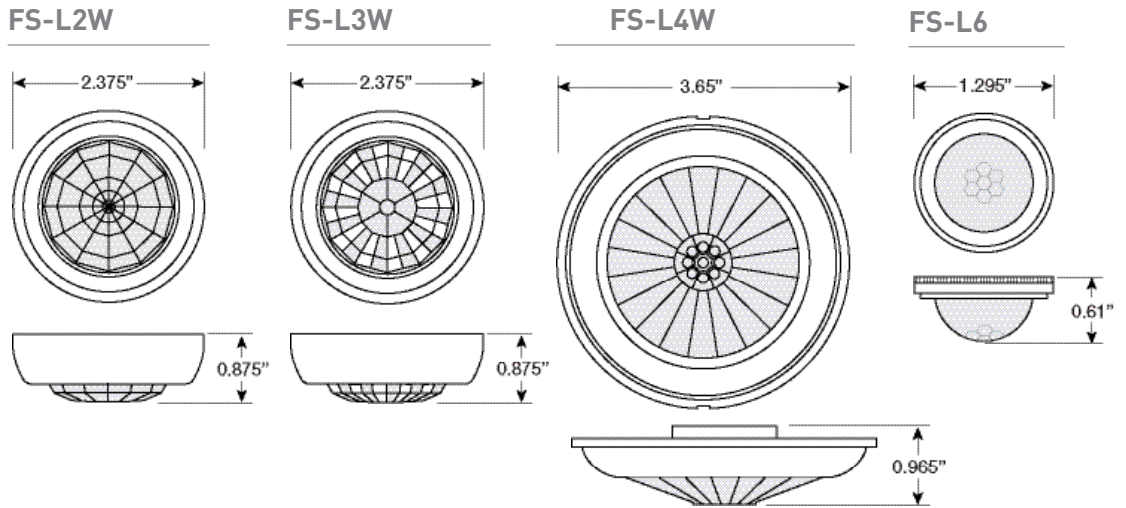
- IP65 and UL 244A and 508 rated (when fully assembled and installed) for use in wet location environments (indoor and outdoor)
- Fixed sensitivity optimized for FS-LxW and FS-L6 lens coverages
- Polycarbonate, flame retardant, UV resistant, impact resistant (FS-LxW lenses)
- Recyclable



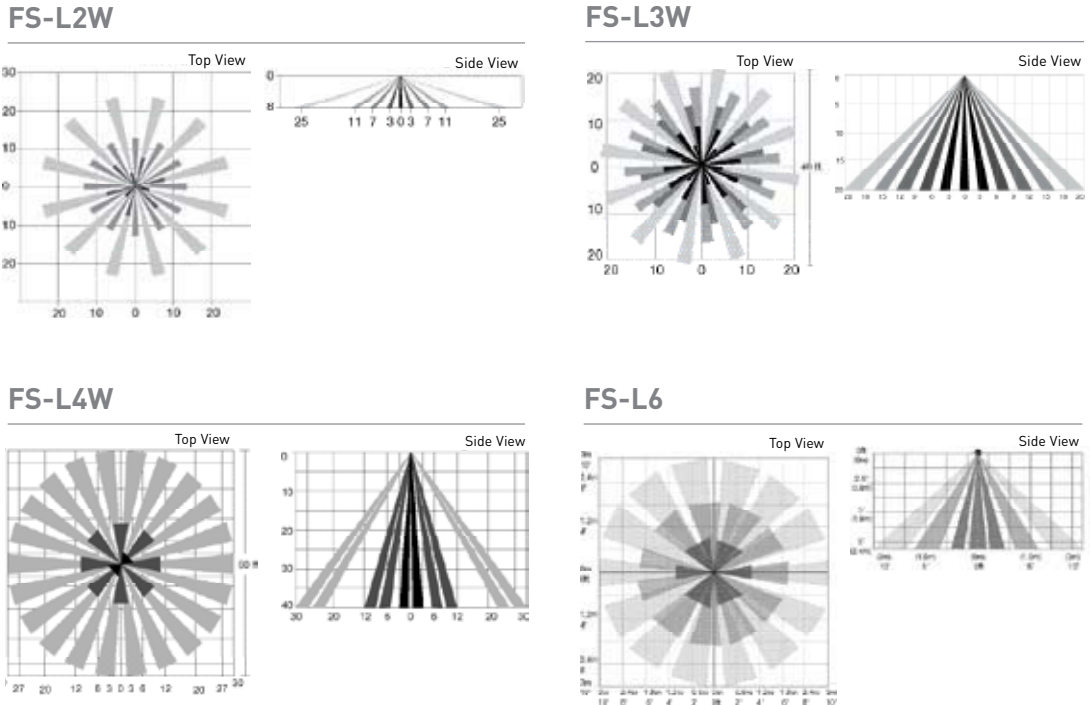
Specifications

- Operating temperature: -40-131°F (-40-55°C)
- Storage temperature: -40-176°F (-40-80°C)
- Operating Humidity: 20-90%
- Five year warranty
- UL and cUL listed

Lens Dimensions



Coverage Patterns



Ordering Information

Catalog No.	Color	Description
<input type="checkbox"/> FS-L2W	White	360° lens, maximum coverage 48' diameter from 8' height
<input type="checkbox"/> FS-L3W	White	360° lens, maximum coverage 40' diameter from 20' height
<input type="checkbox"/> FS-L4W	White	360° lens, maximum coverage 60' diameter from 40' height
<input type="checkbox"/> FS-L6	White	360° lens, maximum coverage 20' diameter from 8' height



FS-705/FS-755 Wide Angle PIR Occupancy Sensor



PROJECT
LOCATION/TYPE

Product Overview

Description

The FS-705/FS-755 Wide Angle PIR Occupancy Sensors control lighting based on occupancy utilizing passive infrared (PIR) technology. The sensors provide 180 degree coverage and are designed for locations that require wide angle occupancy detection, such as refrigerator and freezer cases, vending machines and aisleway displays.

Operation

The FS-705/FS-755 are self-contained devices. The FS-705 is a 24 VDC device that operates via a 120, 230 or 277 VAC WattStopper power pack, while the FS-755 is a line voltage unit operating at 120/277 VAC. By detecting the difference between infrared energy from a human body in motion and the background space within the controlled area, the sensor turns lighting systems on. When occupants leave the controlled area, it switches lighting off after the user-selectable time delay elapses.

Wide Angle and Sensitivity Range

Equipped with a Fresnel lens and a unique dual pyro, the FS-705/FS-755 can cover more than 40 detection zones in all directions. Coverage is adjustable to 12 or 15 feet. When mounted at seven feet six inches above the floor, the sensor provides true 180 degree horizontal coverage and 70 degree vertical coverage to efficiently monitor the controlled area. The sensor's time delay adjusts to one of four settings: thirty seconds, one minute, two minutes or eight minutes.

Applications

The FS-705/FS-755 offers excellent control of lighting for locations where wide angle coverage is needed, such as refrigerator and freezer cases, vending machines and aisleways. Its wide coverage pattern detects motion before a person reaches the display area to turn lighting on, and turns off lighting when the area is vacant for the user-adjustable time delay. In cold food aisles, one sensor is typically used per case. It is ideally suited to controlling LED lighting. Sensor performance will provide fast payback and many years of energy savings.

Features

- Dual pyro covers more than 40 detection zones
- Coverage pattern adjustable to 12 or 15 feet when mounted 7'6" above the floor
- Time delay selectable to one of four settings (30 seconds, 1 minute, 2 minutes or 8 minutes)
- 180 degree horizontal coverage pattern
- 70 degree vertical coverage pattern
- Line and low voltage options
- LED indicator for occupancy detection
- DIP switch simplifies sensor adjustments
- RoHS compliant

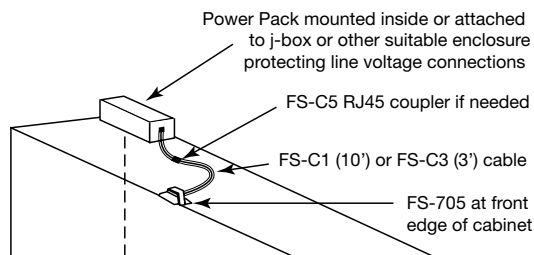


Specifications

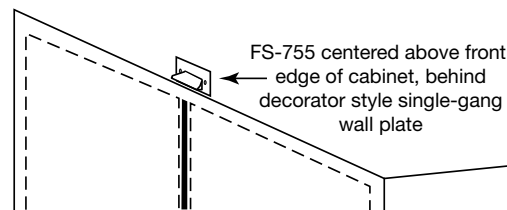
- FS-705: Power Supply: 24 VDC from WattStopper Power Pack
- FS-755: 120/277 VAC, 60 Hz
- Current consumption: 7mA @ 24VDC
- Weight: 2.11oz (60 grams)
- Detection indication: green LED
- Operating temperature range: 32-131°F (0-55°C)
- Storage temperature range: -22-176°F (-30-80°C)
- UL and CUL listed
- Five year warranty

Mounting Diagrams

FS-705 Mounting

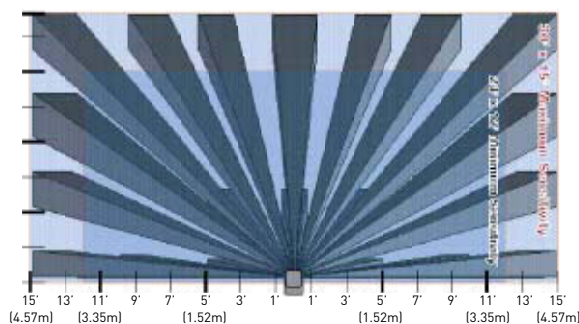


FS-755 Mounting

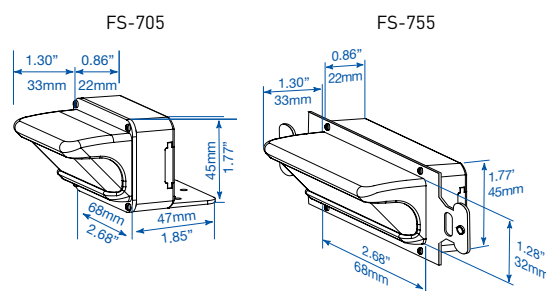


Coverage and Dimensions

Top View

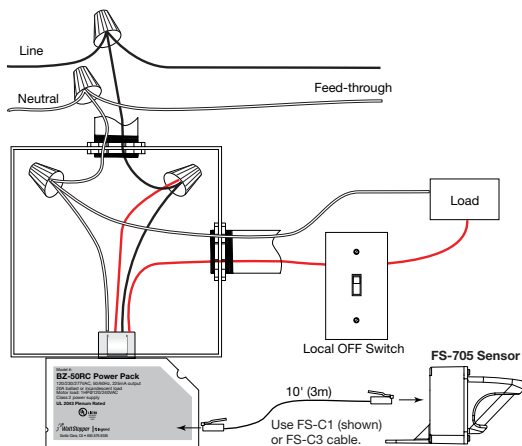


Dimensions

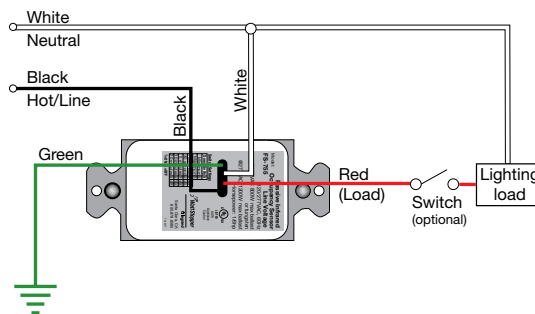


Wiring

FS-705 wiring with a BZ-50RC Power Pack



FS-755 wiring



Ordering Information

Catalog No.	Description
<input type="checkbox"/> FS-705	Wide Angle PIR Occupancy Sensor, 24 VDC
<input type="checkbox"/> FS-755	Wide Angle PIR Occupancy Sensor, 120/277 VAC
<input type="checkbox"/> FS-C1	10' (3.048m) cable with shielded RJ45 male connectors at each end
<input type="checkbox"/> FS-C1-20	20' extension cable with shielded RJ45 male connectors at each end
<input type="checkbox"/> FS-C2	6" (1.524m) cable with 3 flying leads at one end and a shielded RJ45 male connector on the other
<input type="checkbox"/> FS-C2-J	RJ45 override jumper
<input type="checkbox"/> FS-C3	3' (0.914m) cable with shielded 90° male RJ45 on one end and a shielded straight male RJ45 at the other
<input type="checkbox"/> FS-C4	Shielded RJ45 splitter with female to dual female receptacles
<input type="checkbox"/> FS-C5	Shielded RJ45 male to male coupler
<input type="checkbox"/> FS-C6	24" cable with 90° RJ45 connector and three flying leads

NOTE: *Output is 225 mA with relay connected.



FM-105 Super High Frequency Occupancy Sensor



Adjustable time delay

Adjustable detection sensitivity

Hold-off daylighting control

Mounting bracket for flexible installation

Line voltage occupancy sensor

Mounts behind fixture lens hidden from view

PROJECT
LOCATION/TYPE

Product Overview

Description

The FM-105 Super High Frequency Occupancy Sensor is a line voltage sensor that turns lighting on and off based on occupancy, and can hold lights off when sufficient daylight is available. It detects motion via super high frequency (SHF) electromagnetic waves and the Doppler principle. Because it can detect motion through many dense materials other than metal, the FM-105 can be installed behind fixture lenses and hidden from view.

Operation

The FM-105 operates at 120 or 277 VAC and utilizes SHF technology to control lighting based on occupancy. It sends out electromagnetic waves that bounce off nearby surfaces, and uses the Doppler principle to analyze changes in the return waves to detect motion in the area (similar to the way that ultrasonic sensor technology performs). When motion is detected, the FM-105 turns on the load, unless the ambient light level is greater than the daylighting setpoint (if enabled), or turns off the load when no motion is detected for the preset time delay.

Features

- Detects movement when installed behind low-density fixture materials, such as polycarbonate, acrylic and glass diffusers
- Provides hold-off daylighting control when ambient light is greater than daylighting setpoint
- Can be mounted hidden from view
- Easy adjustment via trimpots
- Mounting bracket facilitates installation in various mounting positions
- Simple line voltage wiring does not require a power pack
- Time delay adjustable from 10 seconds to 30 minutes
- Adjustable sensitivity range up to 20 feet
- RoHS compliant

Flexible Functionality

The FM-105 Sensor coverage pattern is omnidirectional. Depending on its installation, it can be adjusted to detect occupancy up to 20 feet away. The FM-105 can be placed inside a lighting fixture or behind an object made of wood or plastic so that it is completely hidden from direct view. Its integrated daylight sensitivity adjusts from 2 to 200 footcandles, and its time delay may be set from 10 seconds to 30 minutes.

Applications

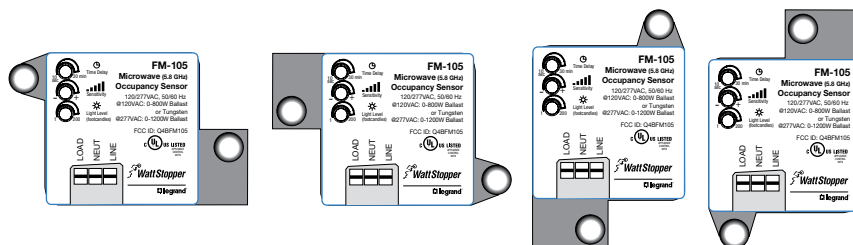
The FM-105 operates best when installed behind low-density fixture materials, such as polycarbonate, acrylic and glass diffusers. FM-105 technology also provides superior detection in hard surfaced areas such as stairwells and hallways. This sensor is also suited for installation behind lenses in outdoor wall sconces, wall packs and pedestrian-scale luminaires.

Specifications

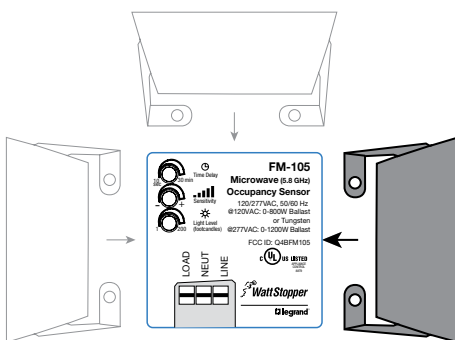
- 120/277 VAC, 50/60 Hz
- Load requirements
 @ 120 VAC, 60 Hz: 0-800 W ballast or tungsten
 @ 277 VAC, 60 Hz: 0-1200 W ballast
- Light Level: 2-200 fc
- Range/Sensitivity: Up to 20' (6.1m)
- Time delay: 10 seconds to 30 minutes
- Operating frequency: 5.8 GHz
- Power output: 1 mW
- Dimensions: 2.0" x 3.09" x 1.63" (51.0mm x 78.5mm x 41.4mm) L x W x D
- Weight: 2.3 oz (65.2 g)
- Operating temperature range: -4-131°F (-20-55°C)
- FCC approved
- UL and CUL listed
- Five year warranty

Mounting & Wiring

Mounting

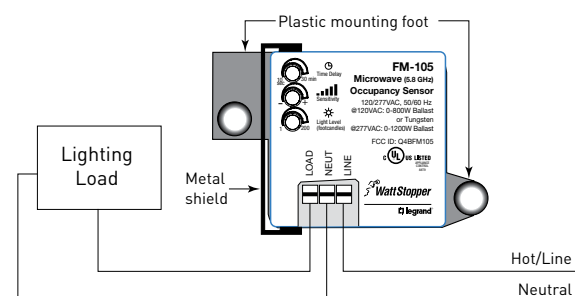


Mounting foot provides four different mounting positions.



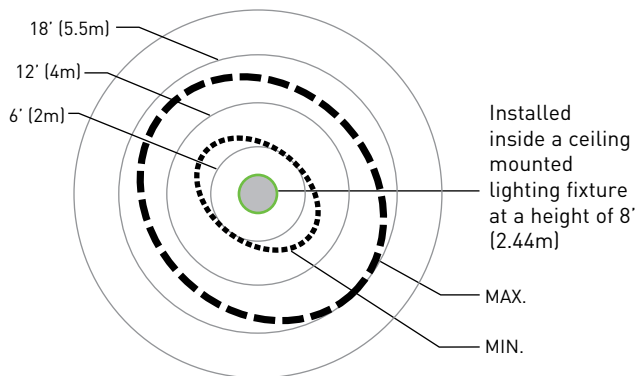
Position metal shield between FM-105 and lamp/ballast.

Wiring Diagram

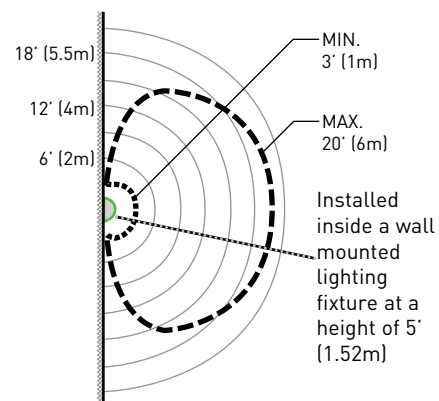


Coverage

Ceiling Mount



Wall Mount



Coverage pattern will vary based on installation of sensor and surrounding materials.

Ordering Information

Catalog No.	Description	Voltage	Load Capacity
<input type="checkbox"/> FM-105	Super High Frequency Occupancy Sensor	120 VAC 277 VAC	0-800 W ballast or tungsten 0-1200 W ballast



FD-301 Fixture Integrated Daylight Dimming Photosensor



Product Overview

Description

The FD-301 Fixture Integrated Daylight Dimming Photosensor is a low voltage controller that works with standard 0-10 VDC electronic dimming ballasts to control electric lighting in response to daylight.

Operation

A closed loop daylighting system, the FD-301 measures the total light level from daylight and electric light in the controlled area. The integral photocell measures only the narrow bandwidth of visible light to accurately report ambient light levels. Once commissioned, the FD-301 calculates the required light level for any given amount of daylight contribution based on two setpoints. One represents the target level when no daylight is present (night setpoint) and the other when significant daylight is present (day setpoint). Electric light output is automatically varied as the daylight level changes throughout the day to maintain the target light level. If specified, occupant controls may be used to temporarily adjust lighting levels without changing the setpoints. The FD-301 works with an FS-PP power pack.

Adjustment Using Remote Controls

The FDR-301-S setup remote facilitates quick easy setup from ground level without tools. Raise and lower buttons are used to adjust target lighting levels for the day and night setpoints in the presence and absence of daylight. LEDs confirm setup operations.

An optional occupant remote control, LSR-301-P, includes raise and lower buttons to temporarily increase the target light level by up to 25% or reduce it to the lamp/ballast minimum level. An "Auto" button returns control to the programmed levels.

Applications

The FD-301 is designed for mounting in fluorescent lighting fixtures using 0-10 VDC electronic dimming ballasts. It is an ideal control choice for daylit locations that experience long periods of occupancy including private or open offices, classrooms and cafeterias. The FD-301 may be used with FS occupancy sensors for maximum energy savings.

Features

- Photocell uses photopic curve to accurately measure light as it is perceived by the human eye
- Provides precise control of lighting to maintain desired light level
- Separate handheld remote control for setup prevents tampering
- Boosts energy savings by reducing maximum lamp output, often resulting in a 20% reduction or more compared with lights at full output
- Optional occupant remote increases user satisfaction and often produces increased energy savings
- Achieves lumen maintenance by holding target light level as lamp output decreases over time

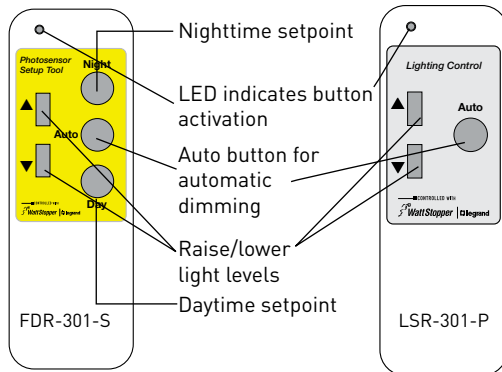


Specifications

- Operating voltage: 24 VDC
- Current consumption: 9mA typical, 30mA peak
- Max sink current: 50mA
- Dimensions: 1.57" x .98" x .84" (40mm x 25mm x 21.4 mm) LxWxD
- Weight: 64.4 grams (2.27 ounces)
- Enclosure material: ABS
- Color: White
- Operating temperature: 0-40°C (32-104°F)
- Operating humidity: 5-95%, non-condensing
- Full range dimming: .2 VDC (minimum) to 10 VDC (100% lighting) output voltage
- Includes 6' (1.83m) lead with RJ45 connector and 1' (.3m) bare leads for 0-10 VDC signal
- Sliding setpoint control algorithm
- Five year warranty

Product Controls

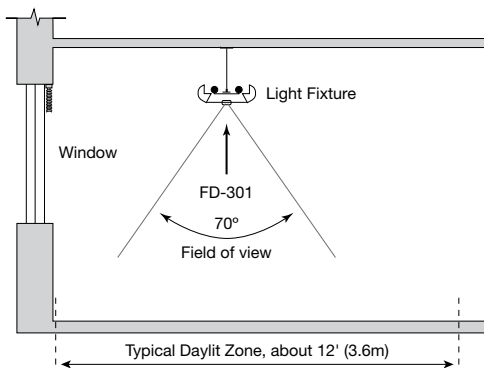
Handheld Remote Controls



Setup remote (left) enables easy setup while optional occupant remote (right) enables temporary adjustments for individual lighting preferences

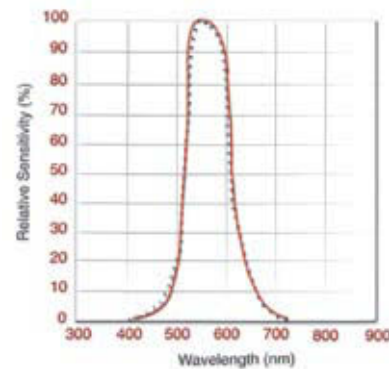
Sensitivity

Photosensor Spatial Response



The peak sensitivity of the FD-301 is a 70° field of view.

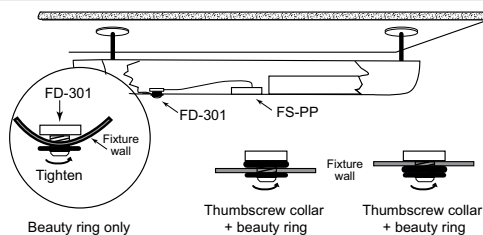
Photodiode Spectral Response



The spectral response of the photodiode closely matches the sensitivity of the human eye.

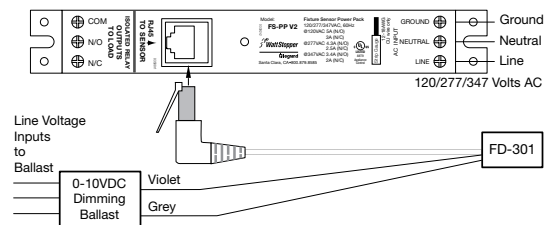
Installation & Wiring

Mounting and Installation



FD-301 photocell mounts in 3/4" diameter hole though the sheet metal in the bottom of the fixture.

Wiring



FD-301 lead connects to power pack, also mounted in fixture. For wiring diagram showing FD-301 and FS Occupancy Sensor, visit CAD Resources Center at www.wattstopper.com.

Ordering Information

Catalog No.	Description	Input Voltage
<input type="checkbox"/> FD-301	Fixture Integrated Daylight Dimming Photosensor	24 VDC
<input type="checkbox"/> FDR-301-S	Setup Remote Control (2 AAA batteries included)	
<input type="checkbox"/> LSR-301-P	Occupant Remote Control (2 AAA batteries included)	
<input type="checkbox"/> FS-PPv2	Power Pack	120/277 VAC; 60Hz



FS-PP Fixture Integrated Sensor Power Pack

Easy RJ45 connection

Normally Open (N/O)/ Normally Closed (N/C) relay options

•LED power indicator

Terminals for easy and sure wire connections

Zero crossing relay



PROJECT
LOCATION/TYPE

Product Overview

Description

The FS-PP Fixture Power Pack provides 24 VDC operating voltage to the FS Low Voltage Sensor series via the RJ45 connector built onto each sensor. The incorporated Form-C Relay, Normally Open (N/O)/Normally Closed (N/C), can control line or low voltage loads.

Operation

The FS-PP houses a step-down transformer that powers the FS sensors, and a relay for switching the load. Connection to the FS-PP is made by simply plugging in the RJ45 connector that is provided at the end of the FS whip. The FS-PP is rated for 120, 277 or 347 input voltages. The output power to the sensors is 24VDC, 70mA, which is capable of powering several sensors (up to seven FS PIR sensors or one FS Ultrasonic sensor).

The FS-PP uses zero crossing technology on the N/O side of the relay to increase relay life.

Instant On Feature

The FS-PP and the FS low voltage sensor incorporate special electrical circuitry which ensures that the load connected to it will come back on after a power failure, and will stay on for two minutes, unless motion is detected.

Applications

The FS-PP is intended for use inside lighting fixtures in conjunction with an FS Low Voltage Sensor. Its compact size provides easy installation into most fixture channels or ballast cavities. The FS-PP form C relay N/C or N/O provides the switching options that are needed to control simple ballast loads, or switching bi-level or dimming ballast levels.

The RJ45 connector allows easy installation of the FS Low Voltage Sensors, permitting pre-wiring of the FS-PP and installation of the sensor later.

Features

- For use with all Low Voltage Fixture Sensors
- ON/OFF and stepped dimming control options (with 0-10VDC dimming ballasts)
- Controls: one Ultrasonic or up to seven PIR Fixture Sensors
- Instant on in the unlikely event of a power failure
- RJ45 receptacle for easy plug and play with all low voltage FS Sensors
- Zero Crossing Circuitry for increased sensor life
- Terminal connections for easy installation
- Small, thin footprint fits in most lighting fixtures
- RoHS compliant

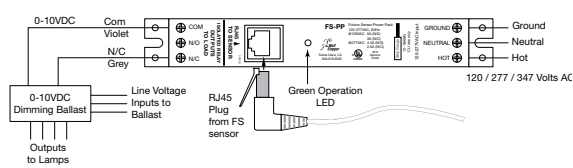


Specifications

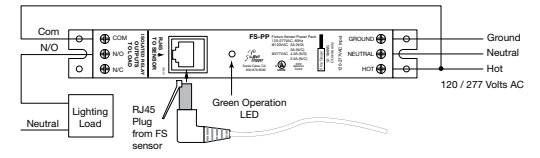
- 120/277/347 VAC, 60Hz
- Form C with Zero Crossing on N/O Relay
- Output: 70mA @ 24VDC
- Load Reg @120: 600W N/O, 360W N/C ballast, 1/6 hp
- Load Reg @277: 1200W N/O, 700W N/C ballast
- Connections:
Low Voltage: RJ45 to FS Sensors
- Line & Load: 12-18 AWG Screw Terminal
- 32°-131°F (0°-55°C)
- Dimensions: 7.5" x .87" x 1" (190.5mm x 22.1mm x 25.4mm)
- UL and cUL listed
- Five year warranty

Wiring & Cable Connectors

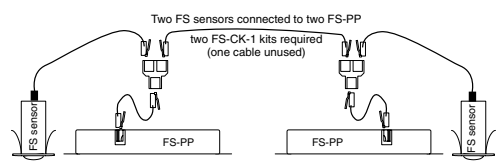
FS Power Pack - Dimming



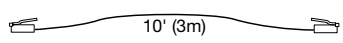
FS Power Pack - Standard On/Off



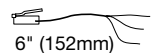
FS Low Voltage w/ FS-CK-1 Cable Kit



Cable Connectors



FS-C1: One 10' cable with a shielded RJ45 male connector at each end.



FS-C2: One 6" cable with 3 flying leads at one end and a shielded RJ45 male connector at the other.



FS-C3: One 3' cable with a shielded 90° RJ45 male connector at one end and a shielded straight male RJ45 connector at the other end, for space-limited applications.



FS-C4: Shielded RJ45 splitter with female to dual female receptacles.



FS-C5: Shielded RJ45 male to male coupler.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> FS-PPv2	Fixture Power Pack 120/277/347 VAC; 60Hz
<input type="checkbox"/> FS-CK2	6" cable with 3 flying leads at one end and a shielded RJ45 male connector at the other, plus a shielded male to male coupler
<input type="checkbox"/> FS-C1	10' cable with shielded RJ45 male connectors at each end
<input type="checkbox"/> FS-C2	6" cable with 3 flying leads at one end and a shielded RJ45 male connector on the other
<input type="checkbox"/> FS-C3	3' cable with shielded 90° male RJ45 on one end and a shielded straight male RJ45 at the other
<input type="checkbox"/> FS-C4	Shielded RJ45 splitter with female to dual female receptacles
<input type="checkbox"/> FS-C5	Shielded RJ45 male to male coupler



BZ-50RC Universal Voltage Power Pack

High-efficiency switching power supply

Overcurrent protection (low-voltage)

RJ45 connection



Plenum rated

Zero crossing for reliability and increased product life

PROJECT
LOCATION/TYPE

Product Overview

Description

The BZ-50RC Universal Voltage Power Pack provides 24 VDC operating voltage to WattStopper's low-voltage occupancy sensors equipped with RJ45 jacks. This device is constructed with environmentally friendly materials and is RoHS-compliant.

Operation

The BZ-50RC consists of a high-efficiency switching power supply and a high-current relay. It has an input of 120/277 VAC, 50/60Hz, and an output of 24VDC, 225mA. It switches line voltage in response to the signal coming from the occupancy sensor. The BZ-50RC can be attached to existing junction boxes or mounted into fixture wiring trays.

Plenum Rated

The BZ-50RC Power Pack is comprised of Teflon-coated low-voltage leads and an ABS, UL 2043 and 94V-0 plastic resin enclosure that is plenum-rated. As a result, the BZ-50RC does not require installation into the junction box, but can be cost-effectively installed directly into a lighting fixture.

Applications

The BZ-50RC Power Pack is designed to be flexible enough to control almost any lighting or HVAC load, such as lighting circuits, self-contained air conditioners, pumps, fans, motors, VAV systems, motorized damper controls and setback thermostats. The BZ-50RC is well-suited for any application which requires high-voltage switching through low-voltage controls. By linking power packs and sensors, an almost unlimited number of configurations can be obtained.

Features

- Self-contained power supply relay system
- Efficient switching power supply providing optimized current output based on number of sensors
- LED indicates status of relay or if there is a low-voltage overcurrent
- Zero crossing circuitry for reliability and increased product life
- UL 2043 plenum rated for cost-effective installation
- 1/2" snap-in nipple attaches to standard electrical enclosures through 1/2" knockouts
- 14 AWG wires on the relay for 20A operation
- Easy RJ45 connection
- RoHS-compliant

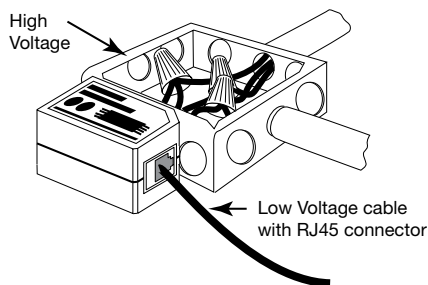


Specifications

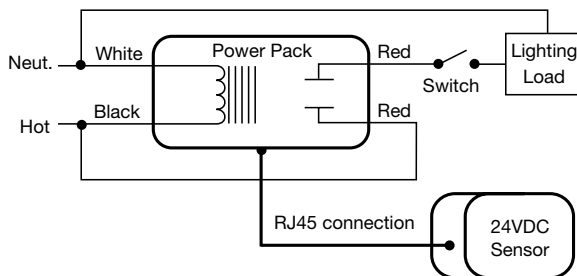
- 120/277VAC, 50/60Hz voltage input
- Load requirements:
Ballast: 20 amp @ 120/277 VAC
Incan: 20 amp @ 120 VAC
Motor: 1 hp @ 120/250 VAC
- Secondary voltage of 24 VDC
- Secondary output of 225 mA (with relay connected)
- Connection:
BZ-50RC with RJ45 connections
- Operating temperature 32°-104°F (0-40°C)
- UL-rated 94 V-0 grey plastic enclosure
- Dimensions: 1.6" x 2.75" x 1.6"
(40.6mm x 69.9mm x 40.6mm) H x W x D
with a 1/2" (12.7mm) snap-in nipple
- UL and cUL listed
- Five year warranty

System Layout & Wiring

Installation Diagram



Wiring with Occupancy Sensor



Ordering Information

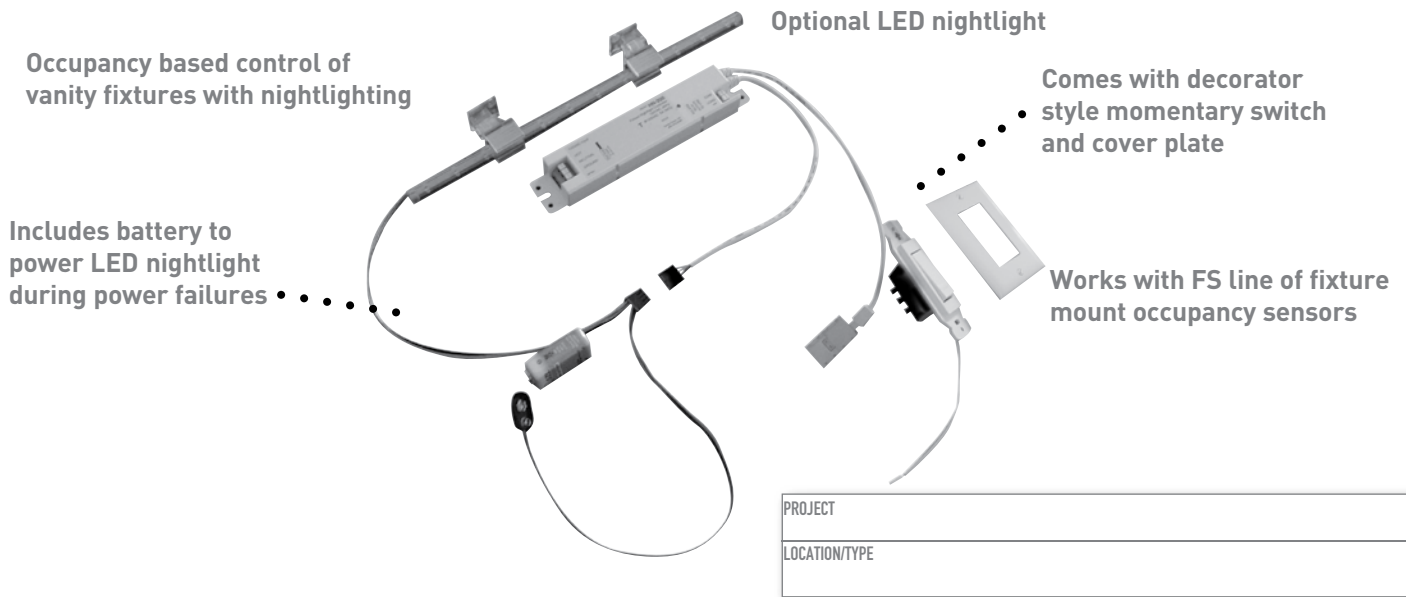
Catalog No.	Description	Load Ratings			Output
		Ballast(A)	Incan(A)	Motor(HP)	
<input type="checkbox"/> BZ-50RC	Universal Power Pack with RJ45 connection	20	20	1*	24 VDC; RJ45 connection
<input type="checkbox"/> FS-C1	10' cable with shielded RJ45 male connectors at each end				
<input type="checkbox"/> FS-C1-20	20' extension cable with shielded RJ45 male connectors at each end				
<input type="checkbox"/> FS-C2	6" cable with 3 flying leads at one end and a shielded RJ45 male connector on the other				
<input type="checkbox"/> FS-C2-J	RJ45 override jumper				
<input type="checkbox"/> FS-C3	3' cable with shielded 90° male RJ45 on one end and a shielded straight male RJ45 at the other				
<input type="checkbox"/> FS-C4	Shielded RJ45 splitter with female to dual female receptacles				
<input type="checkbox"/> FS-C5	Shielded RJ45 male to male coupler				
<input type="checkbox"/> FS-C6	24" cable with 90° RJ45 connector and three flying leads				

*1 Hp rated at 120/250 VAC. **Output is 225 mA with relay connected.

Installation Notes

- 1) All WattStopper power packs should be installed in accordance with state, local, and national electrical codes and requirements.
- 2) Power packs are designed to attach to existing or new electrical enclosures with .5" 125.40mmJ knockout (check electrical codes in your area).
- 3) Most applications require UL-listed, 18-22 AWG, 3-conductor, Class 2 cables for low-voltage wiring. For plenum return ceilings use UL-listed plenum-approved cables.

HN Series Fixture Mount Nightlight Controller



Product Overview

Description

The HN system provides a convenient, energy saving control solution for lighting fixtures which will incorporate LEDs for nightlight applications, such as hotel vanity lighting. The HN allows the lighting to be controlled by an FS fixture mount occupancy sensor (within the fixture).

Operation

The HN-200 system consists of a controller, momentary wall switch and plate, plus a 9 volt battery for backup power. The HN-300 system includes the same, plus an LED nightlight assembly.

The controller installs inside a lighting fixture. The switch toggles the light fixture between full overhead lighting operation and LED nightlighting, or turns off both. When the overhead lighting is ON, the sensor detects occupancy and turns lights off after the space is no longer occupied for the length of the time delay. When this happens, the nightlight turns on automatically. Pressing the switch two times rapidly turns both OFF. FS sensors provide time delays to 30 minutes or, for applications that require longer delays (such as in bathrooms where the sensor can't see the occupant in the shower), one hour.

Features

- Occupancy based control of fixture with nightlight; nightlight is ON when overhead lights are OFF, unless user turns nightlight OFF as well
- For safety, a 9 volt battery is included to provide back up power to the LED nightlight should a power failure occur
- Push-in wire connectors for rapid installation
- Convenient pre-packaged system contains all the components needed to control vanity/nightlight system
- Optional LED nightlight system has adjustable feet for achieving the desired light pattern

Nightlight

The LED nightlight assembly integrates with the HN-200 system to provide the convenience of nightlighting. The nightlight's LED glow is comforting to occupants and provides ample lighting where guests do not need to turn overhead lighting on to use the bathroom. And with the battery back-up, the nightlight will remain lit in the event of a power failure, providing safety to occupants.

Applications

The HN-200 integrates into bathroom vanity fixtures in hotels and other buildings such as assisted living establishments and nursing homes, where bathroom nightlighting is desired. Studies show that hotel guests often leave the bathroom lights on during the night as a nightlight. The system provides energy savings in two ways. The LED nightlight is more efficient than standard lighting, plus, the sensor makes sure there is no waste of lights being left on in vacant spaces.

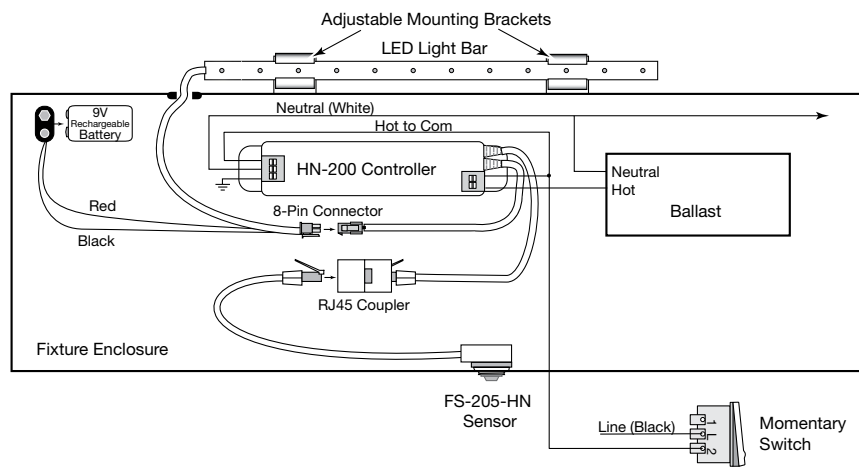
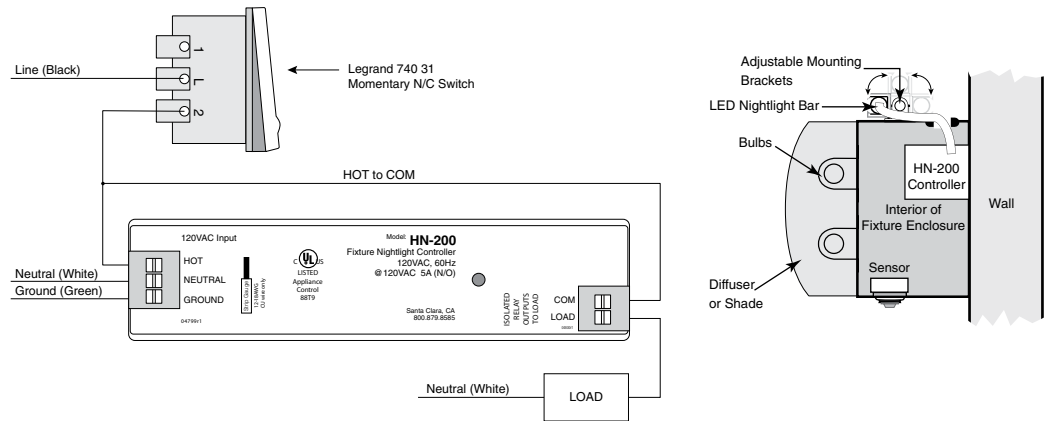


Controller Specifications

- 120 VAC, 60 Hz
- Form A normally open relay
- 8-pin connector to LED strip/battery:
 - 2-wire output to LEDs 400mA @10VDC max
 - 2-wire output to 9V Ni-MH battery 5-8mA @ 10VDC max
- Low voltage connections: RJ45 connection to FS sensor
- Load ratings: 500W @120 VAC
Isolated relay rated: 5A 250 VAC
- Line and load connections: 12-18 AWG terminals
- Operating temperature: 32-131°F (0-35°C)
- Dimensions: 7.5" x 0.75" x 1.5"
(190mm x 19mm x 38mm) L x W x D
- UL and CUL listed
- Five year warranty

Wiring & Connections

Wiring Diagrams



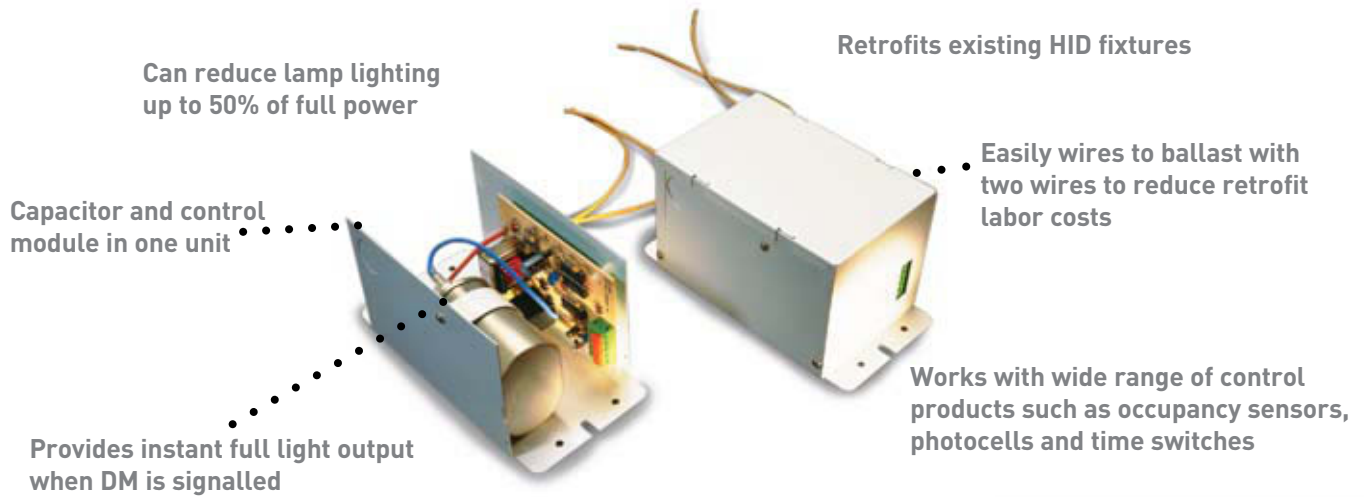
Ordering Information

Catalog No.	Description
<input type="checkbox"/> HN-200	Fixture mount nightlight controller, momentary wall switch, plate, 9volt battery
<input type="checkbox"/> HN-300	Fixture mount nightlight controller, momentary wall switch, plate, 9volt battery, LED nightlight
<input type="checkbox"/> FS-205	Fixture sensor; 24VDC; passive infrared; 30 minute max. time delay; small footprint
<input type="checkbox"/> FS-205-HN	Fixture sensor; 24VDC; passive infrared; one hour max. time delay; small footprint
<input type="checkbox"/> FS-305-RC	Fixture sensor; 24VDC; passive infrared; 30 minute max. time delay; expanded coverage area
<input type="checkbox"/> FS-505C	Fixture sensor; 24VDC; ultrasonic; 30 minute max. time delay

Controller, switch, plate and sensors are all white.



DM-100 Bi-level HID Controllers



PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's DM-100 control module switches High Intensity Discharge (HID) lighting based on occupancy or other control signals. By providing bi-level (high/low) control, it eliminates the restrike time problem associated with on/off control of HID lighting. This enables a significant source of energy savings, potentially up to 50%.

Operation

The DM-100 utilizes a dual capacitor and capacitor switching to achieve the bi-level control. It features an easy installation, requiring just two wires to connect to the ballast. The DM-100 works with a 24 VDC controlling device, such as an occupancy sensor, photocell, or time switch, and switches HID lighting between high and low. For example, with an occupancy sensor, the DM-100 will switch lights to a lower, energy-saving level when the space is unoccupied. When occupants return, lights immediately return from low to high.

Zone Control Option

Multiple DM-100s can be linked together and then controlled from one device. In addition, multiple DM-100s can connect to multiple controlling devices in a variety of configurations. This gives users the means of combining control methods to customize HID control for each space.

Applications

The DM controller can be used in many facilities that currently employ HID lighting, such as warehouses, gymnasiums, parking garages, and retail applications. Since the DM-100 integrates with all low/high bay WattStopper occupancy sensors, daylighting and timing products, a broad range of configurations is available to address different lighting control needs.

Features

- Capacitor and control module in one unit
- Easy installation requires just two wires to connect to the ballast
- Provides instant full light output when DM unit is signalled
- Utilizes zero crossing to protect relay and increase product life
- Mounts directly on to the HID fixture, or can mount remotely
- Maintains full light level for 15 minutes during power up to prevent lamp damage
- Since dual capacitor is housed with the control module rather than in the ballast cavity, the capacitor life span is extended
- Multi-zone control is possible through connecting DM-100s to multiple controlling devices in a variety of configurations; lets users customize control for each space

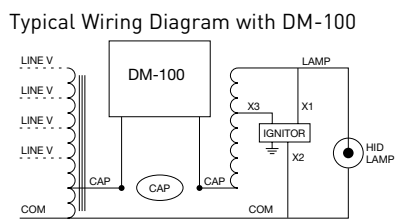
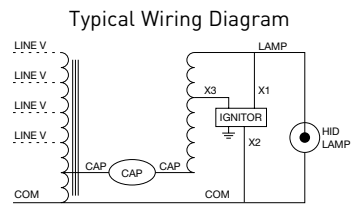


Specifications

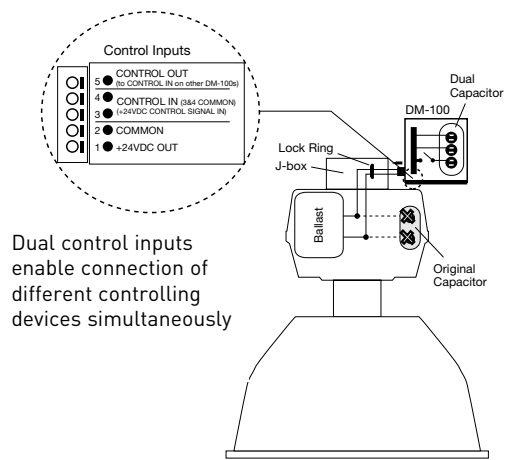
- For use with Metal Halide (MH), Metal Halide Pulse Start (MHPS), and High Pressure Sodium (HPS) lamps
- Operates only with Constant Wattage Autotransformer (CWA) type ballasts
- Compatible with Advance, Magnetek, and Venture ballasts, custom capacitor values for use with other manufacturers' ballasts available
- Designed for 175-1000W, CWA-type ballast HID lamps
- Maximum load rating of 1000 watts for MH or HPS lamps, 750 watts for MHPS lamps
- Relay rating: 10A at 250 VAC
- Operating temperature range: -10-104°F (-23-40°C)
- Maximum current output of 15mA at 24 VDC
- Dimensions: 3.75" x 5.75" x 4.75" (95.25mm x 146mm x 121mm) H x W x D, < 2 lbs.
- UL and cUL listed
- Five year warranty

Wiring & Mounting

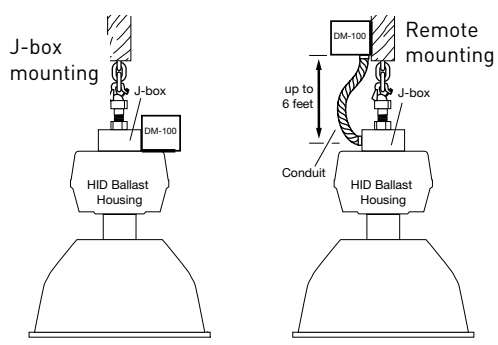
Wiring Diagrams



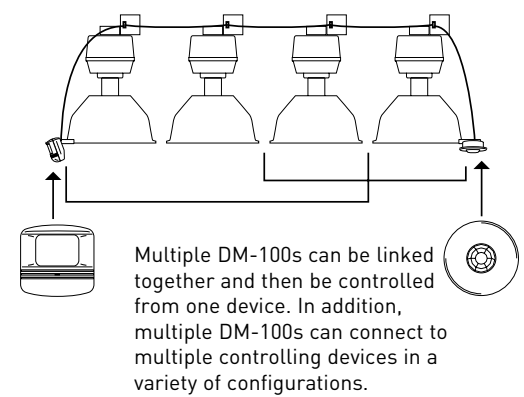
Control Inputs



Mounting Options



Multi-Zone Control



Ordering Information

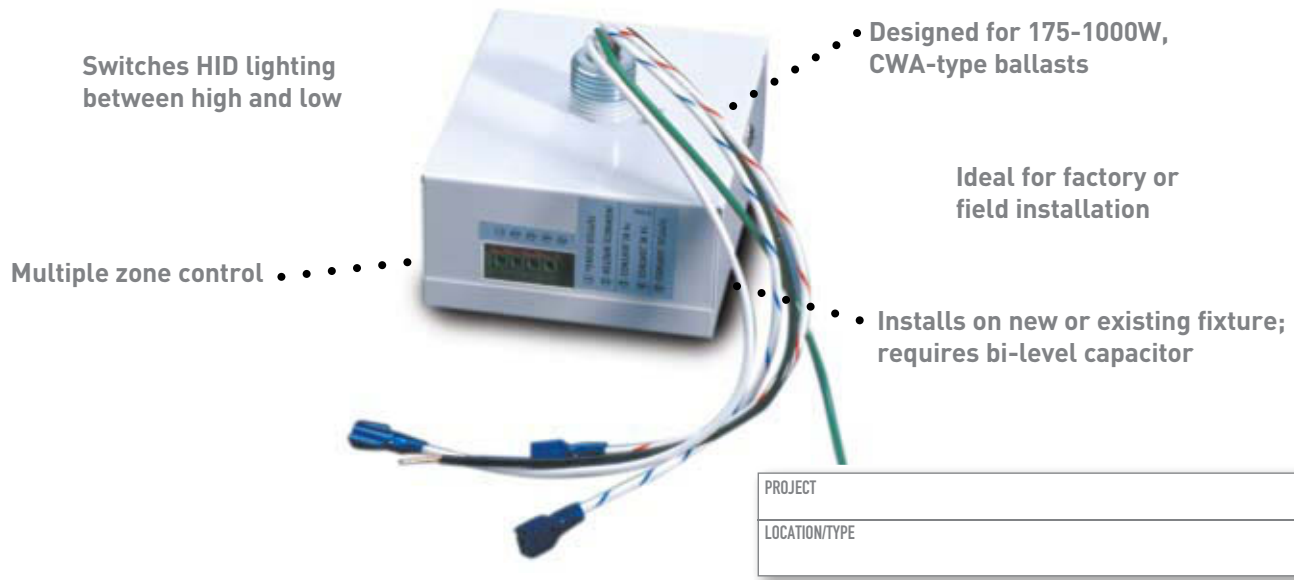
Catalog No.	Fixture/Ballast/Lamp Type
<input type="checkbox"/> DM-100-xxxH	250 - 1000 W High Pressure Sodium
<input type="checkbox"/> DM-100-yyyM	175 - 1000 W Metal Halide
<input type="checkbox"/> DM-100-zzzMP	150 - 750 W Metal Halide Pulse Start

xxx = 250, 400 or 1000
 yyy = 175, 250, 400 or 1000
 zzz = 150, 175, 200, 250, 320, 350, 400 or 750

*To order the correct DM-100, information about specific lamp and ballast characteristics is needed. Please refer to the DM-100 qualification questionnaire in the installation instructions, available at www.wattstopper.com, or contact technical support at 800-879-8585



DM-105 Bi-level HID Controller



Product Overview

Description

WattStopper's DM-105 is a control module that switches High Intensity Discharge (HID) lighting based on occupancy or other control signals. By providing bi-level (high/low) control, it eliminates the restrike time problem associated with on/off control of HID lighting. The module installs on new or existing fixtures and requires a bi-level capacitor, which is installed inside the fixture.

Operation

The DM-105 works with a 24 VDC controlling device, such as an occupancy sensor, daylighting controller, or time switch, and switches HID lighting between high and low. For example, with an occupancy sensor, the DM-105 will switch lights to a lower, energy saving level when the space is unoccupied. When occupants return, lights immediately return from low to high. The DM-105 provides 24 VDC to the controlling device. It utilizes a dual capacitor and capacitor switching to achieve the bi-level control.

Zone Control Option

Multiple DM-105s can be linked together and then be controlled from one device. In addition, multiple DM-105s can connect to multiple controlling devices in a variety of configurations. This gives users the means of combining control methods to customize HID control for each space.

Applications

The DM controller can be used in many facilities such as warehouses, gymnasiums, parking garages, and retail applications. Since the DM-105 integrates with all standard WattStopper occupancy sensors, daylighting and timing products, a broad range of configurations is available to address different lighting control needs.

Features

- Installs on new or existing fixtures and requires a bi-level capacitor installed inside the fixture
- Utilizes zero crossing to protect relay and increase product life
- Maintains full light level for 15 minutes during power up to prevent lamp damage
- Provides instant full light output when DM unit is signalled
- Multiple modules can be linked together and switched from one controlling device
- Multi-zone control is possible through connecting DM-105s to multiple controlling devices in a variety of configurations; lets users customize control for each space
- The DM-105 features an easy installation, mounting directly on to the HID fixture using four wires to the capacitor and ballast

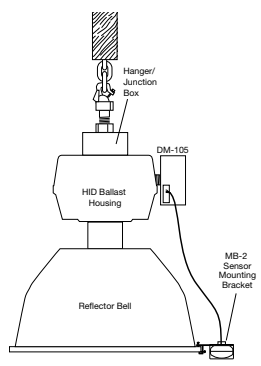


Specifications

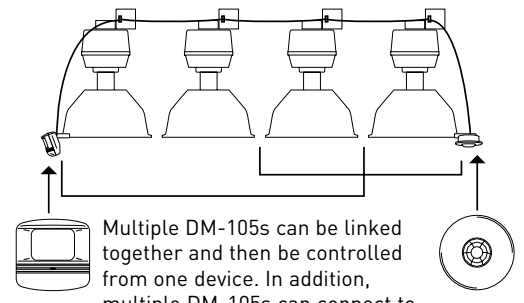
- For use with Metal Halide (MH), Metal Halide Pulse Start (MHPS), and High Pressure Sodium (HPS) lamps
- Operates only with Constant Wattage Autotransformer (CWA) type ballasts (compatible with all CWAs); contact WattStopper or ballast manufacturer for capacitor values appropriate for ballast
- Dual (bi-level) capacitor can be supplied by WattStopper or fixture manufacturer
- Maximum load rating of 1000 watts for MH, HPS or MHPS lamps
- More than 100 individual DM-105 units can be connected in series
- Lamp lighting levels can be reduced to 50% of full power
- Relay rating: 15A at 250 VAC
- Operating temperature range: -10-113°F (-23-45°C)
- Maximum current output of 15mA at 24 VDC
- Dimensions: 1.8" x 3.8" x 4.6" (47mm x 97mm x 116mm) H x W x D, < 2 lbs.
- UL and cUL listed
- Five year warranty

Wiring & Installation

Mounting Options

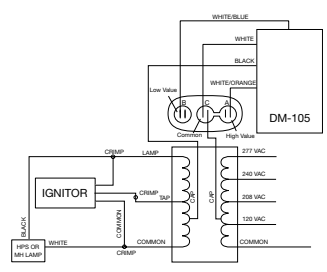


Multi-Zone Control

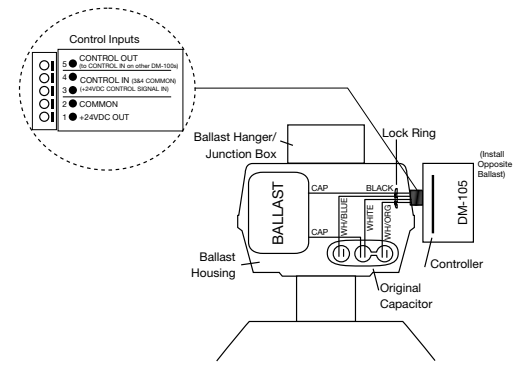


Multiple DM-105s can be linked together and then be controlled from one device. In addition, multiple DM-105s can connect to multiple controlling devices in a variety of configurations.

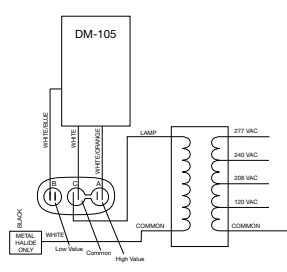
Typical Wiring w/HPS or MAPS Ballasts



Wiring



Typical Wiring w/Metal Halide



Dual control inputs enable connection of different controlling devices simultaneously

Ordering Information

Catalog No.	Description
<input type="checkbox"/> DM-105	Bi-level HID Control Module (does not include capacitor)
<input type="checkbox"/> MB-1	Occupancy Sensor Bracket for high-bay or industrial setting mounting
<input type="checkbox"/> MB-2	Occupancy Sensor Bracket for HID metal reflector bell (without cover) mounting

Note: For DM control modules with a bi-level capacitor included, see DM-100 cut sheet

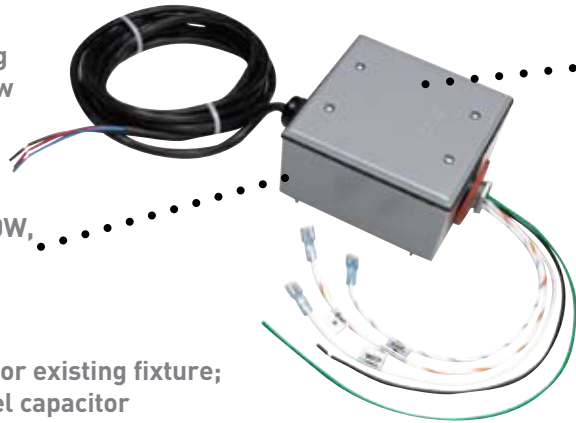


DM-115-WP Outdoor Bi-level HID Controller

Switches HID lighting between high and low

Designed for 175-1000W, CWA-type ballasts

Installs on new or existing fixture; requires bi-level capacitor



Weatherproof box

Ideal for wet or damp locations, such as parking lots

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's DM-115-WP Outdoor Bi-level HID Controller is a control module designed for outdoor use that switches High Intensity Discharge (HID) lighting based on occupancy or other control signals. By providing bi-level (high/low) control, it eliminates the restrike time problem associated with on/off control of HID lighting. The module installs on new or existing fixtures and requires a bi-level capacitor, which is installed inside the fixture.

Operation

The DM-115-WP works with a 24 VDC controlling device. For example, when used with an EW Outdoor Motion Sensor, the DM-115-WP will switch lights to a lower, energy-saving level when the space is unoccupied. When occupants return, lights immediately return from low to high. The DM-115-WP provides 24 VDC to the controlling device. It utilizes a dual capacitor and capacitor switching to achieve the bi-level control.

Weatherproof Box

The DM-115-WP is housed in a rugged weatherproof box for outdoor mounting applications. The box is able to handle wet and damp locations, and fluctuating weather conditions and temperatures.

Applications

The DM controller can be used in many wet or damp applications such as parking lots, parking garages, tennis courts, swimming pools and sport parks. Since the DM-115-WP integrates with all standard 24 VDC WattStopper occupancy sensors, a broad range of configurations are available to address different lighting control needs.

Features

- Installs on new or existing fixtures; requires bi-level capacitor installed inside fixture
- Enclosed in weatherproof box for use in wet and damp applications
- Utilizes zero crossing to protect relay and increase product life
- Maintains full light level for 15 minutes during power up to prevent lamp damage
- Provides instant full light output when DM unit is signalled
- Multiple modules can be linked together and switched from one controlling device
- Easy installation, mounting directly on HID fixture and connecting to capacitor and ballast via four wires

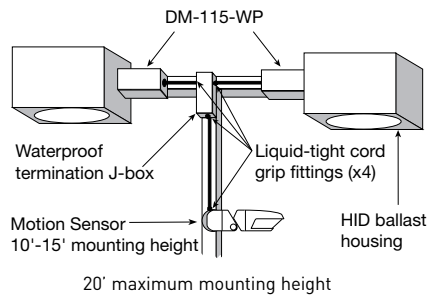


Specifications

- For use with Metal Halide (MH), Metal Halide Pulse Start (MHPS), and High Pressure Sodium (HPS) lamps
- Operates only with Constant Wattage Autotransformer (CWA) type ballasts (compatible with all CWAs); contact WattStopper or ballast manufacturer for capacitor values appropriate for ballast
- Dual (bi-level) capacitor can be supplied by WattStopper or fixture manufacturer
- Maximum load rating of 1000 watts for MH, HPS or MHPS lamps
- Lamp lighting levels can be reduced to 50% of full power
- Includes 10 feet of outdoor rated low voltage wire to connect sensor
- Relay rating: 10A at 250 AC
- Operating temperature range: -40-131°F (-40-55°C)
- Maximum current output: 15mA at 24 VDC
- Dimensions: 4.5" x 4.5" x 2.52" (114.3mm x 114.3mm x 64mm) H x W x D, < 2 lbs.
- UL and cUL listed (rated UL1598 as a raintight device)
- Five year warranty

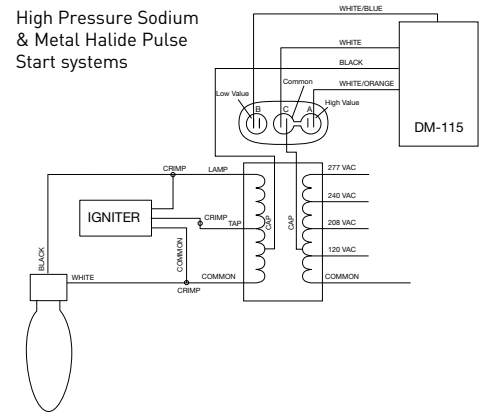
Wiring & Installation

Mounting Options

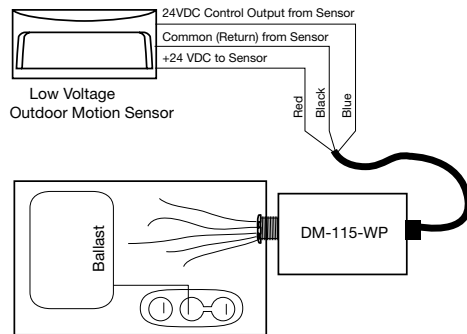


NOTE: capacitor, junction boxes and extra outdoor-rated wire not included

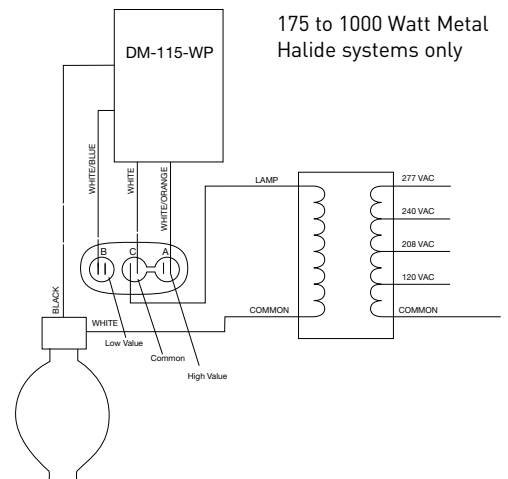
Typical Wiring w/HPS or MHPS Ballasts



Wiring with an Outdoor Sensor



Typical Wiring w/Metal Halide



Ordering Information

Catalog No.	Description
<input type="checkbox"/> DM-115-WP	Weatherproof bi-level HID Control Module (does not include capacitor)
<input type="checkbox"/> EW-205-24-W	270° Outdoor/Indoor PIR Motion Sensor, Arctic white
<input type="checkbox"/> EW-205-24-G	270° Outdoor/Indoor PIR Motion Sensor, Architectural grey

NOTE: for recommendation on capacitor values, see the DM-100 cut sheet or contact technical support at 800-879-8585.





Daylighting controls maximize your energy savings

WattStopper leads the industry in innovative automatic daylighting controls. With daylighting on the rise in sustainable building practices, automatic daylighting control

is one of the most effective ways to capture the potential energy savings. Choose from open and closed loop technologies, ON/OFF switching and dimming controls, single or multiple zone and system or stand-alone controls.



Table of Contents

Daylighting Controls Matrix	F3
Daylighting Controls Overview	F5-F7
Designing with Daylighting Controls	F8-F14
Product Details	F15-F27



Daylighting Controls

Product Matrix



	LS-102	LS-301	LCO-203	LCD-203
ON/OFF Switching	X		X	
Dimming Control		X		X
Single Zone	X	X		
Up to Three Zones			X	X
Open Loop			X	X
Closed Loop	X	X		
Adjustable Deadband	25, 50, 75, 100%		10-80% per channel	
Adjustable Setpoint(s)	ON Setpoint 1-850 fc OFF Setpoint 25%, 50%, 75%, 100%, above the ON Setpoint	20-60fc	5-60fc for each channel	5-60fc for each channel
Adjustable Time Delay	3, 10, 20, and 30 minutes		ON, 5-60 seconds per channel OFF, 3-60 minutes per channel	programmable dimming, 5-60 sec. per channel, fade rates optional cutoff delay from 0-20 minutes
Automatic Setpoint Calculation	X			
LED Status Indicator	X			
LCD Status Display	X		displays photosensor readings	displays photosensor readings
Manual Control Option	X	remote adjusts target levels	wall switch	wall switch
Programming				
Menu Driven Programming	X		X	X
Remote Programming		X		
Use with these products				
Power Pack	WattStopper power pack	WattStopper power pack	BT-203	BT-203
Photosensor	included in controller	included in controller	LS-290C	LS-290C
Handheld Remotes		LSR-301-S and LSR-301-P		
System options				
Wall Switch	low voltage wall switch		LS-3C	LS-5C
Enclosures			LS-8E and LS-12E	LS-8E and LS-12E
Sample Applications				
	private office cafeteria warehouse lobby hallway	private/open office classroom restaurant retail, library	open office space lobby, atrium warehouse, retail gymnasium	open office space classroom restaurant, retail library





Daylighting Controls Overview

As an abundant, renewable energy source, daylight can be one of the most effective means of saving precious, nonrenewable energy resources — and reducing your energy costs. Harnessing its power to replace electric lighting with automatic daylighting controls provides additional benefits:

- sustainability
- energy savings
- more attractive commercial properties for leasing and tenancy retention
- compliance with energy codes



Daylighting Controls for Title 24

California's Title 24-2008 code revision includes mandatory requirements for daylighting controls in areas defined as daylight zones (primary sidelit, secondary sidelit, and skylit).



A wide variety of spaces benefit from the combined use of daylight and electric lighting. Examples of potential applications include:



Educational

- Libraries
- Classrooms
- Gymnasiums
- Cafeterias

Retail

- Ambient lighting
- Signage
- Perimeter display lighting
- Skylit areas

Public Buildings

- Libraries
- Recreational facilities
- Public works

Commercial

- Open and private offices
- Perimeter spaces
- Conference rooms
- Corridors

Capture Energy Savings

According to the US EPA, automatic daylighting controls can boost energy savings by up to 40%.

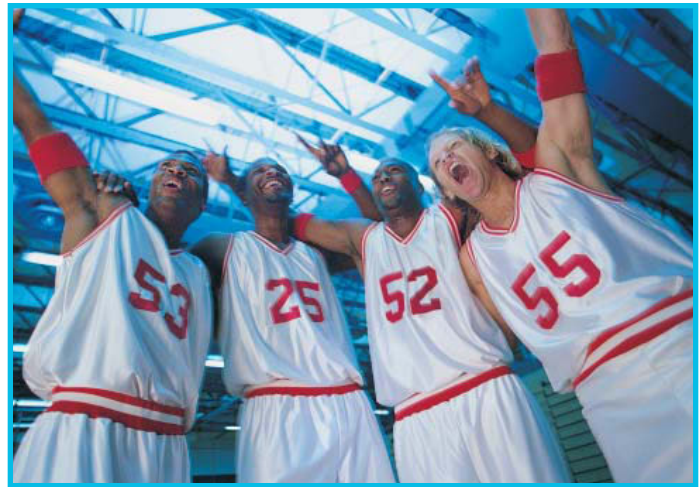


Daylighting Controls Overview

How do daylighting controls work?

Photocells measuring either the level of daylight contribution or the overall combined natural and electric lighting level are the key component of all daylighting controls. The information from the photocells enables the photosensor to switch or dim selected lights in either one or multiple zones to achieve an optimum lighting level based on user-defined parameters. Manual overrides may also be included for fine tuning lighting levels in selected applications.

The following pages explain the issues to consider when specifying daylighting controls, the kinds of controls available, and the pros and cons of each type of control for various applications, as well as the terminology specific to daylighting controls.



Daylighting controls may also be integrated with other lighting controls, like occupancy sensors or scheduled controls, for maximum flexibility and energy savings.



Designing with Daylighting Controls

Three primary issues to consider when selecting daylighting controls are:

- Daylight characteristics of the space
- Lighting design
- Space usage



By examining these variables, you will be able to decide how the controlled lights should operate, including whether to dim or switch the lights and how many zones of control you need.

Daylight Characteristics

Areas that receive a great deal of daylight with minimal fluctuations throughout the day are good candidates for switching controls. An area with a daylight contribution of less than two to four times the required electric lighting level is a better candidate for dimming, as daylight can augment electric lighting, but is not sufficient to replace it entirely.

Where daylight is distributed evenly throughout the space, a single control zone will work. Spaces with unevenly distributed daylight require multiple control zones. Sidelit applications are prime examples of areas that will benefit from multiple control zones to properly balance light levels.



Designing with Daylighting Controls

Lighting Design

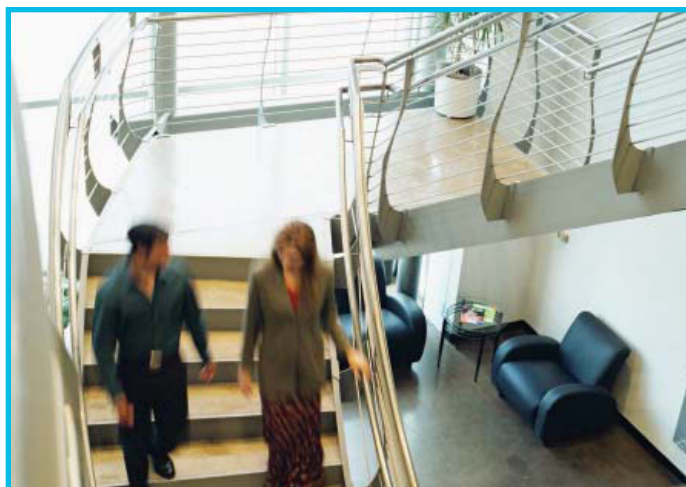
Lighting fixture location and whether lamps are visible to occupants are important factors.

Lights outside of occupants' normal view can be switched without causing a distraction. Lamps that are visible to occupants are best dimmed.

Designers can control selected lamps within a group of fixtures or selected fixtures as a control zone to adjust in relation to daylight level in order to optimize the overall lighting.

Space Usage

The kinds of tasks being performed in a space are also important. Areas of transient activity, such as lobbies and hallways, tend to be the ones best suited to switching. Where changing light levels might be a distraction to occupants, such as in offices or classrooms, dimming is the preferred choice.



Note: Building codes also play a role in the lighting and control design and may dictate the use of dimming or multi-channel devices. For instance, California's Title 24-2008 requires multi-level controls for areas within a defined "daylight zone."





Selecting the Appropriate Product

Once you have decided between switching or dimming, you will have answers to most of the questions that come up when specifying daylighting controls. To choose the right product, you also need to decide whether:

- Stand-alone or system controls are desired
- One or multiple control zones are needed
- Open loop or closed loop technology will be used

Stand-alone or System Controls

Daylighting control can be achieved using a simple stand-alone unit that dims or switches a single group of lights or by using a multi-channel system. The benefits of the stand-alone devices include simple installation and low cost, and such devices are often the ideal choice for small rooms or spaces with a balanced daylight contribution. Multi-channel systems, in addition to offering multiple zone control capability, generally offer more adjustment options and are especially suited to larger spaces and spaces with uneven daylight contribution.



Single or Multiple Control Zones

The choice of single or multiple zones is interrelated with the selection of stand-alone or system controls. Generally, stand-alone devices will be preferred for smaller spaces with uniform daylight characteristics, while larger spaces with less even daylight contribution will benefit from being grouped into multiple control zones.



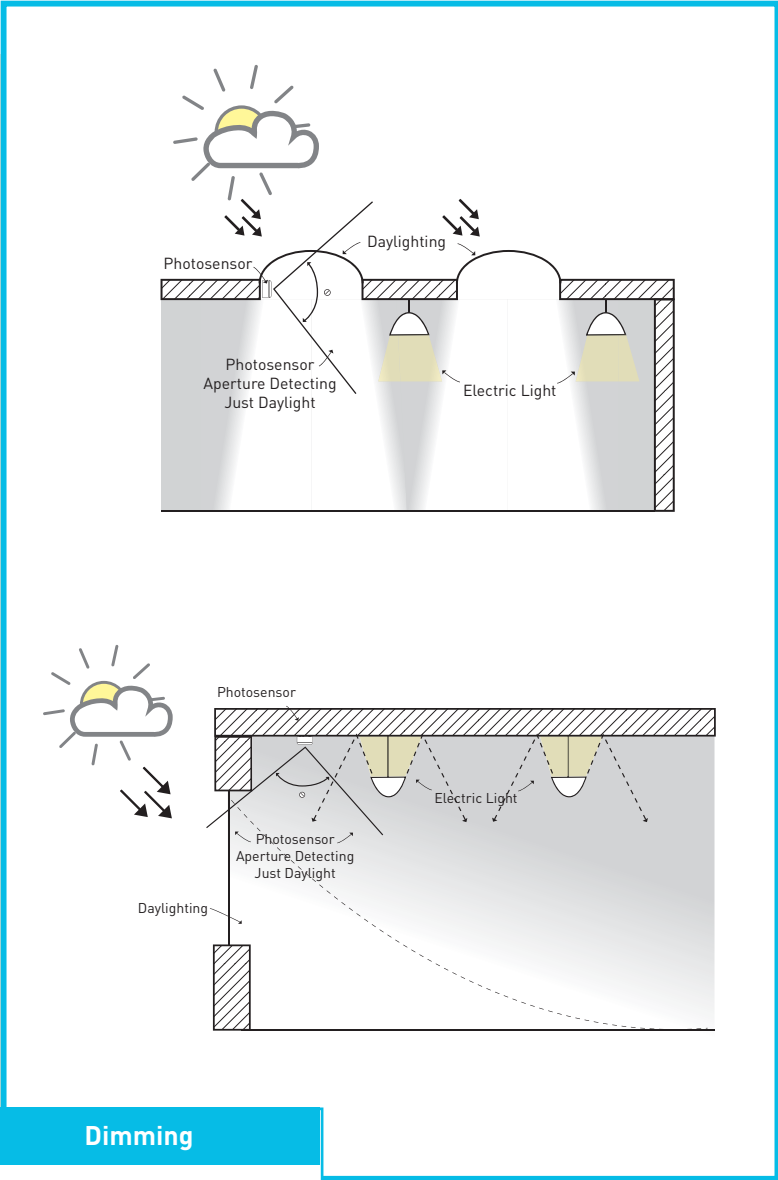


Designing with Daylighting Controls

Open or Closed Loop Technology

This consideration focuses on how the device measures the daylight contribution in a space. A photosensor for open loop control measures only the daylight, and does not incorporate the electric lighting in its reading. Alternately, closed loop controllers measure the ambient light level in a space.

Open loop controllers like the LCD-203 and the LCO-203 may control multiple channels. Closed loop controls such as the LS-102 and the LS-301 Dimming Photosensor with its sliding setpoint, provide superb control when dimming is used, but are limited to single zone control.



	On/Off Switching	Dimming
Single Zone	LS-102 (closed loop)	LS-301 (closed loop)
Multi Zone	LCO-203 system (open loop)	LCD-203 system (open loop)



Daylighting Control Considerations

Photosensor Placement

Photosensor positioning is critical to the success of a daylighting control project. Photosensors are typically ceiling or skylight mounted to best sample illumination levels. The optimal location depends upon the choice of the control system.

Photosensors for closed loop systems should be in a location representative of the controlled space, avoiding direct illumination from windows, skylights, or lighting fixtures.

Photosensors for open loop systems should measure only the daylight contribution. They should face toward windows or up into skylights and be positioned so that they do not view the electric lighting.

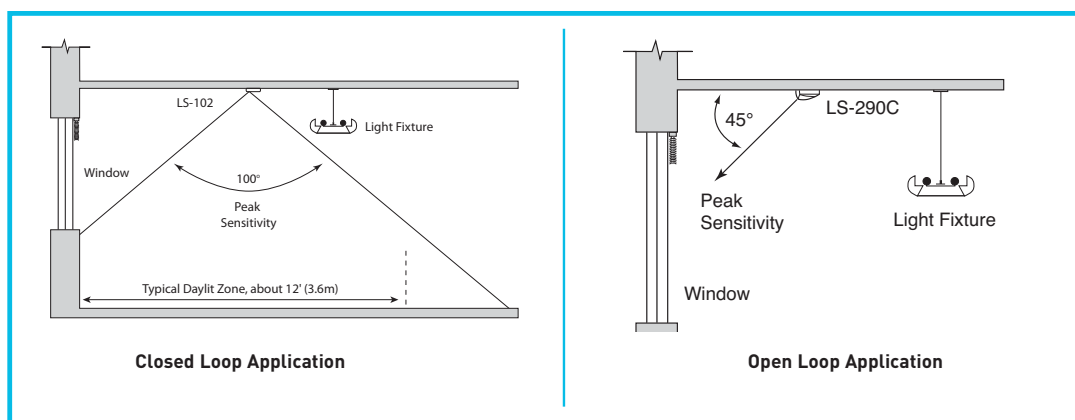
Ballast Compatibility

Daylight dimming control systems send a 0-10VDC control signal and can control a wide variety of industry standard ballasts.

Integrating Daylighting Control with Other Control Devices

Daylighting controls can be simply and effectively combined with time-scheduled devices or occupancy-based controls. WattStopper's Digital Lighting Management product line offers an ideal range of solutions for such an approach, enabling easy integration of different control strategies to maximize energy performance. Refer to Section A for more information about DLM daylighting solutions.

Daylighting controls can also be combined with other control devices to reduce peak load. When signaled to load shed, the controllers reduce lighting to an alternate level. The signal may be generated by a relay panel or from a device operated by the utility.



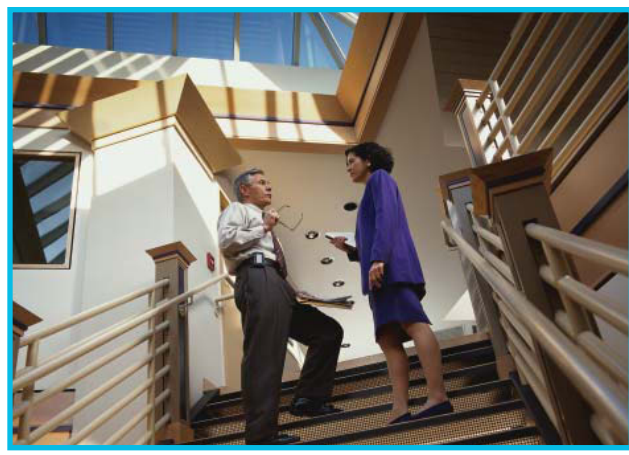


Designing with Daylighting Controls

Daylighting Control Settings

Daylight Factor

The daylight factor is the ratio of the daylight illuminance in a zone in a given space due to the light received directly or indirectly from the sky.



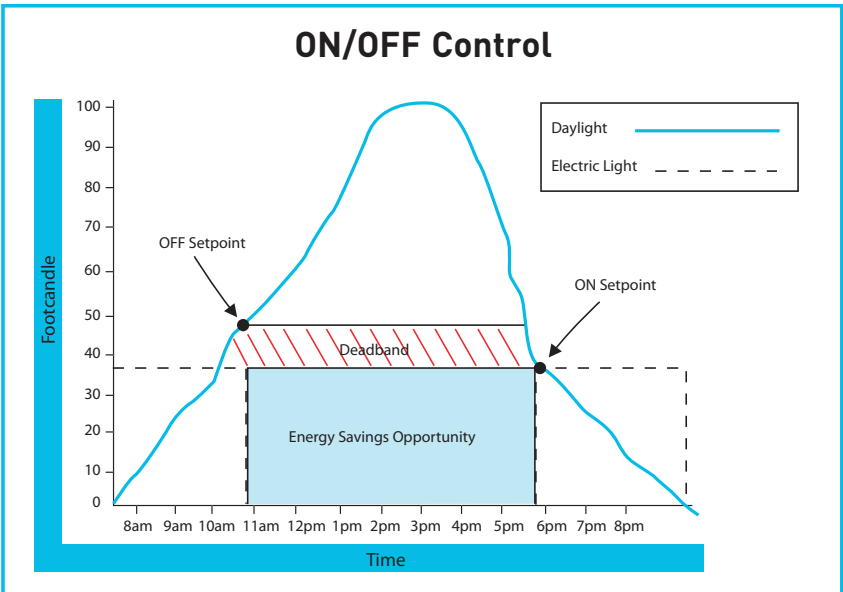
ON/OFF Daylighting Control

ON/OFF Setpoint Levels

The ON/OFF setpoint levels are the user-defined daylight levels that must be reached before the lights are turned on or off.

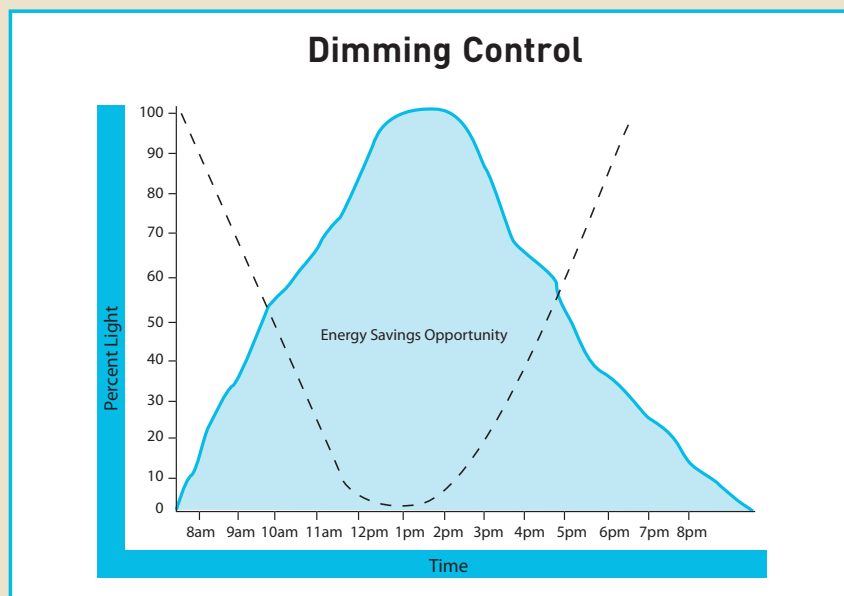
Deadband

The deadband is a control margin above the fixed ON setpoint or below the fixed OFF setpoint in which minute variations in light levels will not trigger an ON or OFF response from the electric lights.



ON/OFF Time Delay

The ON/OFF time delay is a time-based interval that must elapse after the setpoint has been reached before the controlled lighting will shut on or off. Deadband settings and time delays are used to prevent unwanted lamp cycling.



Dimming Daylighting Control

Target Level

The target level is the user-defined daylight level that must be reached before the lights are dimmed up or dimmed down.

Ramp Up/Fade Down

The ramp up or fade down is the number of seconds it takes to go from the minimum to the maximum control output level and vice versa.

Cut-off

The cut-off is the number of minutes it takes to shut the lights off after the zone dims to minimum. Setting the cut-off helps prevent unwanted cycling of electric lighting.



LightSaver® LS-102 Switching Photosensor

Single zone, on/off switching photosensor

Automatic setpoint selection

Easy-to-read LCD display and LED status indicators



Automatic startup/calibration

Digital multi-band photosensor

Multiple user-adjustable control parameters

PROJECT
LOCATION/TYPE

Product Overview

Description

The LS-102 Daylighting Controller is a single zone, on/off switching device designed to be installed in a closed loop application. A self-contained 24 VDC device with an extended range of 1-1400 footcandles, the LS-102 requires a low voltage power pack to operate. The controller consists of an advanced digital multi-band photosensor, an on-board microcontroller, and an LCD display. This photosensor is positioned behind a 100° cone that cuts off unwanted light, preventing false triggers.

Operation

Setpoints can be selected either automatically or manually. When ambient light levels exceed the off setpoint, the controller turns lighting off. It will turn lighting systems back on when the on setpoint is triggered. Because of its automatic calibration feature, many applications require little or no adjustment of the settings. The LS-102 can be paired with a low voltage wall switch to enable manual override, or with an occupancy sensor to enable its 'Hold On While Occupied' feature.

Features

- Easy-to-read LCD display prompts installer through set-up
- Four user-adjustable parameters: on setpoint, off setpoint, off setpoint time delay, and 'Hold On While Occupied' Mode (if wired with an occupancy sensor)
- Test mode overrides programmed time delay, enabling installer to verify accuracy of settings
- Control load status verification allows testing and confirmation that wiring is correct
- Form factor designed to eliminate misalignment
- LED status indicator identifies when device is in override or test mode, or if device has switched lights on or off
- Mounting options for top- or side-lit applications
- One-hour manual override capability (when wired with low voltage, pushbutton wall switch)
- Programmable in most daylight conditions
- Qualifies for use on ARRA-funded public works projects

Automatic Startup/Calibration

The LS-102 features automatic setpoint calculations. The device initiates a procedure to select an appropriate value for the on setpoint. As part of the process, the controlled load is first turned on for a brief interval to warm up the lamps, and then switched off. This process is repeated several times. At the completion of the calibration, a new value for the on setpoint will have been selected. Other adjustable settings include deadband and time delay settings. If desired, the deadband can be adjusted to a value of 25, 50, 75, or 100 percent above the setpoint. The time delay can be adjusted to 3, 10, 20 or 30 minutes.

Applications

The LS-102 Daylighting Controller can be used to control any type of lighting: incandescent, fluorescent, compact fluorescent (CFL), HID, and LEDs. The devices work in peripheral offices, skylit areas, cafeterias, warehouses and any other indoor area with natural light contribution.

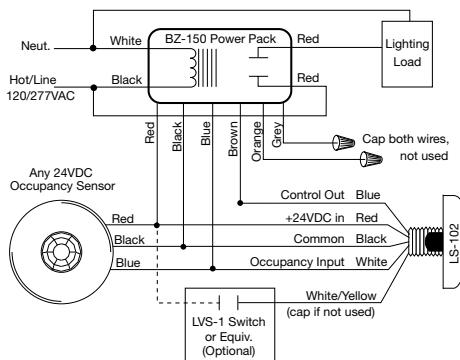


Specifications

- Automatic setpoint calculation
- Digital Multi-Band Photosensor Range: 1-1400 footcandles
- ON Setpoint Range: 1-850 footcandles
- Status Indicator: Multi-function green LED
- Power Requirements: 12/24 VDC; 7 mA typical
- Output Signal: 24VDC; maximum 120 mA
- Location: Suitable for dry interior locations
- Environment: 32-120°F (0-49°C), less than 90% relative humidity
- Dimensions: 2.4" diameter x 0.7" deep (61mm x 17mm)
- Five year warranty
- UL listed

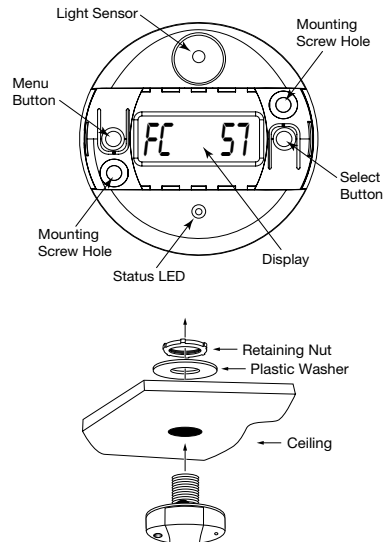
Wiring, Installation & Location

Wiring Diagram

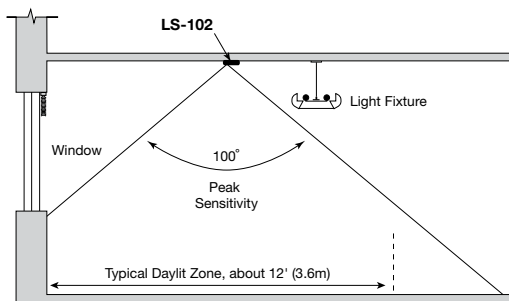


For other wiring diagrams, please visit the CAD Resource Center at www.wattstopper.com

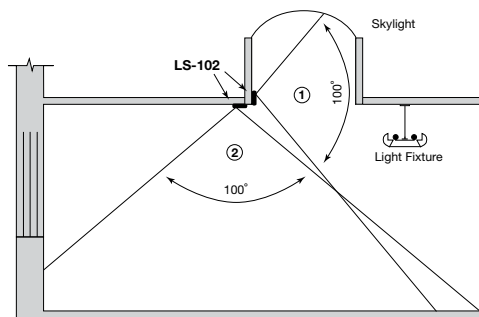
Mounting and LED Display



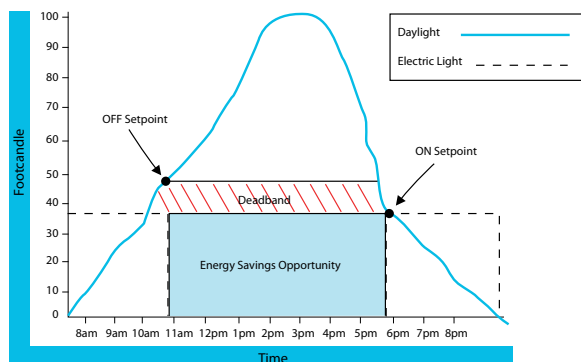
Side Lighting Application



Top Lighting Application



Deadband Level Chart



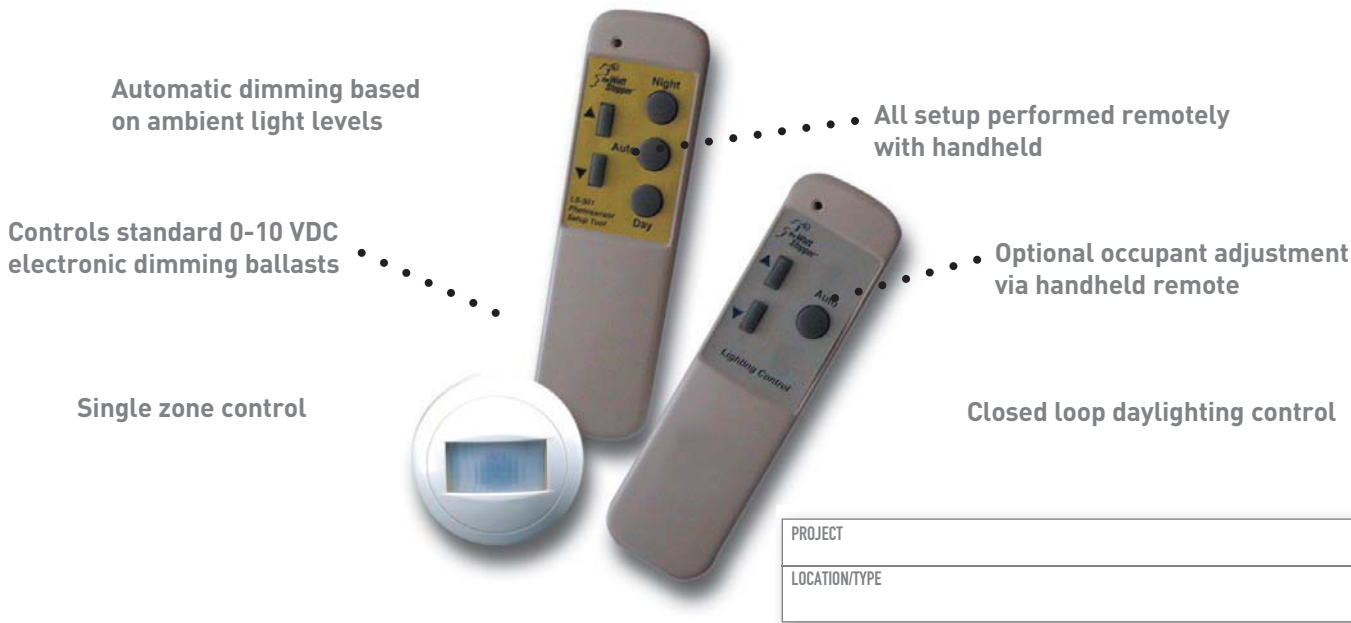
If the LS-102's photosensor lighting level drops below the on setpoint, the lights will remain on. If the sensor's lighting level rises above the off setpoint, the LS-102 will automatically turn the lights off. If the sensor's lighting level remains in the predetermined deadband range (25%, 50%, 75% or 100%) the lighting will be passive until the sensor's level reaches the high or low setpoints.

Ordering Information

Catalog No.	Description	Footcandle Range	Deadband Adjustment Range
<input type="checkbox"/> LS-102	On/Off Switching Photosensor	1-1400 fc	25%, 50%, 75% & 100% above on setpoint
<input type="checkbox"/> LS-102-U	On/Off Switching Photosensor, ARRA-compliant	1-1400 fc	25%, 50%, 75% & 100% above on setpoint
<input type="checkbox"/> LS-102-FTA	On/Off Switching Photosensor, ARRA-compliant (FTA exception)	1-1400 fc	25%, 50%, 75% & 100% above on setpoint



LightSaver® LS-301 Dimming Photosensor



Product Overview

Description

The LightSaver LS-301 is a closed loop, ceiling mount, low voltage indoor photosensor that works with standard, 0-10 VDC electronic dimming ballasts to dim lighting as daylight increases.

Operation

The LS-301 mounts on a ceiling and utilizes a spectral filtering system to measure daylight and electric light levels. A closed loop daylighting system, the LS-301 measures the total light level from daylight and electric light in the controlled area to adjust electric lighting levels. As the daylight contribution increases, the lights dim down. The photosensor utilizes sliding setpoint control, which responds to the different spatial distribution qualities of electric light and daylight. The LS-301 calculates the required light level for current daylight contribution based on two setpoints. One represents the target level when no daylight is present (night setpoint) and the other when significant daylight is present (day setpoint).

Adjustment via Handheld Remote Control

All LS-301 adjustments are made with one of two handheld remotes. The FDR-301-S provides five buttons for initial set-up, which is easily completed by first raising or lowering electric light levels to desired levels, then programming this target level into the photosensor. The LSR-301-P provides three buttons for occupants to adjust light levels. With this optional tool, users can increase target light levels by up to 25% or reduce them to the lamp/ballast minimum level. Pressing the "Auto" button returns the control to programmed levels.

Applications

The LS-301 is designed to blend into its surroundings when installed in any environment. It provides one zone of daylighting control in a private office or classroom. In these applications, the LS-301 can be combined with an occupancy sensor. Often, it is possible for the LS-301 to share a single power pack with occupancy sensor(s).

Features

- Provides precise control of lighting to maintain desired light level
- Extremely linear photocell response with greater than 1% accuracy
- Designed to measure light as the human eye perceives it, eliminating "overreporting" illumination levels provided by daylight
- California Title 24-2008 compliant
- Separate handheld remote controls for setup and occupant adjustment to prevent tampering
- Boosts energy savings by reducing maximum lamp output, often resulting in a 20% reduction or more compared with lights at full output
- Achieves lumen maintenance by holding target light level as lamp output decreases over time
- Qualifies for use on ARRA-funded public works projects

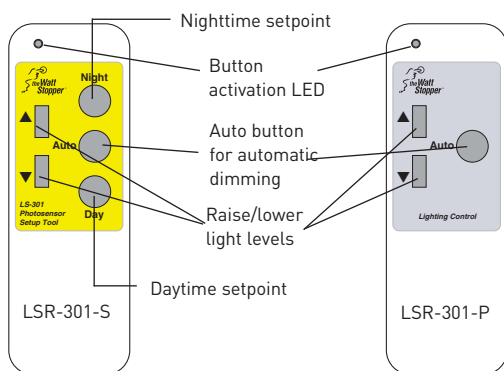


Specifications

- Full range dimming: .2 VDC (minimum) to 10 VDC (100% lighting) output voltage
- Current consumption: 30 mA @ 24 VDC
- In typical applications, setpoints are adjustable from 20-60 footcandles (210-640 lux)
- Controls up to 50 standard dimming ballasts in one zone
- Sensor leads: gray and violet to ballast, red and black to 24 VDC
- Dimensions: 2.35" diameter. x 0.875" depth (60mm x 22mm), threaded piece extends 1.25" (31.8mm) from back, fits .5" knockout
- Five year warranty

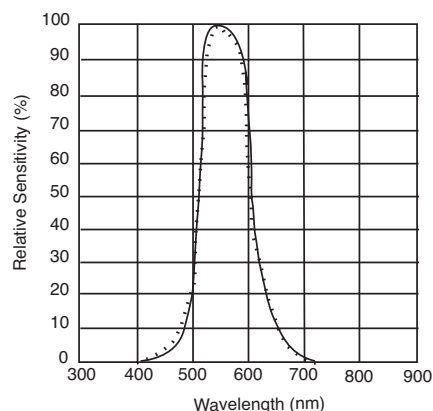
Product Controls

Remote Controls



Remote handheld (above left) enables easy set-up while optional occupant remote provides adjustability for individual lighting preferences.

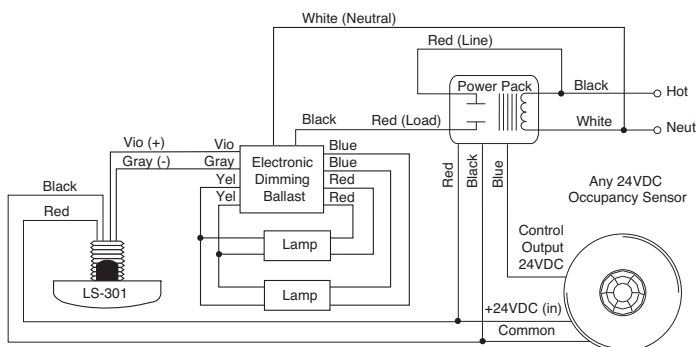
Spectral Response Curve



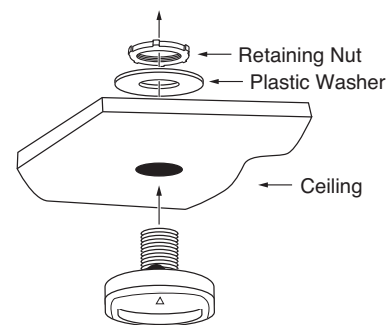
The spectral response of the LS-301 photocell closely matches the sensitivity of the human eye.

Wiring & Installation

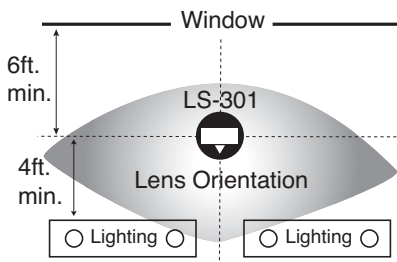
Wiring



Mounting and Installation



Coverage



Placement Guidelines

- Mount photocell between 6 and 12 feet (1.8m - 3.7m) from window.
- Do not mount directly above direct/indirect pendant fixtures. Mount at least 4 feet (1.2m) from pendant fixtures.

Ordering Information

Catalog No.	Description	Input Voltage
<input type="checkbox"/> LS-301	Dimming Photosensor	24 VDC
<input type="checkbox"/> LS-301-U	Dimming Photosensor, ARRA-compliant	24 VDC
<input type="checkbox"/> LS-301-FTA	Dimming Photosensor, ARRA-compliant (FTA exception)	24 VDC
<input type="checkbox"/> LSR-301-S	Setup Remote Control (2 AAA batteries included)	
<input type="checkbox"/> LSR-301-P	Occupant Remote Control (2 AAA batteries included)	

LS-301 works with WattStopper power packs



LightSaver® LCD-203 Dimming Controller

Low voltage automatic dimming control module

Three control channels with individually programmable settings

Push-button programming and automated setup



LCD display of photosensor readings

Optional wall switch override for manual control

Open loop control

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's LightSaver LCD-203 daylighting controller provides automatic dimming control for fluorescent and HID fixtures. It is an open loop controller providing up to three zones of control from a single photocell. It also integrates with occupancy sensors and accommodates individual occupant overrides via an optional wall switch.

Operation

The LCD controller is part of a system that includes the LS-290C Photosensor and the BT-203 Power Pack. Each of the LCD controller's three channels has a 0-10 VDC output and connects to its own dedicated relay in the power pack. The photocell measures daylight and transmits the data to the controller. Each channel in the controller raises or lowers light levels, while the respective relays in the power pack switch lighting on or off. When daylight is adequate for a channel to fully dim, lights switch off after an adjustable time delay. This capability can be disabled for zones where lighting should remain on.

Multiple Channel Control

To achieve balanced dimming control, users group fixtures receiving comparable daylight levels into three control groups or zones. Zones closest to the daylight source are dimmed the most, while zones further away from the daylight source dim less. Unused channels may be disabled.

Applications

The LCD controller is suitable for a wide range of applications, such as open office areas, classrooms, retail stores, and any application with skylights. It is particularly suitable for applications that require independently dimming fixtures in adjoining zones. The load shedding capability can further reduce light levels during critical periods or during periods of reduced occupancy. If an occupancy sensor is used, its non-occupancy signal initiates dimming by the LCD controller prior to turning lighting off.

Features

- Simplified setup and calibration
- Optional dimming wall switch (LS-5C) provides manual dimming and ON/OFF control so users can adjust lighting as desired
- Seven individually adjustable parameters for each channel: setpoint, minimum output, maximum output, ramp rate, fade rate, cutoff time delay, load shed limit
- DIN rail mounting
- Menu-driven, push-button programming without special tools
- Automatic internal calculation for dimming requirements of individual channels for simplified setup
- California Title 24-2008 compliant
- Qualifies for use on ARRA-funded public works projects

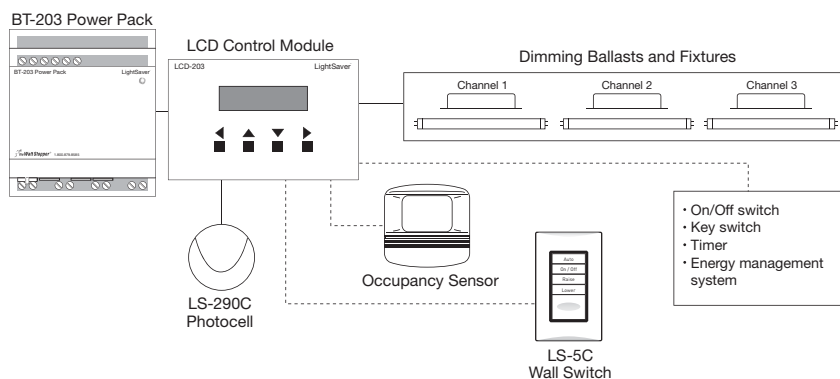


Specifications

- Class 2 low voltage device
- Compatible with standard 0-10 volt dimming ballasts
- Controls up to 50 0-10 VDC ballasts per dimming channel
- Photocell range from 3 - 6,000 footcandles
- Programmable dimming and fade rates from 5-60 seconds
- Selectable cut off delay from 0-20 minutes or can be disabled
- Programmable minimum output from 0-4VDC
- Programmable maximum output from 6-10VDC
- Load shed output from 0-10 VDC
- Setpoint range from 5-60 fc
- 24VDC supply voltage provided by BT-203
- Control output voltage to ballasts 0-10VDC
- Dimensions: 3.5" x 2.81" x 2.5" (89mm x 71mm x 64mm) L x W x D
- UL and CUL listed
- Five year warranty

System Layout & Wiring

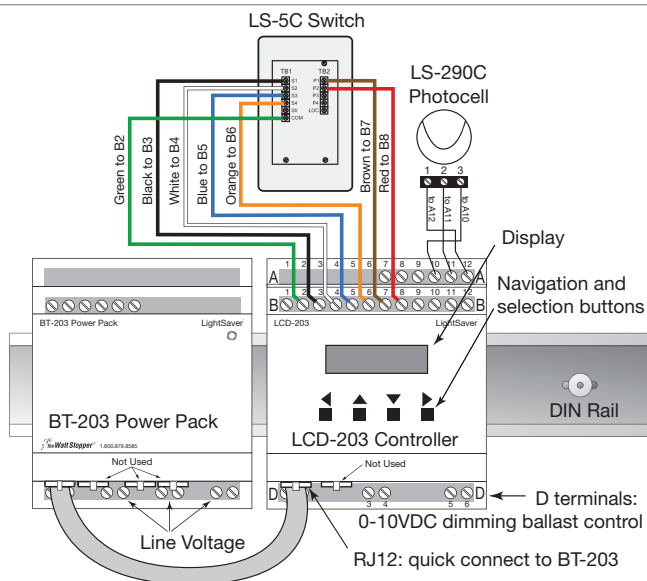
LCD System Layout



The LCD Dimming Control System consists of an LCD control module, an LS-290C Photosensor, and a BT-203 power pack.

Users may add options to the system to increase functionality, such as the LS-5C wall switch and occupancy sensors.

LCD-203 Wiring and Settings

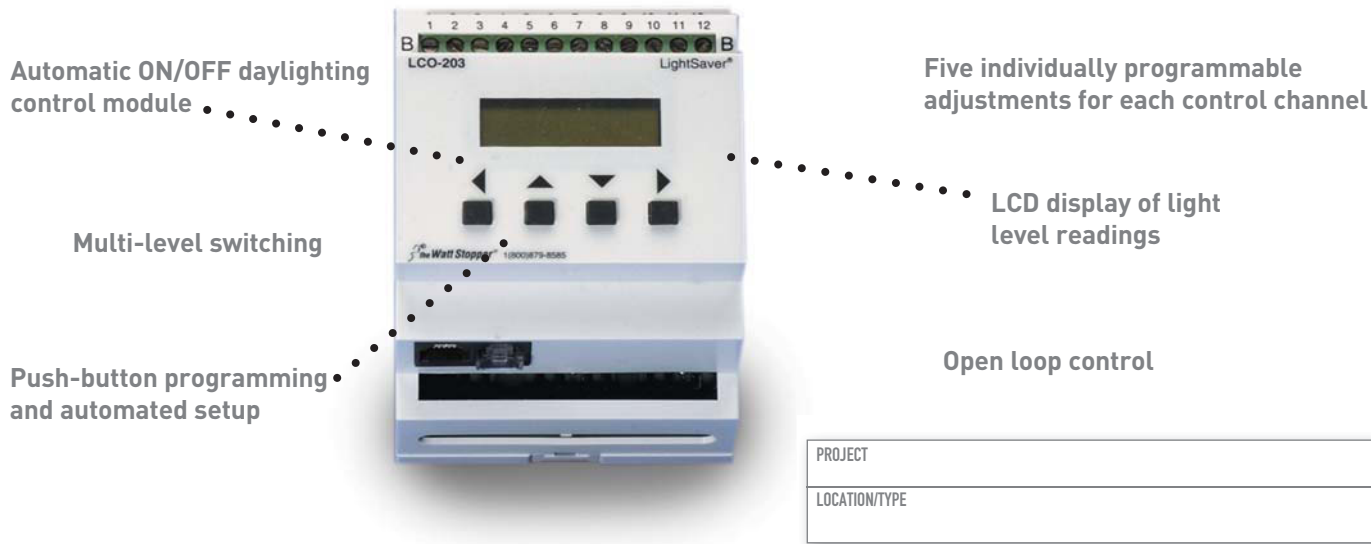


Ordering Information

Catalog No.	Description	Voltage	Control Channels
<input type="checkbox"/> LCD-203	Dimming control module	24 VDC	three
<input type="checkbox"/> LS-290C	Photosensor 3 - 6000 footcandle range		
<input type="checkbox"/> BT-203	Power Pack		
Dimming control system options:			
Product group	Catalog No.	Description	
Switch	<input type="checkbox"/> LS-5C	Wall Switch	
Enclosure	<input type="checkbox"/> LS-E8	Screw-cover enclosure 8" x 8" x 4" (203.2mm x 203.2mm x 101.6mm)	
	<input type="checkbox"/> LS-E12	Screw-cover enclosure 12" x 12" x 4" (304.8mm x 308.8mm x 101.6mm)	



LightSaver® LCO-203 ON/OFF Switching



Product Overview

Description

WattStopper's LightSaver LCO-203 provides automatic ON/OFF switching control for fluorescent and HID fixtures. It is an open loop controller providing up to three zones of control from a single photocell.

Operation

The LCO controller is part of a system that includes the LS-290C photocell and the BT-203 Power Pack. Each of the LCO controller's three channels connects directly with its own dedicated relay in the power pack. The photocell measures daylight and transmits these data to the LCO controller. When daylight is adequate, the LCO controller switches lighting off. When daylight diminishes below the desired setpoint, the LCO controller switches lighting back on. The ON and OFF delays for each channel are individually adjustable. The LCO controller integrates with occupancy sensors as well as an optional wall switch for manual overrides.

Features

- Simplified setup and calibration
- Optional wall switch (LS-3C) provides ON/OFF control so users can adjust lighting
- Five individually adjustable parameters for each channel: ON delay, OFF delay, deadband, setpoint, load shed setpoint
- Menu-driven, push-button programming without special tools
- Automatic internal calculation of daylight contribution for each channel for simplified setup
- DIN rail mounting
- Suitable for mounting in low voltage section in control panel
- California Title 24-2008 compliant
- Qualifies for use on ARRA-funded public works projects

Multiple Channel Control

Multi-channel control enables gradual, multi-level switching of electric lighting as the daylight contribution increases. The LCO can be used to either switch off individual rows of lamps in a luminaire or entire luminaires. This gradual reduction is likely to provide more balanced lighting while being less distracting to occupants.

Applications

Spaces such as warehouses, storage areas, atriums, lobbies, and open office areas will benefit from use of the LCO controller.

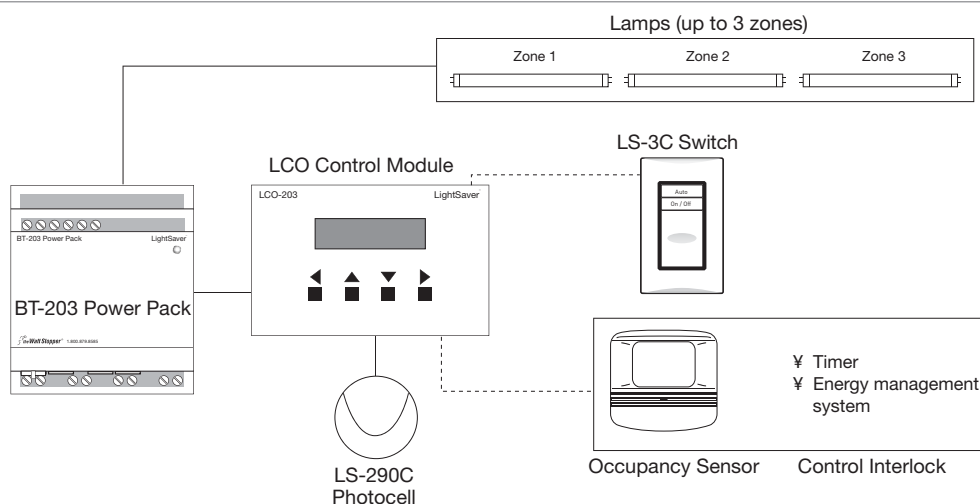


Specifications

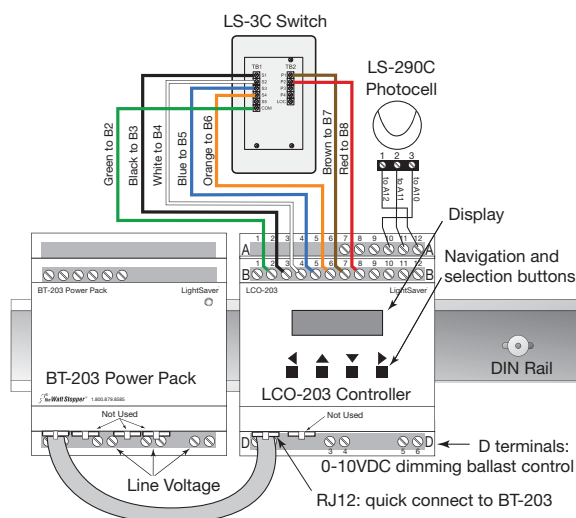
- Class 2 low voltage device
- Photocell range from 3 - 6,000 footcandles
- Setpoint range from 5-60 fc
- Programmable deadband from 10%-80%
- Adjustable ON delay from 5-60 seconds
- Adjustable OFF delay from 3-60 minutes
- Load shed setpoint from 5-60 fc
- 24VDC supply voltage provided by BT-203
- Dimensions: 3.5" x 2.81" x 2.5" (89mm x 71mm x 64mm) L x W x D
- UL and CUL listed
- Five year warranty

System Layout & Wiring

System Layout



LCO-203 Wiring and Settings



Ordering Information

Catalog No.	Description	Voltage	Channels
<input type="checkbox"/> LCO-203	ON/OFF switching control module	24 VDC	three
<input type="checkbox"/> LS-290C	Photosensor		
<input type="checkbox"/> BT-203	Power Pack		
ON/OFF control system options:			
Product group	Catalog No.	Description	
Switch	<input type="checkbox"/> LS-3C	Wall Switch	
Enclosure	<input type="checkbox"/> LS-E8	Screw-cover Enclosure 8" x 8" x 4" (203.2mm x 203.2mm x 101.6mm)	
	<input type="checkbox"/> LS-E12	Screw-cover Enclosure 12" x 12" x 4" (304.8mm x 308.8mm x 101.6mm)	

LightSaver® LS-290C Photosensor

Photosensor for
LightSaver LCD-203 and
LCO-203 Controllers

Footcandle range
from 3 - 6000



Mounts vertically or
horizontally

Architecturally attractive
design

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's LightSaver LS-290C open loop Photosensor provides the daylight data necessary for operation of the LCD-203 and LCO-203 day-lighting control systems.

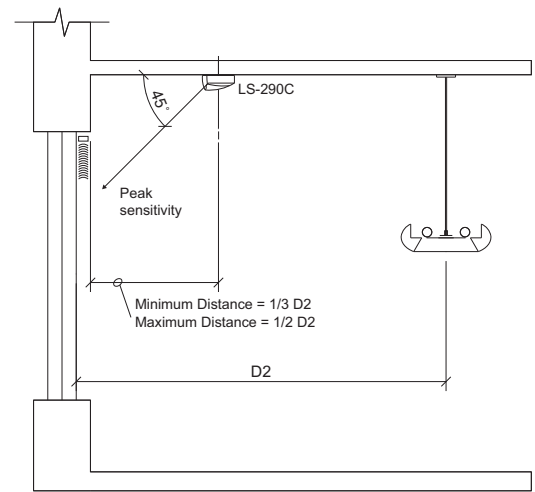
Operation

Utilizing a photodiode element, the LS-290C continuously measures ambient light levels. The Photosensor is positioned to 'see' incoming daylight from either a window or skylight without seeing electrical light. Users select the applicable footcandle range by a jumper beneath the front cover.

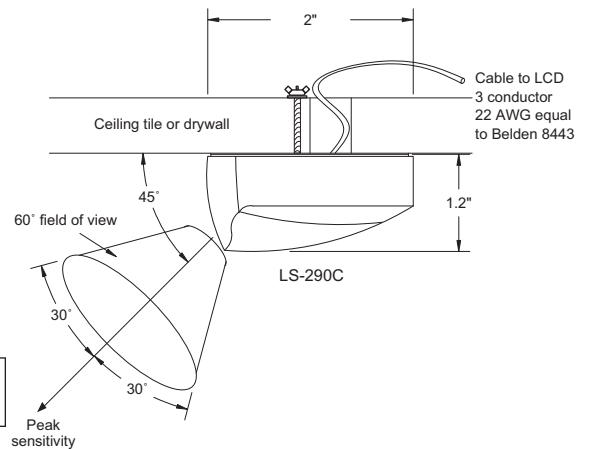
Specifications

- Three jumper-selectable footcandle ranges: 3-300 fc, 30-3000 fc, 60-6000 fc
- Low voltage, Class 2 device
- Protective hard plastic cover
- 3 conductor 22 AWG twisted cable equal to Belden 8443
- Maximum wire length is 250 feet (76.2m)
- Dimensions: 2" diameter x 1.2" deep (50.8mm diameter x 30.5mm deep)
- UL and CUL listed
- Five year warranty

Photosensor Placement



Installation and Wiring



Ordering Information

Catalog No.	Description	Footcandle range
<input type="checkbox"/> LS-290C	Open Loop Photosensor	3 - 6000 (32 - 64,000 lux)

Qualifies for use on ARRA-funded public works projects.



LightSaver® BT-203 Power Pack

Power pack for LightSaver LCO-203 and LCD-203 controllers

Three relays for switching line voltage

120/230/277 VAC



Quick connect to LCD-203 and LCO-203 control modules

DIN rail mount

PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's LightSaver BT-203 Power Pack powers the LightSaver LCO-203 and LCD-203 control modules.

Specifications

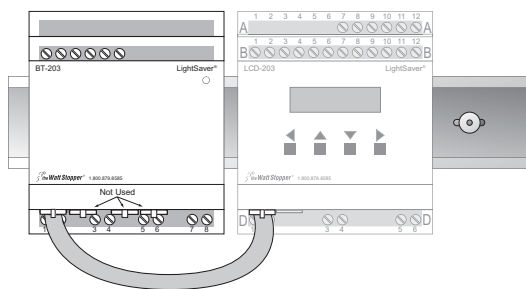
- Voltages: 120/230/277 VAC, 50/60 Hz
- Secondary power: 1000 mA @ 24 VDC (for control of larger loads, contact technical support)
- 3 normally open relays, 620 Va @ 120 or 277 VAC
- Dimensions: 2.76" x 3.57" x 2.36" (70.0mm x 90.5mm x 60.0mm) L x W x D
- UL and CUL listed
- Five year warranty

Operation

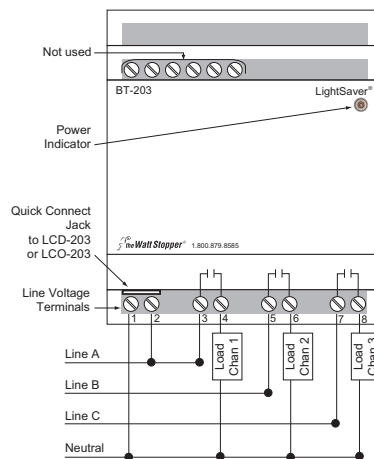
The BT-203 supplies low voltage power to LCO and LCD controllers. It connects via a quick connect cable. It has three normally open relays used to switch line voltage in response to signals from the connected controller. In addition, the power pack has an automatically resetting fuse. If the current drawn from the BT-203 exceeds the specifications, the +24VDC output will turn off and the LED will turn off. Upon removal of the fault condition and primary power, the BT-203 will restore the power.

Wiring & Mounting

Mounting



Wiring



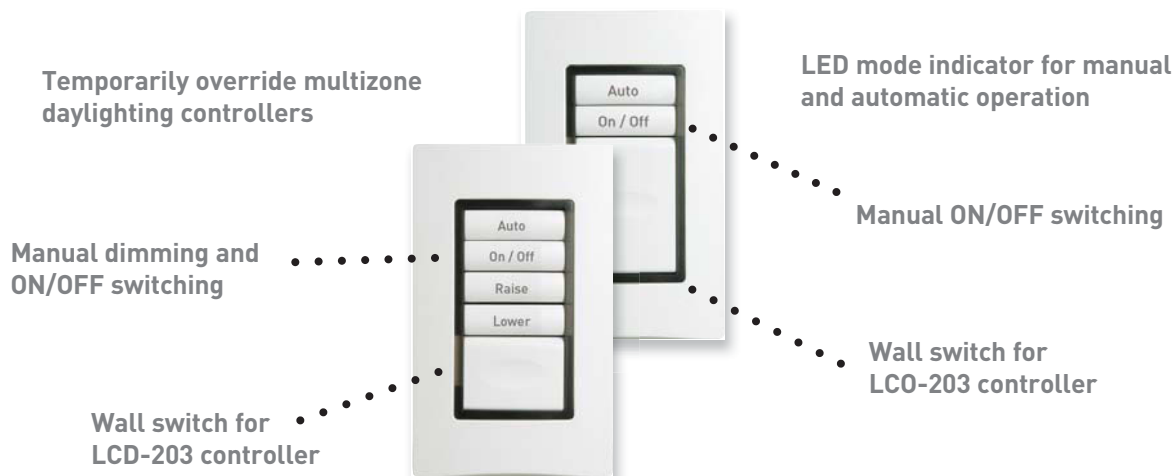
Ordering Information

Catalog No.	Description	Input Voltage	Output
<input type="checkbox"/> BT-203	Power Pack	120/230/277 VAC, 50/60 Hz	1000mA @ 24 VDC

Qualifies for use on ARRA-funded public works projects.



LightSaver® LS-3C and LS-5C Wall Switches



PROJECT

LOCATION/TYPE

Product Overview

Description

LightSaver Wall Switches allow occupants to temporarily override WattStopper's automatic multizone daylighting control systems. The LS-3C provides ON/OFF switching for the LCO-203 and the LS-5C provides manual dimming and ON/OFF switching when used with LCD-203 controller.

Operation

The LS-3C has two operating buttons (Auto and On/Off) and the LS-5C has four operating buttons (Auto, On/Off, Raise and Lower). An LED indicates whether the controller is operating the lights automatically or is being manually overridden. Pressing the On/Off button on either device temporarily puts the controller into manual mode and switches the lights ON or OFF. Pressing and holding the Raise or Lower button on the LS-5C increases or decreases the light level. All three channels are dimmed or switched in unison. Pressing the Auto button switches the controller back into automatic operation.

Features

- Work with LCO-203 and LCD-203 multizone daylighting controllers
- Low voltage wiring makes it safe and inexpensive to add switches wherever they are needed
- Mount in standard single gang box
- Terminal screws simplify wiring
- Screwless cover plate enhances aesthetics

Combined with Occupancy Control

When an LS-3C or an LS-5C is used with a controller and an occupancy sensor, the manual override terminates when occupancy ends. When occupancy resumes, the controller automatically resumes automatic control.

Applications

LightSaver Wall Switches are ideal for applications such as classrooms, offices, and conference rooms where occupants may need to customize the lighting levels for specific activities. Up to four LS-3C or LS-5C switches may be wired to an LCD-203 or LCO-203 for multi-way switching.

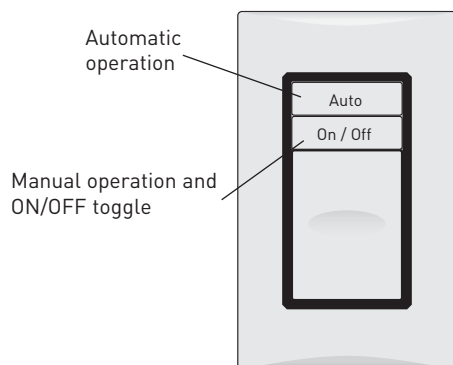


Specifications

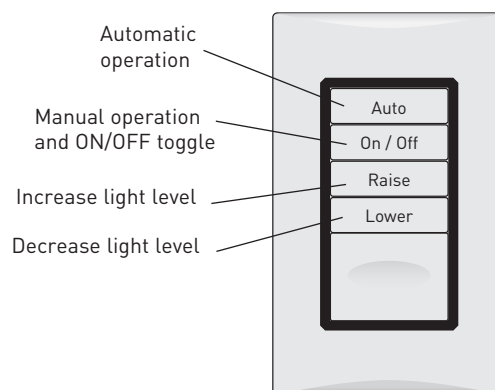
- Low voltage, class 2 device
- Maximum wire length from controller is 150 feet (45.72m)
- Dimensions: 2.75" W x 4.5"H x .94" D (69.8mm x 114.3mm x 23.9mm)
- Environment: 32-139°F (0-60°C), 5-95% relative humidity, non-condensing
- Color: white
- One year warranty

Controls

LS-3C Operation

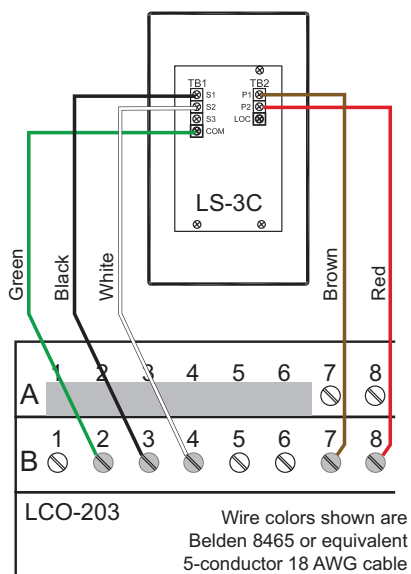


LS-5C Operation

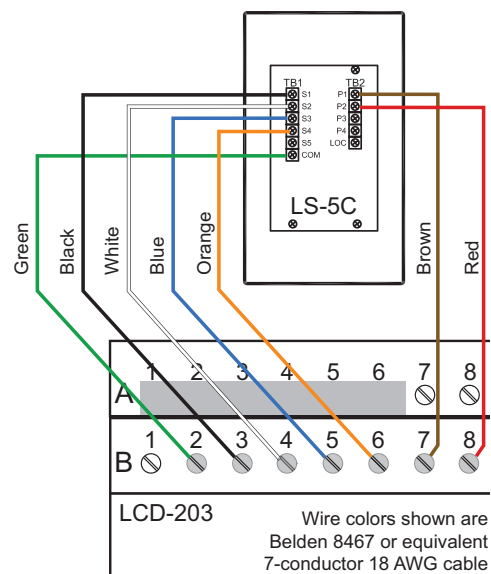


Installation & Wiring

LS-3C Wiring to LCO-203



LS-5C Wiring to LCD-203



Both the LS-3C and the LS-5C mount in a standard single-gang back box.

Ordering Information

Catalog No.	Description
<input type="checkbox"/> LS-3C	Wall Switch for LCO-203
<input type="checkbox"/> LS-5C	Wall Switch for LCD-203



LightSaver® Enclosures



PROJECT
LOCATION/TYPE

Product Overview

Description

LightSaver Enclosures are suitable for use in housing LightSaver control system components, including control modules (LCO or LCD), and the BT Power Pack. Rated NEMA 1, they are suitable for dry indoor locations, such as electrical rooms or closets.

Specifications

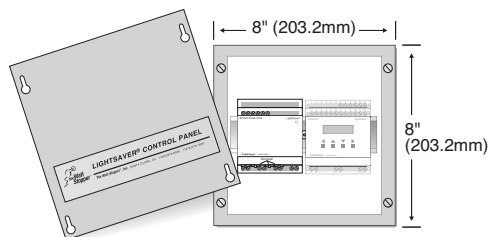
- NEMA 1 rated for dry indoor locations
- Surface mount
- Single pre-mounted DIN rail in 8" x 8" size; dual pre-mounted DIN rail in 12" x 12" size
- Dimensions: 8" x 8" x 4" (203.2mm x 203.2mm x 101.6mm) or 12" x 12" x 4" (304.8mm x 304.8mm x 101.6mm) LxWxD

Features & Applications

Available in two sizes, the enclosures feature screw covers. The 8" x 8" sized enclosure contains a single pre-mounted DIN rail suitable for holding one row of LightSaver control modules. For instance, it can hold an LCO-203 paired with a power pack. The larger enclosure is 12" x 12", and contains two rows of pre-mounted DIN rail. It can house multiple LightSaver control modules as well as power packs and relays.

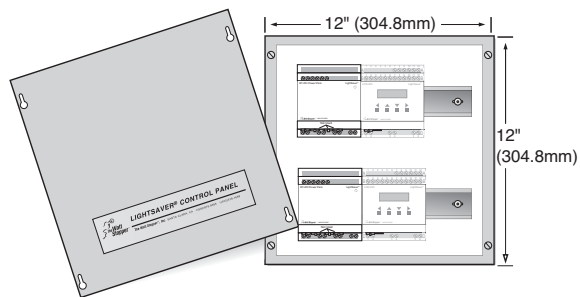
Enclosure Examples

LS-E8 LightSaver Enclosure



Provides a row of DIN rail for mounting one LCO-203 or LCD-203 and one BT-203 power pack

LS-E12 LightSaver Enclosure



Includes two rows of DIN rail for mounting 3 LCO-203s or LCD-203s and 3 BT-203s

Ordering Information

Catalog No.	Description	Dimensions (length x width x depth)
<input type="checkbox"/> LS-E8	Screw Cover Enclosure	8" x 8" x 4" (203.2mm x 203.2mm x 101.6mm)
<input type="checkbox"/> LS-E12	Screw Cover Enclosure	12" x 12" x 4" (304.8mm x 304.8mm x 101.6mm)







Do more with lighting spend less on energy

There's a whole world of control between on and off. Now, you can rely on WattStopper dimmers and

fan speed controls to access this world of control possibilities, maximizing energy savings while achieving ambiance, safety and convenience.

Dimmers and Fan Speed Controls

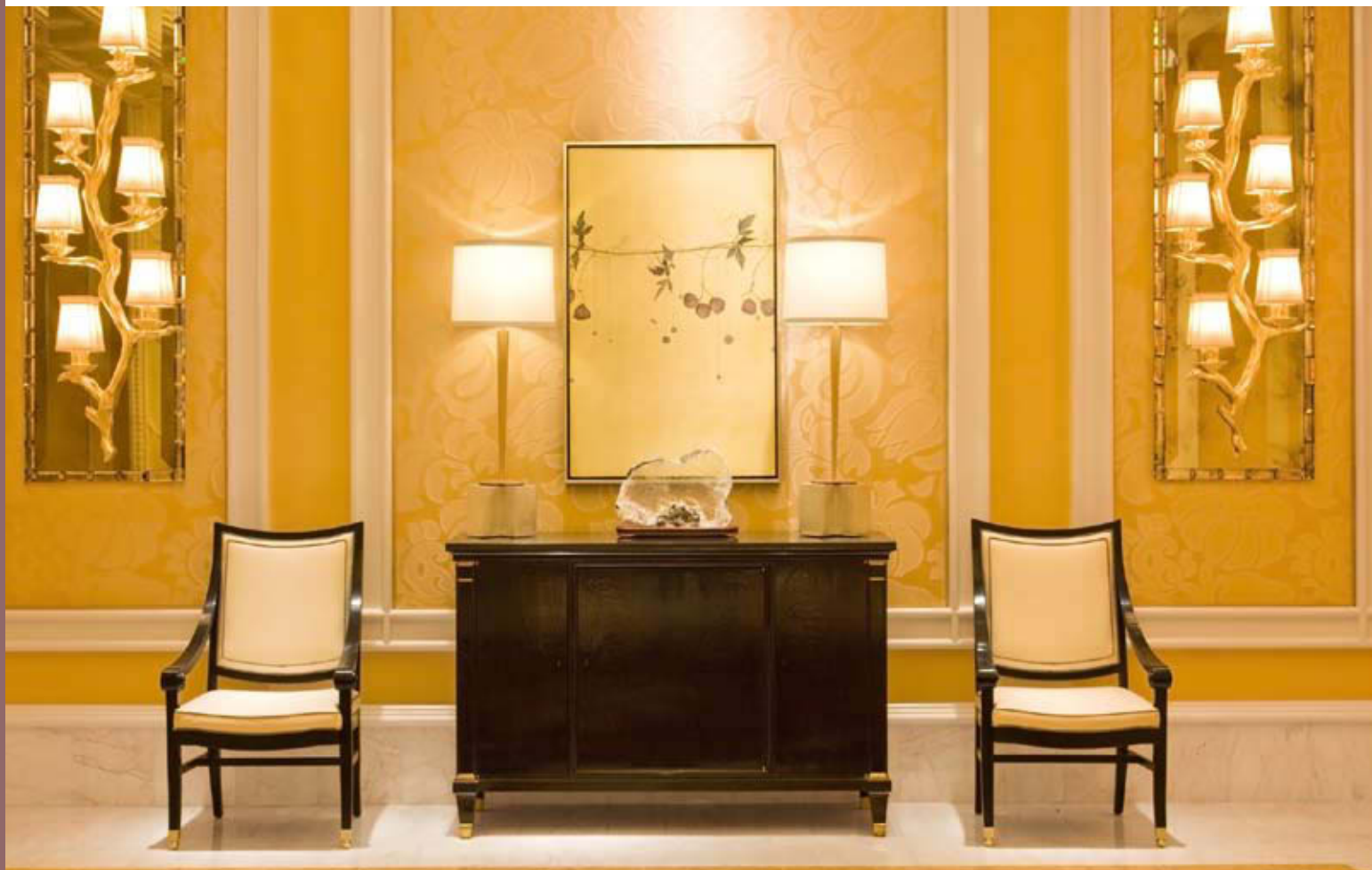


Table of Contents

Introduction	G1 - G4
Features and Benefits	G5 - G6
Design Considerations	G7 - G8
Product Matrix	G9 - G10
Product Details	G11 - G54



Extending the benefits of lighting control between on and off



Now you can supplement automatic on/off lighting controls with easily adjustable light level control for enhanced energy efficiency. Establish the perfect light level for presentations. Transform a sunny cafe appropriate for the lunch crowd into a romantic dining environment with the touch of a button.

But you don't need to sacrifice your energy performance goals. After all, it's no secret that dimming saves electricity regardless of the type of load controlled. Most electronic ballasts offer energy savings approximately proportional to the reduction in light output.* Energy savings from dimming incandescent lamps are almost as high, and dimming can extend incandescent lamp life up to 20 times.

*IESNA Lighting Handbook, 9th Edition p. 6-42



Increase energy savings

Dimmers save energy even at minimal dimming levels.

Reduce lighting costs

Dimming increases lamp life which reduces replacement, labor and maintenance costs.

Enhance productivity

Individual controls allow occupants to adjust lighting in work spaces.

Foster sustainable practices

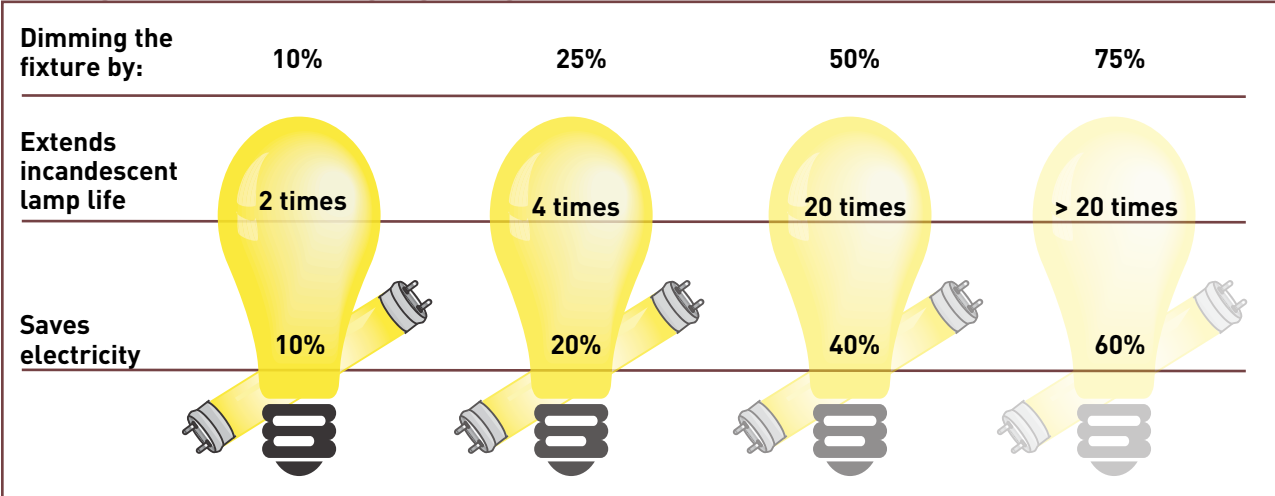
Reducing lamp replacement along with energy consumption extends resources and harmonizes with sustainable building practices.

Provide ambiance

Adjustable lighting levels create comfort, tranquility and beautiful, inviting spaces.



Savings from dimming lighting





Robust design, range of choices

WattStopper's new dimmers are available in one spec-grade and three designer product families. Each boasts distinctive features while maintaining a similar, stylish look and feel.

Operation is easy thanks to intuitive design. Fan speed controls are included in all product families.

Architectural Dimmers

Rugged, durable architectural dimmers provide higher dimming capacity

- Preset dimmers with large on/off switch
- Slide-to-off model for 0-10 volt dimming
- Slide-to-off fan speed control
- Colors: White, Ivory, Light Almond, Grey and Black



No derating required on many models

Because dimmers can be ganged together without removing fins, installation is quicker and easier

Personalized labeling

User-friendly customized labeling eliminates the guesswork of which dimmer controls what load

Multi-way models

Most models can be used in single-pole and multi-way applications, simplifying product selection

Specialized wallplate system

Products include everything necessary for ganging multiple controls – no need to order wallplates separately

Low-end trim

Magnetic low voltage (MLV) and fluorescent dimmers include a low-end trim to compensate for variations in transformers and ballasts

High-end trim

Incandescent dimmers include a high-end trim to reduce the maximum output, saving energy and extending lamp life



Designer Choices

Choose from three designer product families, sharing core functionality as well as appealing aesthetics:

- Preset control
- Multi-way control options
- Fan speed control
- Six designer colors



Touch Dimmers

- Full range dimming from multiple locations
- Large multi-function control switch
- LED light level indication
- Universal model for multiple load types
- Last level recall



Paddle Dimmers

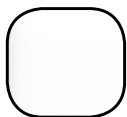
- Large on/off switch with linear slide control
- Preset control: lights come on to level set by the slider
- Fluorescent and MLV low-end trim



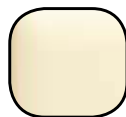
Slide Dimmers

- Preset models: large switch and elegant slide control (lights come on to level set by slider)
- Dual slide-to-off model
- MLV low-end trim

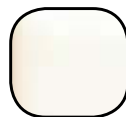
Colors



White



Ivory



Almond*



Light Almond



Grey



Black

*Not available in Architectural series



Designing with dimming and fan speed controls

You're probably already using occupancy sensors, lighting control panels, or Digital Lighting Management for automatic on/off control. Now it's easy to specify fan speed controls and dimmers, and realize the energy savings between on and off.

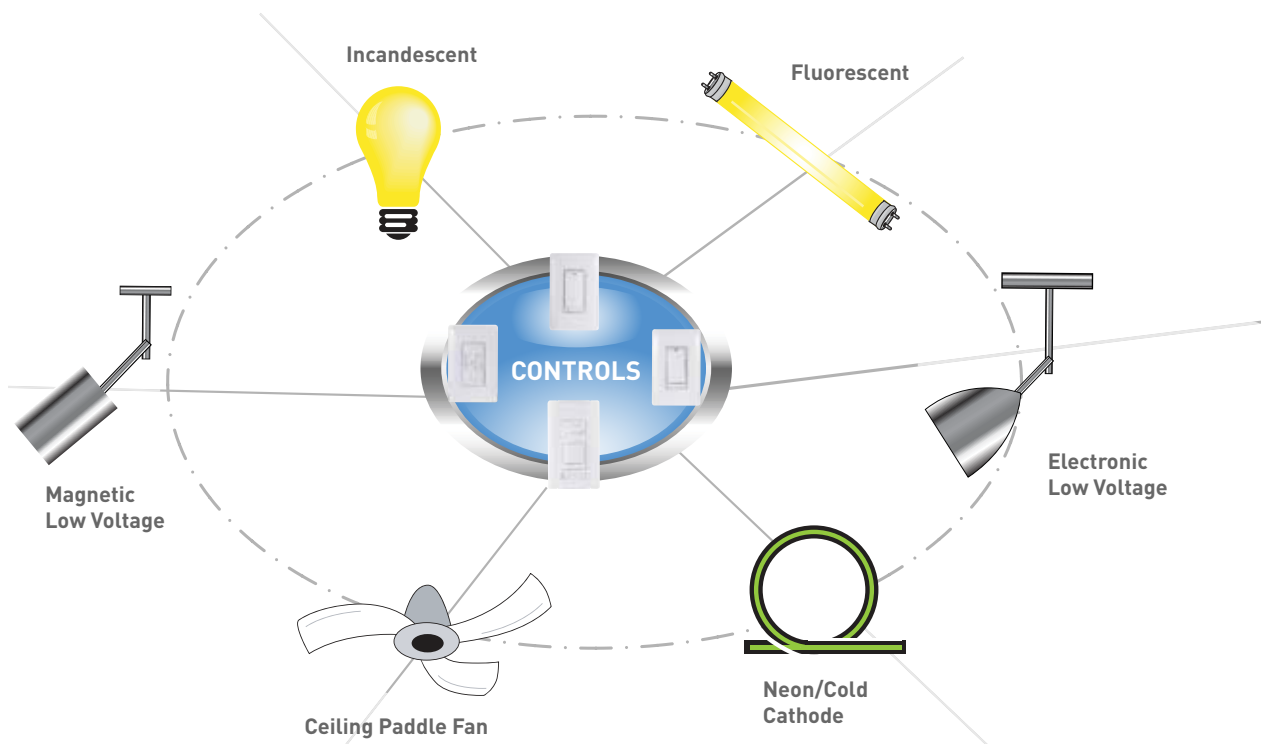
Match lighting load types with appropriate dimmers

When adding dimming controls to an application, ensure that the desired dimmer is compatible with the load type. For instance, universal dimmers can control a wide range of load types, from incandescent to electronic low voltage to

fluorescent. Other dimmers, however, control only specific load types. For example, recessed lighting, common in restaurants, is often magnetic low voltage and will require a dimmer compatible with that load type.

Determine the total load to be controlled

To identify the correct model dimmer or fan speed control, calculate the total load you wish to control from one device. For example, six 150 watt downlights require a dimmer rated for at least 900 watts.



Matching the load type with the device ensures proper functionality.



Identify control locations and select functionality

For applications such as a private office with a single entrance, control from one location is typically all that is needed. Either a single-pole or multi-way dimmer, rated for the correct load type, will work equally well.





In spaces such as conference rooms, executive boardrooms, training rooms, lobbies, waiting areas or other spaces with several entrances, you may wish to provide control from more than one location.

For control from two locations, designers may select a multi-way **Architectural, Paddle** or **Slide** dimmer and a three-way switch to provide dimming from one location and on/off control from the other location. For on/off control from additional locations they may simply add one or more four-way switches.

For true multi-location dimming use WattStopper **Touch Dimmers**. One multi-way dimmer paired with Touch Dimmer Remotes will provide full-range dimming control from every location.



Product Matrix

Model #	Voltage	Load Type	Load Rating	
Architectural				
	AD-1103	120VAC, 60Hz	Incandescent	40 - 1100W
	AD-2003	120VAC, 60Hz	Incandescent	40 - 2000W
	ADMLV-703	120VAC, 60Hz	Magnetic Low Voltage	40 - 700VA
	ADMLV-1603	120VAC, 60Hz	Magnetic Low Voltage	40 - 1600VA
	ADFM-8A	120VAC, 60Hz	Two-wire Fluorescent	0.33 - 8A
	ADFM-16A	120VAC, 60Hz	Two-wire Fluorescent	0.33 - 16A
	ADFM277-10A	277VAC, 60Hz	Two-wire Fluorescent	0.33 - 10A
	ADFE-16A	120VAC, 60Hz	Three-wire Fluorescent	0.33 - 16A
	ADFE277-10A	277VAC, 60Hz	Three-wire Fluorescent	0.33 - 10A
	ADF120277	120/277VAC, 60Hz	0-10V Fluorescent	Do not exceed 60 ballasts
ADFC-6A	120VAC, 60Hz	Fan Motor	0.33 - 6A	
Touch				
	TD-603	120VAC, 60Hz	Incandescent	40 - 600W
	TDA-603		Universal	25 - 600W
	TDFC-1A		Fan Motor	0 - 1.5A
	TDR		N/A	-
Paddle				
	PD-703	120VAC, 60Hz	Incandescent	50 - 700W
	PD-1103		Incandescent	50 - 1100W
	PDMLV-703		Magnetic Low Voltage	50 - 700VA
	PDMLV-1103		Magnetic Low Voltage	50 - 1100VA
	PDFM-8A		Two-wire Fluorescent	0.33 - 8A
	PDFC-1A		Fan Motor	0 - 1.6A
Slide				
	SD-603	120VAC, 60Hz	Incandescent	50 - 600W
	SD-1003		Incandescent	50 - 1000W
	SD2-300		Incandescent	25 - 300W (for each load)
	SDMLV-603		Magnetic Low Voltage	25 - 600VA
	SDFC-5A		Fan Motor	0.33 - 5A



	Preset or Slide-to-off	Neutral Required	Multi-way or Single-pole	Derating Requirements*
	Preset		Multi-way	no fins removed 1100W/1000W; with fins removed 1000W/900W
	Preset		Multi-way	
	Preset		Multi-way	
	Preset		Multi-way	no fins removed 1600VA/1600VA; with fins removed 1600VA/1550VA
	Preset		Multi-way	no fins removed 8A/8A; with fins removed 7.7A/6.3A
	Preset		Multi-way	
	Preset		Multi-way	
	Preset	X	Multi-way	
	Preset	X	Multi-way	
	Slide-to-off		Single-pole	
	Slide-to-off		Single-pole	
	Preset		Multi-way	500W/400W
		X		500W when 5 or more devices are ganged together
		X		
	Preset		Multi-way	
				1000W/800W
				700VA/650VA
				950VA/700VA
				8A/6.5A
	Preset		Multi-way	
	Preset		Multi-way	900W/750W
	Slide-to-off		Single-pole	
	Preset		Multi-way	
	Preset		Multi-way	

*On units where derating is required, first number listed is for 2-gang installation, second number listed is for 3-gang installation.



Handwritten text on a wooden surface, possibly a menu or a list of items.



Maximize dimming functionality with architectural dimmers

A field-configurable wallplate system simplifies installation of multiple dimmers, including dimmers for larger loads. What's more, a label slot enables users to create and change labels, right on local laptops, eliminating the guesswork of which devices control what lights.

Spec-grade architectural dimmers control a wide range of load types including incandescent, magnetic low voltage, and a variety of dimmable fluorescent ballasts. A fan speed control is also available.

Wallplate ganging system

On/Off switch

Dimming slider

Label slot





Incandescent Multi-way Architectural Dimmer (AD-1103, AD-2003)

High-capacity spec-grade dimmers for performance and energy savings

Adjust light output to ideal levels with slider

Adjustable high-end trim for added energy savings



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Easy personal labeling for identifying controlled lighting load

PROJECT
LOCATION/TYPE

Product Overview

Description

The AD-1103 and AD-2003 Incandescent Multi-way Architectural Dimmers provide easy preset dimming control via an on/off switch and a slider. Designed to replace a standard light switch or dimmer, the devices allow users to set the ideal light level for any activity taking place in the room. Each dimmer includes a wallplate with a slot for a user-supplied label behind a clear window.

Operation

The AD Incandescent Multi-way Dimmers control incandescent and halogen loads, and install into a standard single-gang or multi-gang wallbox. Once installed, the device is controlled by the slider and on/off switch. To dim the connected load, the user moves the slider down. To brighten the connected load, the user moves the slider up. Pressing the switch turns the connected load on or off. Lighting will come on to the preset level, determined by the slider position.

Multi-way Operation & High-end Trim

The AD-1103 and AD-2003 Incandescent Multi-way Dimmers can be used in three-way and multi-way circuits. In a three-way application, the installer connects a dimmer in one location and a three-way switch in the other location. This allows dimming and on/off control from the dimmer, and on/off control from the switch. In a multi-way installation, one or more four-way switches are installed between the dimmer and three-way switch. The AD-1103 and AD-2003 also include a high-end trim feature for added energy savings. If desired, the dimmer output can be adjusted down from 100% to as low as 90% using a trimpot located behind the wallplate.

Applications

The AD-1103 and AD-2003 Incandescent Multi-way Dimmers are ideal in commercial spaces where multiple activities occur. For example, providing dimming control in a conference room ensures that light levels can be adjusted for presentations or meetings. Users can customize lighting for any activity while simultaneously realizing energy savings.

Features

- Replaces standard single-pole or 3-way switch
- Operates incandescent and halogen loads
- Large switch turns connected load on or off
- Slider control for easy dimming or brightening
- Provides multi-way control when used with 3-way and 4-way switches
- No current leakage to load when switch is in off position for safety
- Choice of five decorator colors (White, Ivory, Light Almond, Grey and Black)
- Includes wallplate for single or multi-gang installation

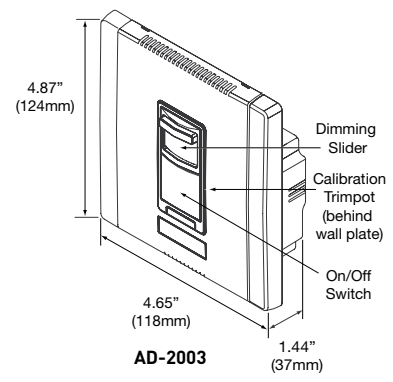
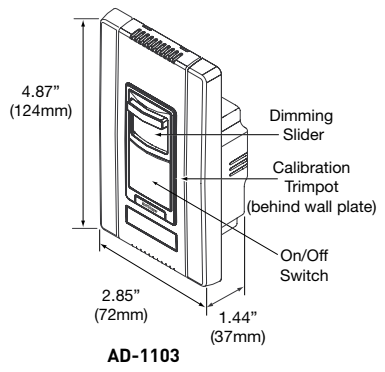


Specifications

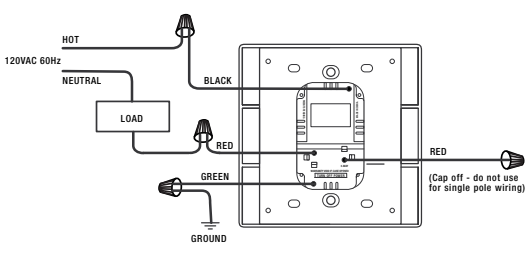
- 120 VAC; 60 Hz
- No neutral required
- Load ratings (incandescent):
 - AD-1103: 40-1100W, see derating chart
 - AD-2003: 40-2000W
- Filtered output for RFI suppression
- Includes voltage compensation circuitry for stabilized light output
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

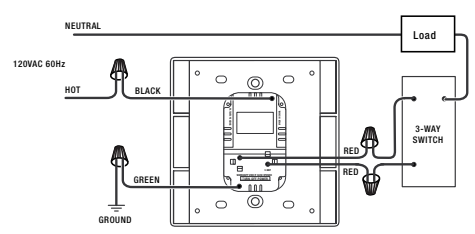
Product Controls



Single-pole Wiring



3-way/Multi-way Wiring



Multi-gang Derating Information

Dimmer Catalog #	Maximum Load	Fins are NOT removed		Fins ARE removed	
		2-gang	3-gang	2-gang	3-gang
AD-1103	1100W	1100W	1000W	1000W	900W
AD-2003	2000W	no derating required		fins cannot be removed	

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> AD-1103-W	White	Incandescent 1100W Multi-way Architectural Dimmer	120 VAC, 60 Hz	40-1100W
<input type="checkbox"/> AD-1103-I	Ivory			
<input type="checkbox"/> AD-1103-LA	Lt. Almond			
<input type="checkbox"/> AD-1103-G	Grey			
<input type="checkbox"/> AD-1103-B	Black			
<input type="checkbox"/> AD-2003-W	White	Incandescent 2000W Multi-way Architectural Dimmer	120 VAC, 60 Hz	40-2000W
<input type="checkbox"/> AD-2003-I	Ivory			
<input type="checkbox"/> AD-2003-LA	Lt. Almond			
<input type="checkbox"/> AD-2003-G	Grey			
<input type="checkbox"/> AD-2003-B	Black			

Magnetic Low Voltage Multi-way Architectural Dimmer (ADMLV-703, ADMLV-1603)

High-capacity spec-grade dimmers for performance and energy savings

Adjust light output to ideal levels with slider

Adjustable low-end trim



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Easy personal labeling for identifying controlled lighting load

PROJECT
LOCATION/TYPE

Product Overview

Description

The ADMLV-703 and ADMLV-1603 Magnetic Low Voltage Architectural Dimmers provide easy on/off and preset dimming control of magnetic low voltage lighting loads via a switch and a slider. Designed to replace a standard light switch or dimmer, the devices allow for ideal light levels regardless of the activity taking place in a room. Each dimmer includes a wallplate with a slot for a user-supplied label behind a clear window.

Operation

The ADMLV-703 and ADMLV-1603 are designed to dim permanently installed magnetic low voltage loads, and are not intended for use to control receptacles, fluorescent lights or motorized appliances. With ADMLV dimmers, users can brighten and dim the connected lights by moving the slider up and down. To lower lighting levels, users move the slider down. To raise lighting levels, users move the slider up. To turn lights on or off, users press the switch. Lighting will come on to the preset level, determined by the slider position.

Multi-way Operation & Low-end Trim

The ADMLV-703 and ADMLV-1603 can be used in both single-pole and multi-way applications. In a three-way application, an ADMLV dimmer is installed in one location and a three-way switch in the other location. This provides the user with on/off and dimming control from the dimmer and on/off control from the switch. In a multi-way installation, one or more four-way switches are installed between the dimmer and three-way switch. The dimmers also allow the low-end trim to be set to accommodate different magnetic transformers. Users simply remove the wallplate and adjust the calibration dial.

Applications

The ADMLV-703 and ADMLV-1603 can be used to save energy and reduce utility costs in a wide range of applications where magnetic low voltage lighting loads are common, such as accent lighting.

Features

- Replaces standard single-pole or 3-way switch
- Operates magnetic low voltage loads
- Large switch turns connected load on or off
- Slider control for easy dimming or brightening
- Provides multi-way control when used with 3-way and 4-way switches
- No current leakage to load when switch is in off position for safety
- Choice of five decorator colors (White, Ivory, Light Almond, Grey and Black)
- Includes wallplate for single or multi-gang installation

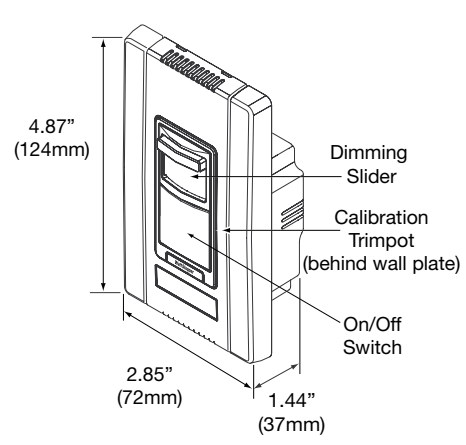


Specifications

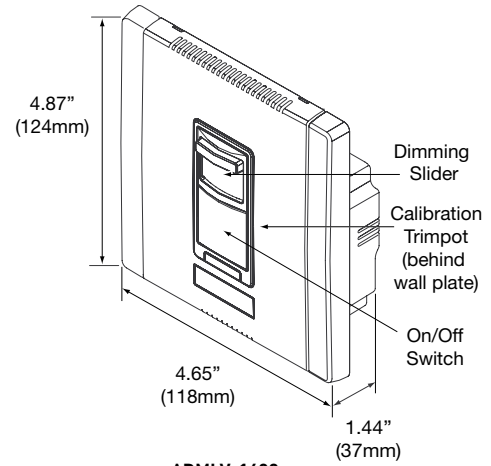
- 120 VAC; 60 Hz
- No neutral required
- Load ratings (magnetic low voltage):
 - ADMLV-703: 40-700VA
 - ADMLV-1603: 40-1600VA, see derating chart
- Filtered output for RFI suppression
- Includes voltage compensation circuitry for stabilized light output
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

Product Controls

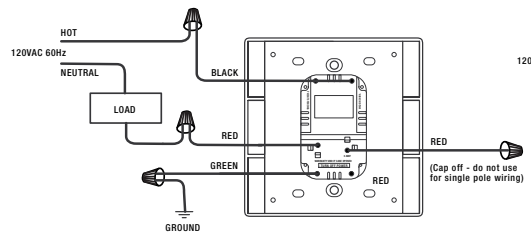


ADMLV-703

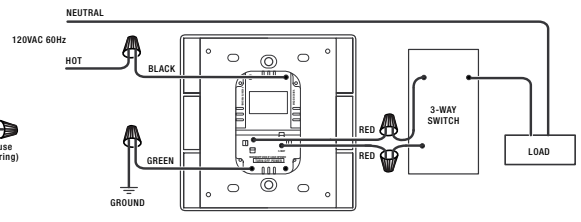


ADMLV-1603

Single-pole Wiring



3-way/Multi-way Wiring



Multi-gang Derating Information

Dimmer Catalog #	Maximum Load	Fins are NOT removed		Fins ARE removed	
		2-gang	3-gang	2-gang	3-gang
ADMLV-703	700VA	no derating required			
ADMLV-1603	1600VA	1600VA	1600VA	1600VA	1550VA

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> ADMLV-703-W	White	Magnetic Low Voltage 700VA Multi-way Architectural Dimmer	120 VAC, 60 Hz	40-700VA
<input type="checkbox"/> ADMLV-703-I	Ivory			
<input type="checkbox"/> ADMLV-703-LA	Lt. Almond			
<input type="checkbox"/> ADMLV-703-G	Grey			
<input type="checkbox"/> ADMLV-703-B	Black			
<input type="checkbox"/> ADMLV-1603-W	White	Magnetic Low Voltage 1600VA Multi-way Architectural Dimmer	120 VAC, 60 Hz	40-1600VA
<input type="checkbox"/> ADMLV-1603-I	Ivory			
<input type="checkbox"/> ADMLV-1603-LA	Lt. Almond			
<input type="checkbox"/> ADMLV-1603-G	Grey			
<input type="checkbox"/> ADMLV-1603-B	Black			



Two-wire Fluorescent Multi-way Architectural Dimmer (ADFM-8A, ADFM-16A, ADFM277-10A)

High-capacity spec-grade dimmers for performance and energy savings

Adjust light output to ideal levels with slider

Adjustable low-end trim



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Ideal for commercial applications; matching 120 and 277V models

PROJECT
LOCATION/TYPE

Product Overview

Description

The ADFM-8A, ADFM-16A and ADFM277-10A Two-Wire Fluorescent Architectural Dimmers provide easy on/off and preset dimming control of two-wire dimmable fluorescent lighting loads via an on/off switch and a slider. Designed to replace a standard light switch or dimmer, they allow for ideal light levels regardless of the activity taking place in a room.

Operation

With the ADFM dimmers, users can brighten and dim the connected lights by moving the slider up and down. Users reduce lighting levels by moving the slider down, or increase brightness by moving the slider up. To turn lighting on or off, users simply press the switch. Lighting will come on to the preset level, determined by the slider position.

Multi-way Operation & Low-end Trim

The ADFM dimmers can be used in both single-pole and multi-way applications. In a three-way application, a dimmer is installed in one location and a three-way switch in the other location. The user enjoys on/off and dimming control from the dimmer and on/off control from the switch. In a multi-way installation, one or more four-way switches are installed between the dimmer and three-way switch. The dimmers also allow the low-end trim to be set to accommodate different ballasts. Users simply remove the wallplate and adjust the calibration dial.

Applications

The ADFM dimmers can be used to save energy and reduce utility costs in applications where fluorescent lighting loads are common, such as private offices and conference rooms.

Features

- Replaces standard single-pole or 3-way switch
- Operates specific fluorescent loads
- Large switch turns connected load on or off
- Slider control for easy dimming or brightening
- Provides multi-way control when used with 3-way and 4-way switches
- Smooth and continuous dimming
- No current leakage to load when switch is in off position for safety
- Choice of five decorator colors (White, Ivory, Light Almond, Grey and Black)
- Includes wallplate for single or multi-gang installation

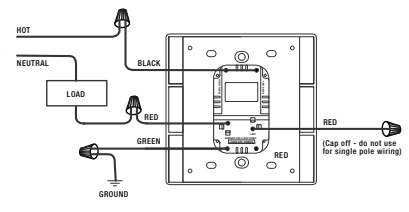


Specifications

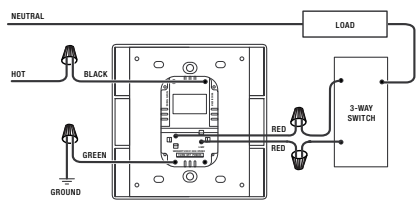
- ADFM-8A and ADFM-16A: 120 VAC; 60 Hz
- ADFM277-10A: 277 VAC; 60 Hz
- No neutral required
- Load ratings (compatible fluorescent loads only):
 - ADFM-8A: 0.3-8A, see derating chart
 - ADFM-16A: 0.3-16A
 - ADFM277-10A: 0.3-10A
- Filtered output for RFI suppression
- Includes voltage compensation circuitry for stabilized light output
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

Wiring Diagrams

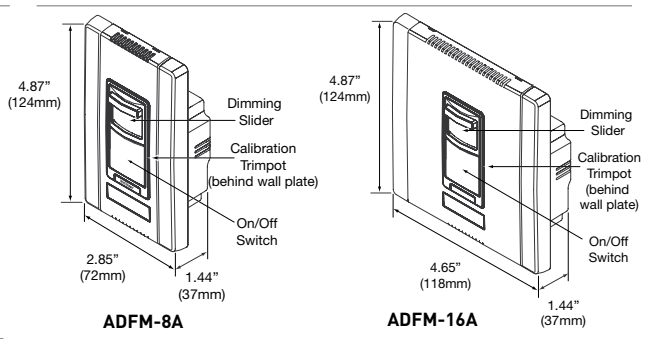


Single-pole Wiring



3-way/Multi-way Wiring

Product Controls



ADFM-8A

ADFM-16A
ADFM277-10A

Multi-gang Derating Information

Dimmer Catalog #	Maximum Load	Fins are NOT removed		Fins ARE removed	
		2-gang	3-gang	2-gang	3-gang
ADFM-8A	8A	8A	8A	7.7A	6.3A
ADFM-16A	16A	no derating required			
ADFM277-10A	10A	no derating required			

Compatible Ballasts

Advance: Mark 10® and Ambistar
ADFM-8A & ADFM-16A: REZ-132-SC, REZ-2532-SC, REZ-3532-SC, REZ-154, REZ-2554, REZ-1Q18-M2, REZ-2Q18-M2, REZ-1T42-M2, REZ-2T42-M3, REZ-1TTS40, REZ-1TTS40-SC, REZ-2TTS40, REZ-2TTS40-SC, REB-2S26-M1-LS-DIM, REB-2S26-M1-BS-DIM ADFM277-10A: VEZ-132-SC, VEZ-2532-SC, VEZ-3532-SC, VEZ-154, VEZ-2554, VEZ-1Q18-M2, VEZ-2Q18-M2, VEZ-1T42-M2, VEZ-2T42-M3, VEZ-1TTS40, VEZ-1TTS40-SC, VEZ-2TTS40, VEZ-2TTS40-SC All Models: IEZ-2S24-D
Lutron: Tu-Wire®
ADFM-8A & ADFM-16A: 2W-T426-120-1-S, 2W-T426-120-2-S, 2W-T432-120-1-S, 2W-T432-120-2-S, 2W-T832-120-1-S, 2W-T832-120-2-S
Sylvania: Quicktronic® Powersense™
All Models: QTP1x32T8/UNV DIM, QTP2x32T8/UNV DIM, QTP3x32T8/UNV DIM, QTP4x32T8/UNV DIM

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> ADFM-8A-W	White	Two-Wire Fluorescent 8A Multi-way Architectural Dimmer	120 VAC, 60 Hz	0.3-8A
<input type="checkbox"/> ADFM-8A-I	Ivory			
<input type="checkbox"/> ADFM-8A-LA	Lt. Almond			
<input type="checkbox"/> ADFM-8A-G	Grey			
<input type="checkbox"/> ADFM-8A-B	Black			
<input type="checkbox"/> ADFM-16A-W	White	Two-Wire Fluorescent 16A Multi-way Architectural Dimmer	120 VAC, 60 Hz	0.3-16A
<input type="checkbox"/> ADFM-16A-I	Ivory			
<input type="checkbox"/> ADFM-16A-LA	Lt. Almond			
<input type="checkbox"/> ADFM-16A-G	Grey			
<input type="checkbox"/> ADFM-16A-B	Black			
<input type="checkbox"/> ADFM277-10A-W	White	Two-Wire Fluorescent 10A Multi-way Architectural Dimmer	277 VAC, 60Hz	0.3-10A
<input type="checkbox"/> ADFM277-10A-I	Ivory			
<input type="checkbox"/> ADFM277-10A-LA	Light Almond			
<input type="checkbox"/> ADFM277-10A-G	Grey			
<input type="checkbox"/> ADFM277-10A-B	Black			



Three-wire Multi-way Fluorescent Architectural Dimmer (ADFE-16A, ADFE277-10A)

High-capacity spec-grade dimmers for performance and energy savings

Adjust light output to ideal levels with slider

Adjustable low-end trim



For single-pole or multi-way applications

On/Off/Preset control

Ideal for commercial applications; matching 120 and 277V models

PROJECT
LOCATION/TYPE

Product Overview

Description

The ADFE-16A and ADFE277-10A Three-Wire Fluorescent Architectural Dimmers are designed to replace standard light switches or dimmers. The devices provide easy on/off and preset dimming control of fluorescent lighting loads via the on/off buttons and sliders. Each device allows for ideal light levels regardless of the activity taking place in a room.

Operation

With ADFE Fluorescent Dimmers, users can brighten and dim the connected lights by moving the slider up and down. Users reduce lighting levels by moving the slider down, or increase brightness by moving the slider up. To turn lighting on or off, users press the on/off switch. Lighting will come on to the preset level, determined by the slider position.

Multi-way Operation & Low-end Trim

The ADFE dimmers can be used in both single-pole and multi-way applications. In a three-way application, a dimmer is installed in one location and a three-way switch in the other location. This provides the user with on/off and dimming control from the dimmer and on/off control from the switch. In a multi-way installation, one or more four-way switches are installed between the dimmer and three-way switch. The dimmers are factory trimmed for operation with the compatible ballasts, but the low-end trim may be adjusted if desired.

Applications

The ADFE dimmers can be used to save energy and reduce utility costs in applications where fluorescent lighting loads are common, such as private offices and conference rooms.

Features

- Replaces standard single-pole or 3-way switch
- Operates specific fluorescent loads
- Large switch turns connected load on or off
- Slider control for easy dimming or brightening
- Provides multi-way control when used with 3-way and 4-way switches
- Smooth and continuous dimming
- No current leakage to load when switch is in off position for safety
- Choice of five decorator colors (White, Ivory, Light Almond, Grey and Black)
- Includes wallplate for single or multi-gang installation

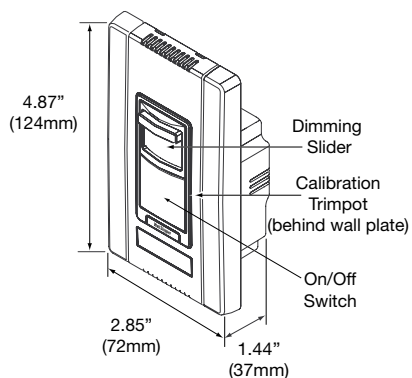


Specifications

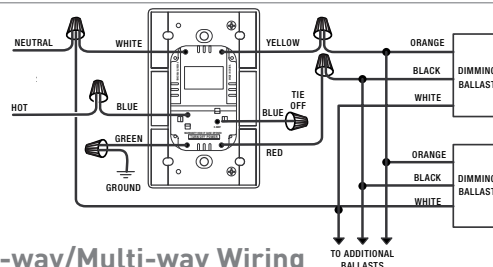
- ADFE-16A: 120 VAC; 60 Hz
- ADFE277-10A: 277VAC; 60 Hz
- Load ratings (compatible fluorescent loads only):
 - ADFE-16A: 0.3-16A; no derating required for multi-gang installations
 - ADFE277-10A: 0.3-10A; no derating required for multi-gang installations
- Filtered output for RFI suppression
- Includes voltage compensation circuitry for stabilized light output
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

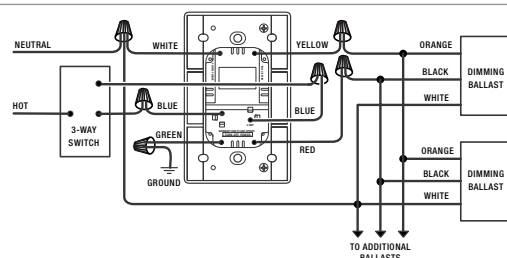
Product Controls



Single-pole Wiring



3-way/Multi-way Wiring



Compatible Ballasts

Lutron: 1% - Hi-Lume, Hi-Lume 3D	Lutron: 5% - Compact SE	Lutron: 10% - Eco-10
ADFE-16A: HL3-T426-120-1-S, HL3-T432-1201-S, FDB-T524-120-1, FDB-T524-120-2, FDB-T539-120-1, FDB-T539-120-2, FDB-T554-120-1, FDB-T554-120-2, FDB-2427-120-1, FDB-2427-120-2, FDB-2427-120-3, FDB-3627-120-1, FDB-3627-120-2, FDB-3627-120-3, FDB-4827-120-1, FDB-4827-120-2, FDB-4827-120-3, FDB-6027-120-1, FDB-6027-120-2, FDB-7280-120-1, FDB-8480-120-1, FDB-9680-120-1 ADFE277-10A: HL3-T426-277-1-S, HL3-T432-277-1-S, FDB-T524-277-1, FDB-T524-277-2, FDB-T539-277-1, FDB-T539-277-2, FDB-T554-277-1, FDB-T554-277-2, FDB-2427-277-1, FDB-2427-277-2, FDB-2427-277-3, FDB-3627-277-1, FDB-3627-277-2, FDB-3627-277-3, FDB-4827-277-1, FDB-4827-277-2, FDB-4827-277-3, FDB-6027-277-1, FDB-6027-277-2 Both Models: H3DT832CUNV110, H3DT832CUNV117, H3DT832CUNV210, H3DT832CUNV217	ADFE-16A: FDB-T418-120-1-S, FDB-T418-120-2-S, FDB-T426-120-1-S, FDB-T426-120-2-S, FDB-T432-120-1-S, FDB-T432-120-2-S, FDB-T442-120-1-S, FDB-T442-120-2-S, FDB-1643-120-1, FDB-1643-120-2, FDB-1643-120-3, FDB-1227-120-1, FDB-2227-120-2, FDB-2227-120-3, FDB-2243-120-3, FDB-2243-120-2 ADFE277-10A: FDB-T418-277-1-S, FDB-T418-277-2-S, FDB-T426-277-1-S, FDB-T426-277-2-S, FDB-T432-277-1-S, FDB-T432-277-2-S, FDB-T442-277-1-S, FDB-T442-277-2-S, FDB-1643-277-1, FDB-1643-277-2, FDB-1643-277-3, FDB-2227-277-1, FDB-2227-277-2, FDB-2227-277-3, FDB-2243-277-3, FDB-2243-277-2	ADFE-16A: E3-T514C-120-1, E3-T514C-120-2, E3-T521C-120-1, E3-T521C-120-2, ECO-T528-120-1, ECO-T528-120-2, ECO-T524-120-1, ECO-T524-120-2, ECO-T5H39-120-1, ECO-T5H39-120-2, ECO-T554-120-1, ECO-T554-120-2, ECO-T539-120-1, ECO-T539-120-2, ECO-T539-120-3, ECO-T540-120-1, ECO-T540-120-2, ECO-T540-120-3, ECO-T550-120-1, ECO-T550-120-2, ECO-T817-120-1, ECO-T817-120-2, ECO-T817-120-3, ECO-T825-120-1, ECO-T825-120-2, ECO-T832-120-1-L, ECO-T832-120-1-T, ECO-T832-120-2-L, ECO-T832-120-2-T, ECO-T832-120-3 ADFE277-10A: E3-T514C-277-1, E3-T514C-277-2, E3-T521C-277-1, E3-T521C-277-2, ECO-T528-277-1, ECO-T528-277-2, ECO-T524-277-1, ECO-T524-277-2, ECO-T5H39-277-1, ECO-T5H39-277-2, ECO-T554-277-1, ECO-T554-277-2, ECO-T539-277-1, ECO-T539-277-2, ECO-T539-277-3, ECO-T540-277-1, ECO-T540-277-2, ECO-T540-277-3, ECO-T550-277-1, ECO-T550-277-2, ECO-T817-277-1, ECO-T817-277-2, ECO-T817-277-3, ECO-T825-277-1, ECO-T825-277-2, E3-T832C-277-1, ECO-T832-277-1-L, ECO-T832-277-1-T, ECO-T832-277-1, E3-T832C-277-2, ECO-T832-277-2-L, ECO-T832-277-2-T, ECO-T832-277-2, ECO-T832-277-3

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> ADFE-16A-W	White	Three-Wire Fluorescent 16A Multi-way Architectural Dimmer	120 VAC, 60 Hz	0.3-16A
<input type="checkbox"/> ADFE-16A-I	Ivory			
<input type="checkbox"/> ADFE-16A-LA	Lt. Almond			
<input type="checkbox"/> ADFE-16A-G	Grey			
<input type="checkbox"/> ADFE-16A-B	Black			
<input type="checkbox"/> ADFE277-10A-W	White	Three-Wire Fluorescent 10A Multi-way Architectural Dimmer	277 VAC, 60 Hz	0.3-10A
<input type="checkbox"/> ADFE277-10A-I	Ivory			
<input type="checkbox"/> ADFE277-10A-LA	Lt. Almond			
<input type="checkbox"/> ADFE277-10A-G	Grey			
<input type="checkbox"/> ADFE277-10A-B	Black			

0-10V Fluorescent Architectural Dimmer (ADF120277)

Dim lighting for increased energy savings

Adjust light output to ideal levels with slider

Control 0-10V fluorescent loads



Adjustable low-end trim

On/Off/Preset control

Easy personal labeling for identifying controlled lighting load

PROJECT

LOCATION/TYPE

Product Overview

Description

The ADF120277 0-10V Fluorescent Architectural Dimmer provides dimming control of 0-10 volt fluorescent lighting loads via a slider, and slide-to-off operation when used with a WattStopper BZ-50 Power Pack (or equivalent). It also operates selected LED loads (contact the manufacturer to determine compatibility). The ADF120277 allows for ideal light levels regardless of the activity taking place in a room. Operation is smooth and continuous.

Operation

With 0-10V Fluorescent Dimmers, users can brighten and dim the connected lights by moving the slider up and down. If the device is connected to a power pack, users can turn lighting off by moving the slider all the way down to the off position.

Low-end Trim

The ADF120277 0-10V Fluorescent Architectural Dimmer includes an adjustable low-end trim to accommodate different ballasts. Users simply remove the wallplate and adjust the calibration dial as needed.

Applications

The ADF120277 can be used to save energy and reduce utility costs in applications where fluorescent lighting loads are common, such as private offices and conference rooms.

Features

- Replaces single-pole switch
- Operates specific fluorescent loads
- Slider control for easy dimming or brightening
- Slider turns connected load on or off (when used with WattStopper BZ-50 Power Pack, or equivalent)
- Smooth and continuous dimming
- No current leakage to load when switch is in off position for safety
- Choice of five decorator colors (White, Ivory, Light Almond, Grey and Black)
- Includes wallplate for single or multi-gang installation

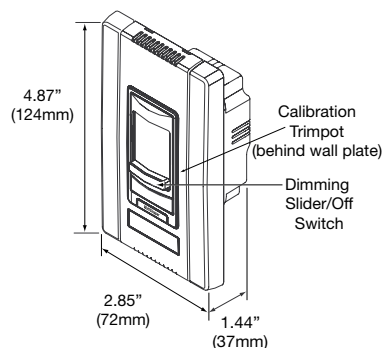


Specifications

- 24 VDC
- On/off switching: Use WattStopper Power Pack Model BZ-50 or equivalent
- Load rating (compatible fluorescent loads only): Maximum capacity: 60 ballasts
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

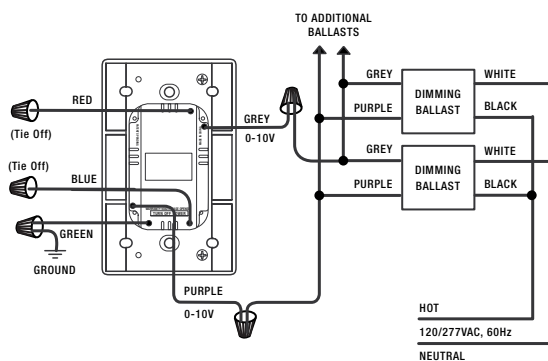
Product Controls



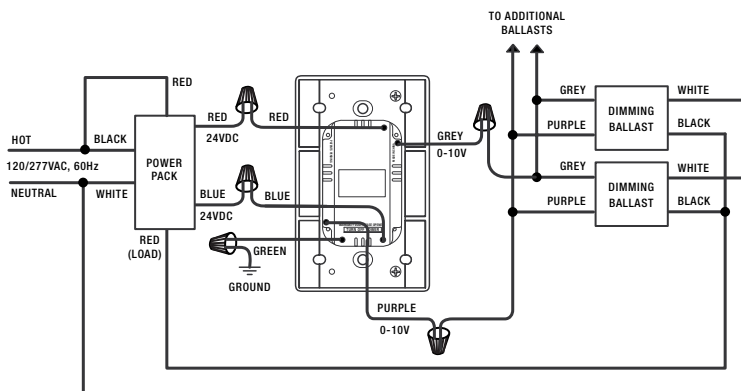
Compatible Ballasts

Manufacturer	Models	Series
Advance	Mark 7®, Xitanium	IZT, RZT, VZT, LED120
GE	T8 Dimming Ballasts	B132, B232, B332
Lutron	Eco-10	TVE
Sylvania	Quicktronic® Powersense™, Helios, Optronic	QTP, QT, OT
Universal	SuperDim, Ballastar	ES, B132, B232, B332, B432

Wiring for Dimming Control Only



Wiring for On/Off and Dimming Control



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> ADF120277-W	White	0-10V Fluorescent Architectural Dimmer	24 VDC	Max. of 60 ballasts
<input type="checkbox"/> ADF120277-I	Ivory			
<input type="checkbox"/> ADF120277-LA	Lt. Almond			
<input type="checkbox"/> ADF120277-G	Grey			
<input type="checkbox"/> ADF120277-B	Black			

Architectural Fan Speed Control (ADFC-6A)

Adjust fan speed easily with slider control

Slide-to-off control

No derating required for multi-gang operation



Multiple fans can be controlled by a single unit

Available in five decorator colors

Maintain ideal fan speed

PROJECT

LOCATION/TYPE

Product Overview

Description

The ADFC-6A Architectural Fan Speed Control replaces a standard fan switch with an architecturally pleasing simple slider. It allows users to set and maintain the ideal fan speed in any space, and is designed to control only ceiling paddle fans.

Operation

The ADFC-6A Architectural Fan Speed Control can easily be installed in any single-or multi-gang wallbox, and replaces a standard fan speed control switch. Users reduce fan speed by moving the slider down, or increase fan speed by moving the slider up. To turn the fan off, users simply move the slider all the way down.

Multiple Fan Control

High capacity ADFC-6A Architectural Fan Speed Controls are ideal for controlling one or more fans. Sometimes, large rooms such as banquet facilities, restaurants, hotel lobbies and enclosed patios use multiple fans. In these cases, controlling multiple fans with one device can effectively ensure even airflow throughout the space. The installer must verify that the combined fan load does not exceed the maximum load rating of the device.

Applications

ADFC-6A Architectural Fan Speed Controls are ideal in either commercial or residential spaces. In any location, users can easily adjust the device to set and maintain the desired fan speed.

Features

- Replaces a standard fan switch (solid-state fan speed controls only)
- One device controls multiple fans
- Provides slide control to easily obtain ideal fan speed settings
- No derating needed
- No current leakage to load when switch is in off position for safety
- Choice of five decorator colors (White, Ivory, Light Almond, Grey and Black)
- Includes wallplate for single or multi-gang installation

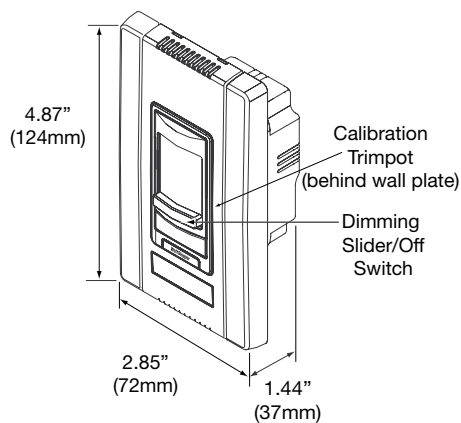


Specifications

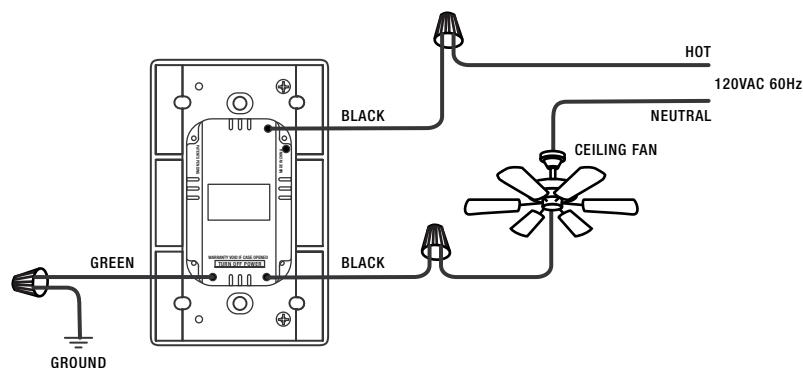
- 120 VAC; 60 Hz
- No neutral required
- Load Rating: 0.3-6A
- Use only with fans marked suitable for use with solid state fan speed controls
- No derating required for multi-gang installations
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

Product Controls



Wiring Diagram



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> ADFC-6A-W	White	Architectural Fan Speed Control	120 VAC, 60 Hz	0.3-6A
<input type="checkbox"/> ADFC-6A-I	Ivory			
<input type="checkbox"/> ADFC-6A-LA	Lt. Almond			
<input type="checkbox"/> ADFC-6A-G	Grey			
<input type="checkbox"/> ADFC-6A-B	Black			

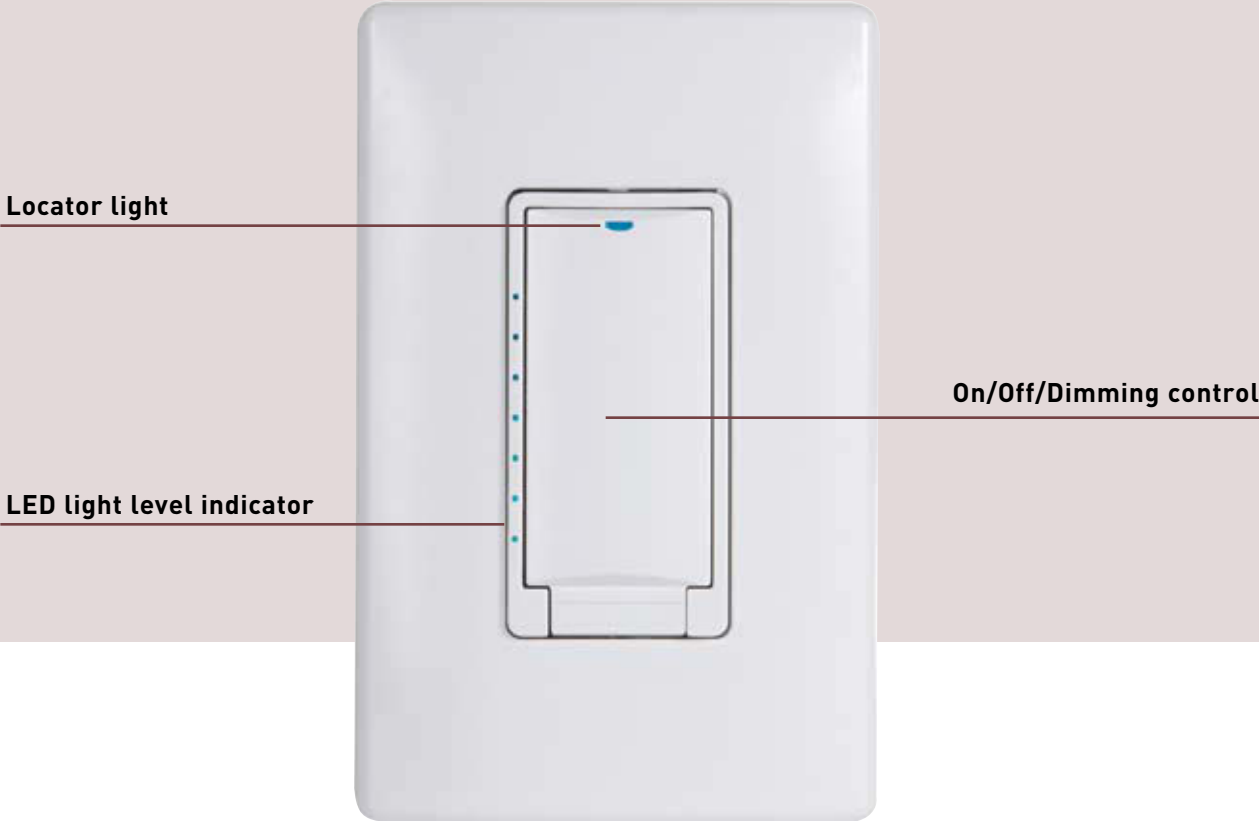




Enjoy sophisticated control with touch dimmers

Elegance and advanced engineering combine in this dimmer. Dim from multiple locations using matching remote controls. See light levels with

LED indicators. It's available in incandescent and universal models. A fan speed control is also offered. Pick a designer color from a field of six.



Incandescent Multi-way Touch Dimmer (TD-603)

Smooth On/Off and Preset control for elegant energy savings

LED bar graph shows preset level and light level

No neutral connection required; controls incandescent loads



Works with Touch Remote for full-function control from multiple locations

Two-second fade rate

Recalls last-used lighting level (preset)

PROJECT

LOCATION/TYPE

Product Overview

Description

The TD-603 Incandescent Multi-way Touch Dimmer provides smooth dimming control of incandescent and quartz halogen lighting loads via a rocker paddle. An LED bar graph displays the preset level when the dimmer is off, and the current lighting level when the dimmer is on. The TD-603 features low-profile decorator styling.

Operation

The TD Incandescent Multi-way Dimmer installs into a single-gang or multi-way wallbox and can replace a standard switch. Once installed, the device is controlled by the user via the paddle. To dim the connected load, the user presses and holds the bottom of the paddle. To brighten the connected load, the user presses and holds the top of the paddle. Tapping once on the top of the paddle recalls the last lighting level. Giving two taps brings lighting to full output. Tapping once on the bottom of the paddle fades lighting to off. All level changes are smoothly executed using a two-second fade rate.

Full-function Multilocation Control

The TD-603 Incandescent Multi-way Touch Dimmer can be used in both single-pole and multilocation applications. In multilocation applications, a TD-603 is installed in one location and the Touch Remote (TDR) is installed in the other locations. This provides the user with full-function dimming control from all connected control locations. The TD-603 cannot be used with three-way and four-way switches.

Applications

The TD-603 Incandescent Multi-way Touch Dimmer is ideal in commercial or residential spaces where multiple activities occur. It is recommended for retrofit applications where no neutral wire is available in the switch box.

Features

- Replaces standard single-pole or multi-way switches
- Operates incandescent and halogen loads
- Provides multi-way control when used with one or more Touch Remote (TDR)
- Low-profile styling
- Square law dimming curve
- Patented overload and short-circuit protection
- Soft start technology significantly extends lamp life by limiting inrush current
- Long life status LED
- Power failure restore to last-used level
- Air-gap switch ensures safe relamping
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

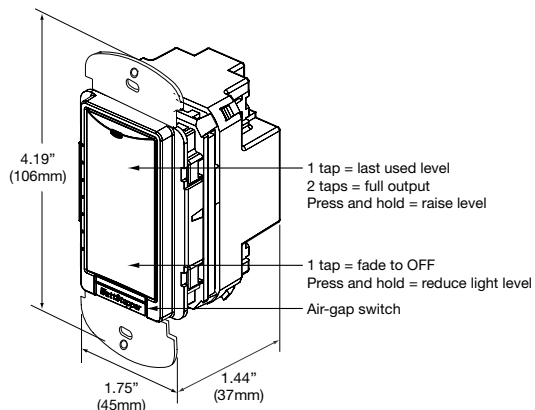


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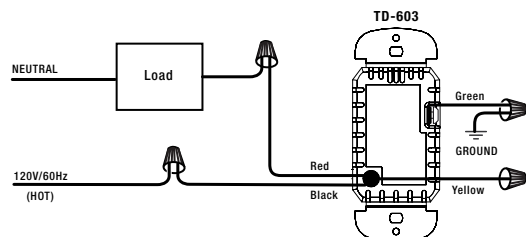
- 120 VAC; 60 Hz
- No neutral required
- Load rating (incandescent): 40-600W, see derating chart
- Filtered output for RFI suppression
- Use only one dimmer in a multilocation application
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

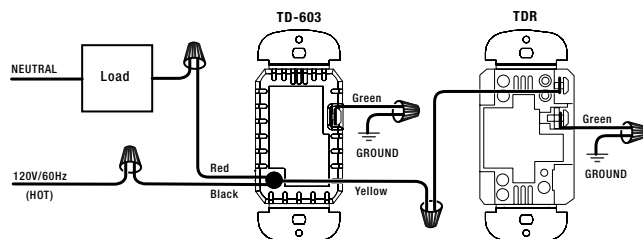
Product Controls



Single-pole Wiring



Multilocation Wiring



Derating Information

Dimmer Catalog #	Maximum load, single-gang	Dimmer at end of multi-gang	Dimmer in middle of multi-gang
TD-603	600W	500W	400W

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> TD-603-W	White	Incandescent 600W Multi-way Touch Dimmer	120 VAC, 60 Hz	40-600W
<input type="checkbox"/> TD-603-I	Ivory			
<input type="checkbox"/> TD-603-A	Almond			
<input type="checkbox"/> TD-603-LA	Lt. Almond			
<input type="checkbox"/> TD-603-G	Grey			
<input type="checkbox"/> TD-603-B	Black			

Contact factory for availability.
Order wallplates separately.

Universal Multi-way Touch Dimmer (TDA-603)

Controls most load types; second dimming curve for fluorescent loads

LED bar graph shows preset level and light level

Smooth On/Off and Preset control for elegant energy savings



Works with Touch Remote for full-function control from multiple locations

Two-second fade rate

Recalls last-used lighting level (preset)

PROJECT
LOCATION/TYPE

Product Overview

Description

The TDA-603 Universal Multi-way Touch Dimmer provides smooth dimming control of incandescent, magnetic low voltage, electronic low voltage (forward phase compatible), neon and cold-cathode, and selected dimmable two-wire linear and compact fluorescent loads via a rocker paddle. It also operates selected LED loads (contact the manufacturer to determine compatibility). An LED bar graph displays the preset level when the dimmer is off, and the current lighting level when the dimmer is on.

Operation

The TDA-603 Universal Dimmer installs into a standard single-gang or multi-way wallbox and can replace a standard switch. Once installed, the device is controlled by the user via the paddle. To dim the connected load, the user presses and holds the bottom of the paddle. To brighten the connected load, the user presses and holds the top of the paddle. Tapping once on the top of the paddle recalls the last lighting level. Giving two taps brings lighting to full output. Tapping once on the bottom of the paddle fades lighting to off. All level changes are smoothly executed using a two-second fade rate.

Features

- Replaces standard single-pole or multi-way switches
- Compatible with most load types
- Provides multi-way control when used with one or more Touch Remote (TDR)
- Low-profile styling
- Square law or fluorescent dimming curve
- Patented overload and short-circuit protection

Multilocation Control & Fluorescent Mode

The TDA-603 Incandescent Multi-way Touch Dimmer can be used in both single-pole and multilocation applications. In multilocation applications, a TDA-603 is installed in one location and the Touch Remote (TDR) is installed in the other locations. This provides the user with full-function dimming control from all connected control locations. The TDA-603 cannot be used with three-way and four-way switches. The TDA-603 Universal Dimmer has two dimming curves, square law (default) and fluorescent, so that various loads, connected to different dimmers, will perform similarly. Fluorescent dimming is smooth, with a typical low level of approximately 5% (consult ballast manufacturer for specifics).

Applications

TDA-603 Universal Dimmers offer a single product solution for multiple dimming requirements. They are recommended as stand-alone replacements for single-pole or multi-way light switches for all commercial, hospitality and residential applications, except those without a neutral wire at the dimmer location.

- Soft start technology significantly extends lamp life by limiting inrush current
- Long life status LED
- Power failure restore to last-used level
- Air-gap switch ensures safe relamping
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMABlack)
- Compatible with decorator wallplates



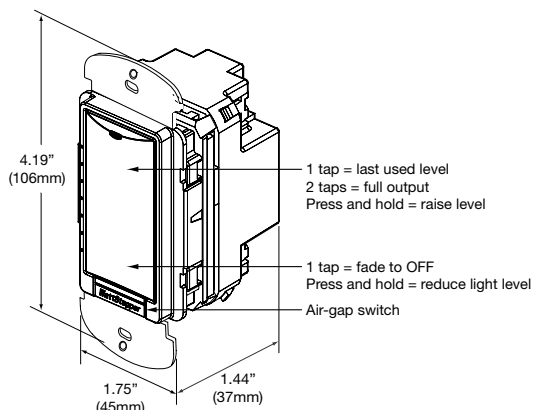
Specifications

- 120 VAC; 60 Hz
- Neutral required
- Load rating (incandescent, ELV (forward phase compatible), MLV, cold cathode/neon, compatible two-wire fluorescent loads):
25-600W or 25-600VA, see derating chart

- Filtered output for RFI suppression
- Use only one dimmer in a multilocation application
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

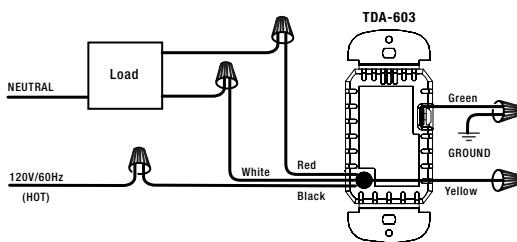
Product Controls



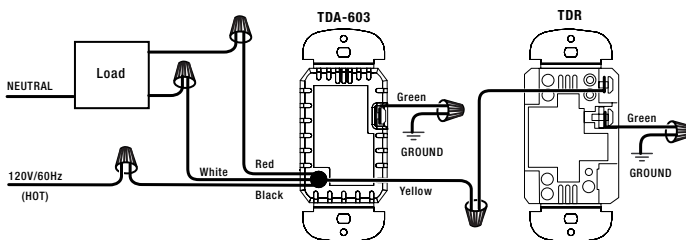
Compatible Ballasts

Manufacturer	Models
Advance Mark 10®	REZ-132-SC, REZ-2532-SC, REZ-3532-SC, REZ-154, REZ-2554, REZ-1Q18-M2, REZ-2Q18-M2, REZ-2Q26-M2, REZ-1T42-M2, REZ-2T42-M3, REZ-1TTS40, REZ-1TTS40-SC, REZ-2TTS40, REZ-2TTS40-SC, IEZ-2S24-D
Advance Ambistar	REB-2526-M1-LS-DIM, REB-2526-M1-BS-DIM
Lutron Tu-Wire®	2W-T426-120-1-S, 2W-T426-120-2-S, 2W-T432-120-1-S, 2W-T432-120-2-S, 2W-T832-120-1-S, 2W-T832-120-2-S
Sylvania Quicktronic® Powersense™	QTP1x32T8/UNV DIM, QTP2x32T8/UNV DIM, QTP3x32T8/UNV DIM, QTP4x32T8/UNV DIM

Single-pole Wiring



Multilocation Wiring



Derating Information

Dimmer Catalog #	Maximum Load	Up to four devices ganged together	Five or more devices ganged together
TDA-603	600W/600VA	No derating required	500W/500VA

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> TDA-603-W	White	Universal 600W Multi-way Touch Dimmer	120 VAC, 60 Hz	25-600W
<input type="checkbox"/> TDA-603-I	Ivory			
<input type="checkbox"/> TDA-603-A	Almond			
<input type="checkbox"/> TDA-603-LA	Lt. Almond			
<input type="checkbox"/> TDA-603-G	Grey			
<input type="checkbox"/> TDA-603-B	Black			

Contact factory for availability.
Order wallplates separately.

Multi-way Touch Fan Speed Control (TDFC-1A)

Controls one or two ceiling fans

Factory preset with four speeds plus on and off

Decorator styling compatible with screwless or standard wall plates



Works with Touch Remote for speed control from multiple locations

Recalls last-used speed

Silent or 'de-humming' technology for buzz-free fan operation

PROJECT

LOCATION/TYPE

Product Overview

Description

The TDFC-1A Touch Fan Speed Control provides speed control for one or two ceiling fans via a rocker paddle and four preset pushbuttons. It features status LEDs and low-profile decorator styling.

Operation

A TDFC-1A Touch Fan Speed Control can operate two ceiling fans from a single location. The user may increase or decrease fan speed by pressing up or down on the paddle, or by tapping one of four small pushbuttons that provide preset speeds ranging from 25-100%. To turn the fan off, the user taps the bottom of the large paddle. The previously used fan speed may be recalled by tapping once on the top of the paddle.

Multilocation Control

The TDFC-1A Touch Fan Speed Control can be used in both single-pole and multilocation applications. In multilocation applications, a TDFC-1A is installed in one location and the Touch Remote (TDR) is installed in the other locations. This provides the user with speed control from all connected control locations. The TDFC-1A cannot be used with three-way and four-way switches.

Applications

The Touch Fan Speed Control is exclusively designed for use with ceiling fans and should not be used to control: lighting, receptacles or transformer-operated devices; a fan and a light wired together on the same load wire or in the same circuit as a GFCI breaker or receptacle; or a fan that requires the manufacturer's fan speed controller.

Features

- Fan Controller operates one or two ceiling fans
- Provides multi-way control when used with one or more Touch Remote (TDR)
- Silent or 'de-humming' technology for buzz-free operation
- Low-profile styling
- Patented overload and short-circuit protection
- Long life LED status indicators
- Power failure restore to last-used speed
- Air-gap switch for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

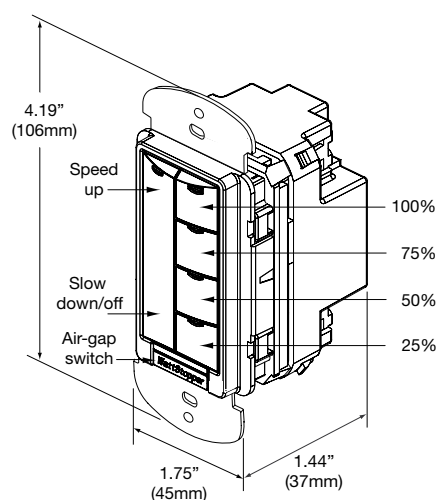


Specifications

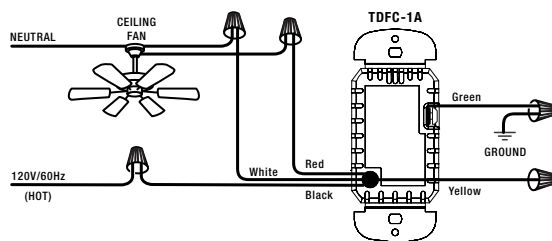
- 120 VAC; 60 Hz
- Neutral required
- Load rating: 0-1.5A
- Use only one fan speed control in a multilocation application
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

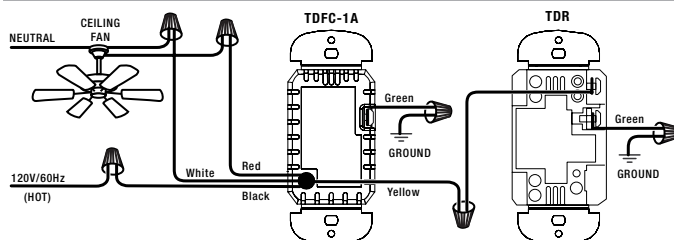
Product Controls



Single-pole Wiring



Multilocation Wiring



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> TDFC-1A-W	White	Multi-way Touch Fan Speed Control	120 VAC, 60 Hz	0-1.5A
<input type="checkbox"/> TDFC-1A-I	Ivory			
<input type="checkbox"/> TDFC-1A-A	Almond			
<input type="checkbox"/> TDFC-1A-LA	Light Almond			
<input type="checkbox"/> TDFC-1A-G	Grey			
<input type="checkbox"/> TDFC-1A-B	Black			

Contact factory for availability.
Order wallplates separately.

Touch Remote (TDR)

Full-function remote control of Touch Dimmers from multiple locations

Decorator styling compatible with screwless or standard wall plates



Remote control of Touch Fan Speed Controls from multiple locations

Recalls last-used lighting level or fan speed (preset)

PROJECT
LOCATION/TYPE

Product Overview

Description

TDR Touch Remotes are used with a TDA-603 Universal Dimmer, TD-603 Incandescent Dimmer or TDFC-1A Fan Speed Control to control lighting or ceiling fan loads from one or more remote locations.

Operation

The TDR has no direct connection to the load. It installs into a standard wallbox and connects to the dimmer or fan speed control via a traveler wire. To dim or slow the connected load, the user presses and holds the bottom of the paddle. To brighten or speed up the connected load, the user presses and holds the top of the paddle. Tapping once on the top of the paddle recalls the last lighting level or fan speed setting. Giving two taps brings the load to full. Tapping once on the bottom of the paddle fades the load off. All changes are smoothly executed using a two-second fade rate.

Multilocation Control Capabilities

TDR Touch Remotes allow full-function remote control of Touch Dimmers, and the capability to remotely turn Touch Fan Speed Controls on to the previous level, adjust fan speed and turn fans on or off. An unlimited number of Touch Remotes may be connected to a single dimmer or fan speed control by a traveler wire; however, the total length of the traveler wire is limited to 200 feet.

Applications

TDR Touch Remotes are ideal for use in commercial or residential applications with multiple entrances, such as conference rooms, training rooms and hallways.

Features

- Compatible with Touch Dimmers and Touch Fan Speed Controls
- Low-profile styling
- Two-second fade rate
- Power failure restore to last-used speed or level
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

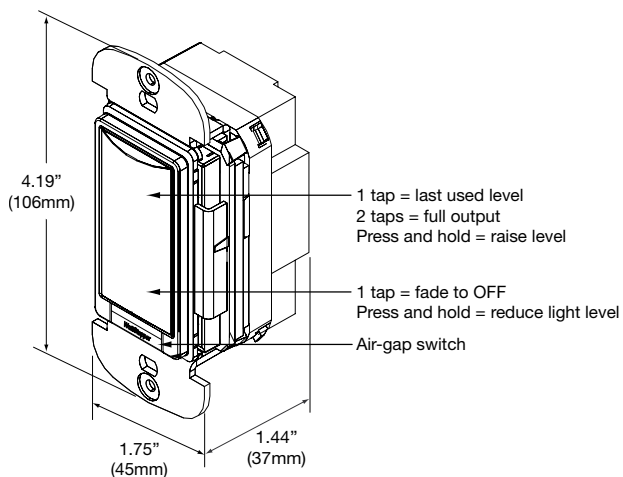


Specifications

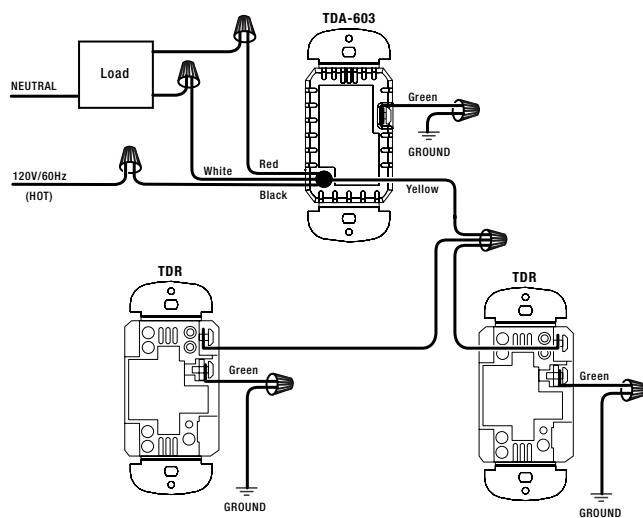
- 120 VAC; 60 Hz
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

Product Controls



Wiring Diagram



One or more TDRs are wired to a single Touch Dimmer or Touch Fan Speed Control using a traveler wire. The combined length of the traveler wires must not exceed 200 feet.

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> TDR-W	White	Touch Remote	120 VAC, 60 Hz	N/A
<input type="checkbox"/> TDR-I	Ivory			
<input type="checkbox"/> TDR-A	Almond			
<input type="checkbox"/> TDR-LA	Lt. Almond			
<input type="checkbox"/> TDR-G	Grey			
<input type="checkbox"/> TDR-B	Black			

Contact factory for availability.
Order wallplates separately.

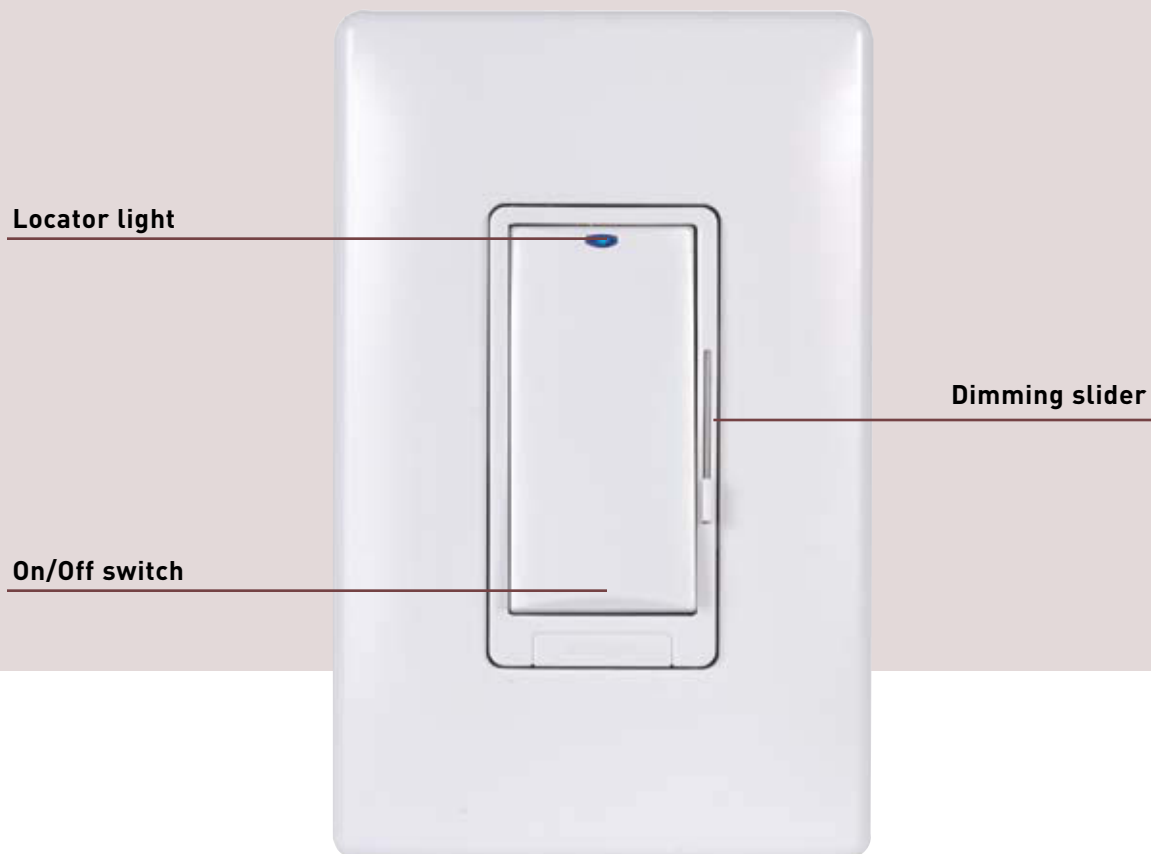




Coordinate device styling with paddle dimmers

Paddle dimmers offer the perfect complement to popular decorator switches. Lights come on to a level set by the understated slide control.

Choose from models for incandescent, magnetic low voltage and fluorescent loads, as well as a matching fan speed control. Styling is enhanced by six designer colors.





Incandescent Multi-way Paddle Dimmer (PD-703, PD-1103)

Dim lighting for increased energy savings

Adjust light output to ideal levels with slider

No derating required for 700W dimmer



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Ideal for both commercial and residential applications

PROJECT
LOCATION/TYPE

Product Overview

Description

The PD-703 and PD-1103 Incandescent Paddle Dimmers provide easy on/off and preset dimming control via a paddle switch and a low-profile slider. Designed to replace a standard light switch or dimmer, the devices allow for ideal light levels regardless of the activity taking place in a room. This provides versatility and customization for the user to apply to any setting.

Operation

The Incandescent Paddle Dimmers brighten and dim the connected lights when the slider is moved up and down. As the slider is moved up towards the top of the product the connected lights will brighten. As the slider is moved towards the bottom of the product, the connected lights will dim. The paddle switches the lights on and off. The lights will turn back on to the preset level, determined by the position of the slider.

Optional Multi-way Control

The PD-703 and PD-1103 dimmers can be used in either single-pole or multi-way applications. In a three-way application, a PD dimmer is installed in one location and a three-way switch is installed in the other location. If additional control locations are required, one or more four-way switches are installed in the middle of the circuit. A multi-way installation provides the user with on/off and dimming control from the dimmer, and on/off control from the switch(es).

Applications

The PD-703 and PD-1103 dimmers are ideal for any space where dimming control of incandescent loads is desired. Using paddle dimmers in spaces that may be used for multiple tasks, such as conference rooms or living/family rooms, allows users to set the lights to the most appropriate levels for specific activities. Additionally, in spaces such as lobbies and entrances lower light levels—still welcoming for visitors entering a building, but not necessarily at 100% throughout the entire day—are ideal.

Features

- Replaces any standard single-pole or 3-way switch
- Operates incandescent and halogen loads
- LED for easy location in darkened rooms
- Large paddle switch turns connected load on or off
- Slider control for easy dimming or brightening
- Quickly recalls the last user setting
- No current leakage to load when switch is in off position for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

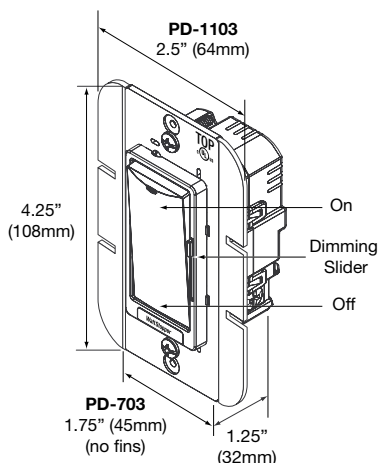


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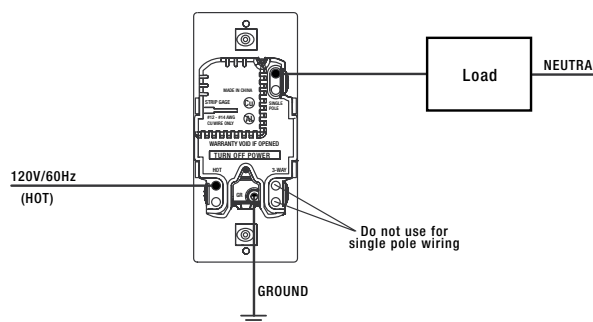
- 120 VAC; 60 Hz
- No neutral required
- Load ratings (incandescent):
 - PD-703: 50-700W; no derating required for multi-gang installation
 - PD-1103: 50-1100W; derating required - see chart below
- Filtered output for RFI suppression
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

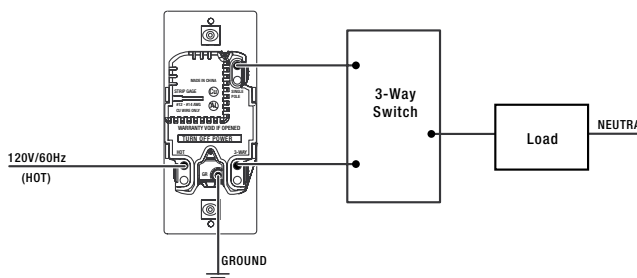
Product Controls



Single-pole Wiring



3-way/Multi-way Wiring



Multi-gang Derating Information

Dimmer Catalog #	Maximum Load	2-Gang Installation (One fin removed from PD-1103)	3-Gang Installation (Both fins removed from PD-1103)
PD-703	700W	No derating required	
PD-1103	1100W	1000W	800W

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> PD-703-W	White	Incandescent 700W Multi-way Paddle Dimmer	120 VAC, 60 Hz	50-700W
<input type="checkbox"/> PD-703-I	Ivory			
<input type="checkbox"/> PD-703-A	Almond			
<input type="checkbox"/> PD-703-LA	Lt. Almond			
<input type="checkbox"/> PD-703-G	Grey			
<input type="checkbox"/> PD-703-B	Black			
<input type="checkbox"/> PD-1103-W	White	Incandescent 1100W Multi-way Paddle Dimmer	120 VAC, 60 Hz	50-1100W
<input type="checkbox"/> PD-1103-I	Ivory			
<input type="checkbox"/> PD-1103-A	Almond			
<input type="checkbox"/> PD-1103-LA	Lt. Almond			
<input type="checkbox"/> PD-1103-G	Grey			
<input type="checkbox"/> PD-1103-B	Black			

Order wallplate separately.



Magnetic Low Voltage Multi-way Paddle Dimmer (PDMLV-703, PDMLV-1103)

Dim lighting for increased energy savings

Adjust light output to ideal levels with slider

Adjustable low-end trim



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Suitable for commercial or residential applications

PROJECT
LOCATION/TYPE

Product Overview

Description

The PDMLV-703 and PDMLV-1103 Magnetic Low Voltage Paddle Dimmers provide easy on/off and preset dimming control of magnetic low voltage lighting loads via a paddle switch and a low-profile slider. Designed to replace a standard light switch or dimmer, the devices allow for ideal light levels regardless of the activity taking place in a room.

Operation

With PDMLV Magnetic Low Voltage Dimmers, users can brighten and dim the connected lights by moving the slider up and down. As the slider is moved up towards the top of the product the connected lights will brighten. As the slider is moved towards the bottom of the product, the connected lights will dim. The paddle switches the lights on and off. The lights will turn back on to the preset level, determined by the position of the slider.

Multi-way Control & Low-end Trim

The PDMLV-703 and PDMLV-1103 can be used in both single-pole or multi-way applications. In a three-way application, a PDMLV dimmer is installed in one location and a three-way switch is installed in the other location. If additional control locations are required, one or more four-way switches are installed in the middle of the circuit. A multi-way installation provides the user with on/off and dimming control from the dimmer, and on/off control from the switch(es). The dimmers also allow easy low-end trim calibration for use with different magnetic transformers. Users simply remove the wallplate to adjust the calibration dial.

Applications

The PDMLV-703 and PDMLV-1103 can be used to save energy and reduce utility costs in both commercial and residential applications where magnetic low voltage lighting loads are common, such as accent lighting.

Features

- Replaces any standard single-pole or 3-way switch
- Operates magnetic low voltage loads
- LED for easy location in darkened rooms
- Large paddle switch turns connected load on or off
- Slider control for easy dimming or brightening
- Quickly recalls the last user setting
- No current leakage to load when switch is in off position for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

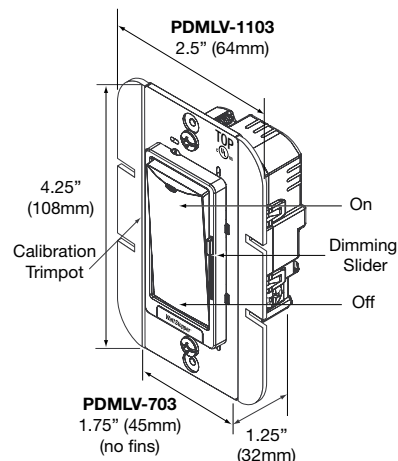


Specifications

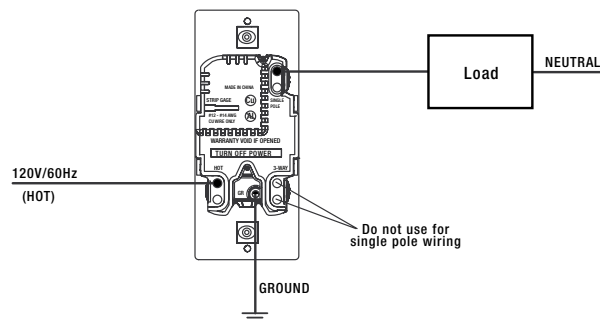
- 120 VAC; 60 Hz
- No neutral required
- Load ratings (magnetic low voltage):
 - PDMLV-703: 50-700VA, derating required - see chart below
 - PDMLV-1103: 50-1100VA, derating required - see chart below
- Filtered output for RFI suppression
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

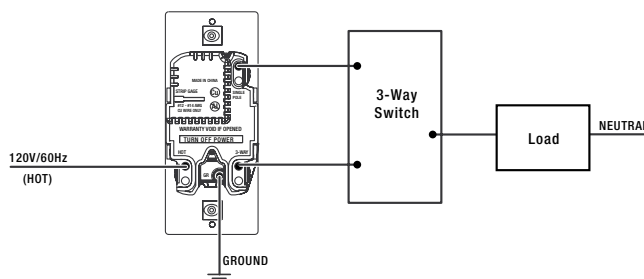
Product Controls



Single-pole Wiring



3-way/Multi-way Wiring



Multi-gang Derating Information

Dimmer Catalog #	Maximum Load	2-Gang Installation (One fin removed from PDMLV-1103)	3-Gang Installation (Both fins removed from PDMLV-1103)
PDMLV-703	700VA	No derating required	650VA
PDMLV-1103	1100VA	950VA	700VA

Ordering Information

	Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/>	PDMLV-703-W	White	Magnetic Low Voltage 700VA Multi-way Paddle Dimmer	120 VAC, 60 Hz	50-700VA
<input type="checkbox"/>	PDMLV-703-I	Ivory			
<input type="checkbox"/>	PDMLV-703-A	Almond			
<input type="checkbox"/>	PDMLV-703-LA	Lt. Almond			
<input type="checkbox"/>	PDMLV-703-G	Grey			
<input type="checkbox"/>	PDMLV-703-B	Black			
<input type="checkbox"/>	PDMLV-1103-W	White	Magnetic Low Voltage 1100VA Multi-way Paddle Dimmer	120 VAC, 60 Hz	50-1100VA
<input type="checkbox"/>	PDMLV-1103-I	Ivory			
<input type="checkbox"/>	PDMLV-1103-A	Almond			
<input type="checkbox"/>	PDMLV-1103-LA	Lt. Almond			
<input type="checkbox"/>	PDMLV-1103-G	Grey			
<input type="checkbox"/>	PDMLV-1103-B	Black			

Order wallplate separately.



Two-wire Fluorescent Multi-way Paddle Dimmer (PDFM-8A)

Dim lighting for increased energy savings

Adjust light output to ideal levels with slider

Adjustable low-end trim



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Suitable for commercial or residential applications

PROJECT
LOCATION/TYPE

Product Overview

Description

The PDFM-8A Fluorescent Multi-way Paddle Dimmer provides easy on/off and preset dimming control of two-wire dimmable fluorescent lighting loads via a paddle switch and a low-profile slider. Designed to replace a standard light switch or dimmer, the device allows for ideal light levels regardless of the activity taking place in a room.

Operation

With Fluorescent Paddle Dimmers, users can brighten and dim the connected lights by moving the slider up and down. As the slider is moved up towards the top of the product the connected lights will brighten. As the slider is moved towards the bottom of the product, the connected lights will dim. The paddle switches the lights on and off. The lights will turn back on to the preset level, determined by the position of the slider.

Multi-way Control & Low-end Trim

The PDFM-8A can be used in both single-pole and multi-way applications. In multi-way applications, a PDFM-8A dimmer is installed in one location and a three-way switch is installed in the other location. If additional control locations are required, one or more four-way switches are installed in the middle of the circuit. A multi-way installation provides the user with on/off and dimming control from the dimmer, and on/off control from the switch(es). The dimmers also allow easy low-end trim calibration for use with different compatible dimming ballasts. Users simply remove the wallplate to adjust the calibration dial.

Applications

The PDFM-8A can be used to save energy and reduce utility costs in applications where fluorescent lighting loads are common, such as private offices and conference rooms.

Features

- Replaces any standard single-pole or 3-way switch
- Operates specific fluorescent loads
- LED for easy location in darkened rooms
- Large paddle switch turns connected load on or off
- Slider control for easy dimming or brightening
- Quickly recalls the last user setting
- No current leakage to load when switch is in off position for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

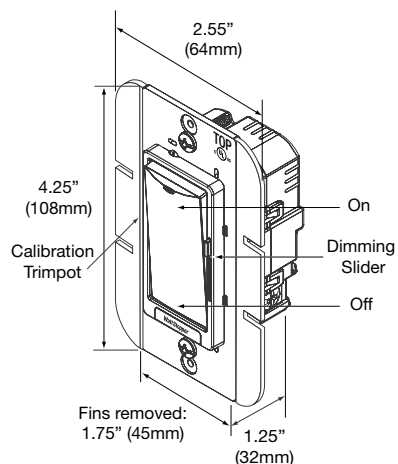


Specifications

- 120 VAC; 60 Hz
- No neutral required
- Load rating (compatible fluorescent loads only): 0.3 - 8A; derating required - see chart below
- Filtered output for RFI suppression
- Includes voltage compensation circuitry for stabilized light output
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

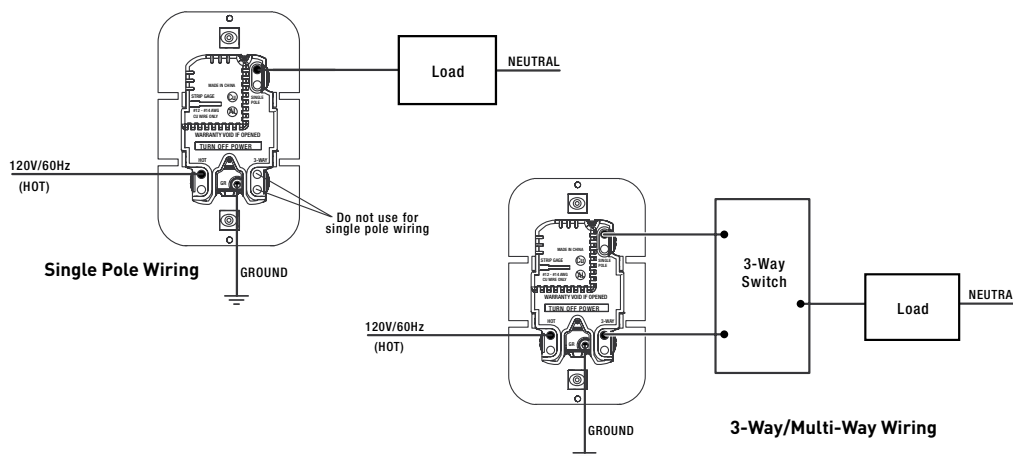
Product Controls



Compatible Ballasts

Manufacturer	Models
Advance Mark 10®	REZ-132-SC, REZ-2S32-SC, REZ-3S32-SC, REZ-154, REZ-2S54, REZ-1Q18-M2, REZ-2Q18-M2, REZ-2Q26-M2, REZ-1T42-M2, REZ-2T42-M3, REZ-1TTS40, REZ-1TTS40-SC, REZ-2TTS40, REZ-2TTS40-SC, IEZ-2S24-D
Advance Ambistar	REB-2S26-M1-LS-DIM, REB-2S26-M1-BS-DIM
Lutron Tu-Wire®	2W-T426-120-1-S, 2W-T426-120-2-S, 2W-T432-120-1-S, 2W-T432-120-2-S, 2W-T832-120-1-S, 2W-T832-120-2-S
Sylvania Quicktronic® Powersense™	QTP1x32T8/UNV DIM, QTP2x32T8/UNV DIM, QTP3x32T8/UNV DIM, QTP4x32T8/UNV DIM

Wiring Diagrams



Multi-gang Derating Information

Dimmer Catalog #	Maximum Load	2-Gang Installation One fin removed	3-Gang Installation Both fins removed
PDFM-8A	8A	No derating required	6.5A

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> PDFM-8A-W	White	Two-wire Fluorescent Multi-way Paddle Dimmer	120 VAC, 60 Hz	0.3-8A
<input type="checkbox"/> PDFM-8A-I	Ivory			
<input type="checkbox"/> PDFM-8A-A	Almond			
<input type="checkbox"/> PDFM-8A-LA	Lt. Almond			
<input type="checkbox"/> PDFM-8A-G	Grey			
<input type="checkbox"/> PDFM-8A-B	Black			

Order wallplate separately.



Multi-way Paddle Fan Speed Control (PDFC-1A)

Controls ceiling fans for comfort and convenience

Adjust fan speed easily with 3-position slider control

No derating required for multi-gang installations



For single-pole or multi-way applications; no neutral required

On/Off paddle switch

Ideal for both commercial and residential applications

PROJECT
LOCATION/TYPE

Product Overview

Description

The PDFC-1A Multi-way Paddle Fan Speed Control allows users to set and maintain the ideal fan speed in any space via a convenient slider device. It installs into any standard single or multi-gang wallbox and is designed to control a single ceiling paddle fan.

Operation

The PDFC-1A Multi-way Paddle Fan Speed Control installs easily and replaces a standard fan speed control switch (ceiling paddle fans only; not designed for use with fan/light combinations). Once installed, the fan can be easily controlled by the on/off switch and slider. Users press the paddle switch to turn the fan off or on to the preset speed level, determined by the position of the slider. To change the fan speed, users move the slider up or down until it clicks into place for one of three fan speeds: low, medium, or high.

Optional Multi-way Control

The PDFC-1A can be used in either single-pole or multi-way applications. In multi-way applications, a fan speed control is installed in one location and a three-way switch is installed in the other location. If an additional control location is required, a four-way switch is installed in the middle of the circuit. A multi-way installation provides the user with on/off and speed control from the PDFC-1A, and on/off control from the switch(es).

Applications

PDFC-1A Multi-way Paddle Fan Speed Controls are ideal in either commercial or residential spaces. Regardless of location, the speed of every fan can be easily controlled.

Features

- Replaces a standard fan speed switch (solid-state fan speed controls only)
- Provides slide control to easily obtain ideal fan speed from one of three settings
- Includes dehumming circuitry for quiet operation
- No derating needed
- LED for easy location in darkened rooms
- Large paddle switch turns fan on or off
- No current leakage to load when switch is in off position for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

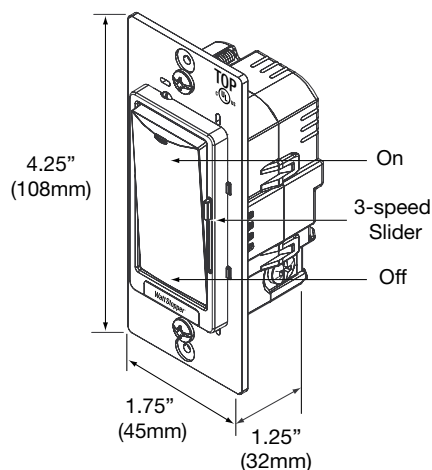


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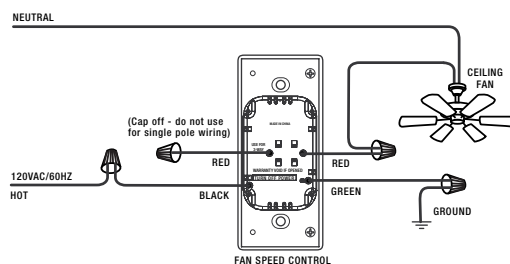
- 120 VAC; 60 Hz
- No neutral required
- For use with ceiling paddle fans only
- Suitable for use with solid state fans
- Load Rating: 0-1.6A
- No derating required for multi-gang installations
- Use only one fan speed control in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed

Controls & Wiring

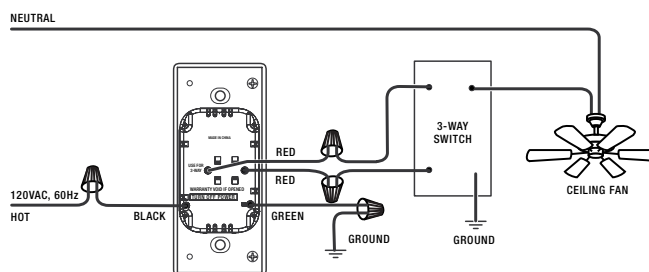
Product Controls



Single-pole Wiring



3-way/Multi-way Wiring



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> PDFC-1A-W	White	Multi-way Paddle Fan Speed Control	120 VAC, 60 Hz	0-1.6A
<input type="checkbox"/> PDFC-1A-I	Ivory			
<input type="checkbox"/> PDFC-1A-A	Almond			
<input type="checkbox"/> PDFC-1A-LA	Lt. Almond			
<input type="checkbox"/> PDFC-1A-G	Grey			
<input type="checkbox"/> PDFC-1A-B	Black			

Order wallplate separately.





Simplify dimming with easy-to-use slide dimmers

Designer-style slide dimmers blend cost-effective aesthetics with a solid tactile feel. This family of products includes preset models, a dual slide-

to-off model, a slide-to-off fan speed control and a choice of six colors. Load types include incandescent and magnetic low voltage.

Dimming slider



On/Off switch



Incandescent Multi-way Slide Dimmer (SD-603, SD-1003)

Dim lighting for increased energy savings

Adjust light output to ideal levels

No derating required for 600W model



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Ideal for commercial and residential applications

PROJECT
LOCATION/TYPE

Product Overview

Description

The SD-603 and SD-1003 Incandescent Multi-way Slide Dimmers provide easy preset dimming control via a slider and an on/off switch. Designed to replace a standard light switch or dimmer, the devices allow users to set the ideal light level for any activity taking place in a room.

Operation

The SD-603 and SD-1003 control incandescent and halogen loads and fit in standard wallboxes. Once installed, each dimmer is controlled by the slider and the switch. To dim the connected load, the user moves the slider down. To brighten the connected load, the user moves the slider up. Pressing the switch turns the connected load on or off. Lighting will come on to the preset level, determined by the slider position.

Multi-way Operation

Both the SD-603 and SD-1003 models can be used in three-way and multi-way circuits. In a three-way application, the installer connects an SD dimmer in one location and a three-way switch in the other location. If additional control locations are required, one or more four-way switches are installed in the middle of the circuit. This allows dimming and on/off control from the dimmer, and on/off control from the switch(es). For example, in a conference room with two entrances, an occupant would be able to dim and turn lighting on or off from the dimmer location, while another occupant would be able to turn lighting on and off at the switch location.

Applications

SD Incandescent Multi-way Slide Dimmers are ideal in either commercial or residential spaces where multiple activities occur. For example, dimming control in a conference room ensures that light levels can be adjusted for presentations or meetings. At home, residents can adjust family room lighting for activities such as watching movies, reading or playing cards. Users can customize lighting for any activity while simultaneously realizing energy savings.

Features

- Replaces standard single-pole or 3-way switch
- Operates incandescent and halogen loads
- Large switch turns connected load on or off
- Slider control for easy dimming or brightening
- Provides multi-way control when used with standard three- and four-way switches
- No current leakage to load when switch is in off position for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

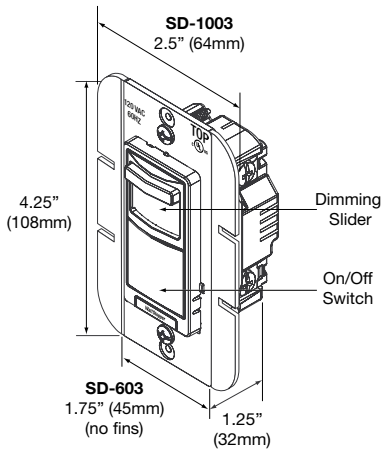


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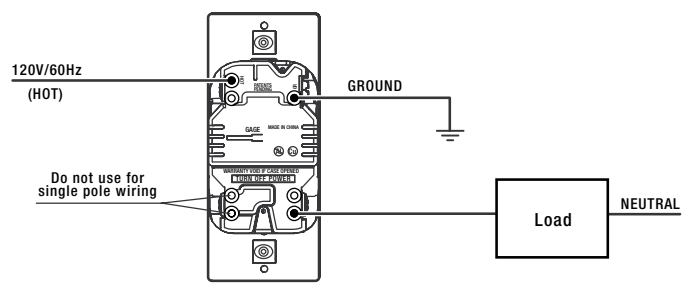
- 120 VAC; 60 Hz
- No neutral required
- Load ratings (incandescent):
 - SD-603: 50-600W; no derating required for multi-gang installations
 - SD-1003: 50-1000W; refer to chart below for derating information
- Filtered output for RFI suppression
- Use only one dimmer in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

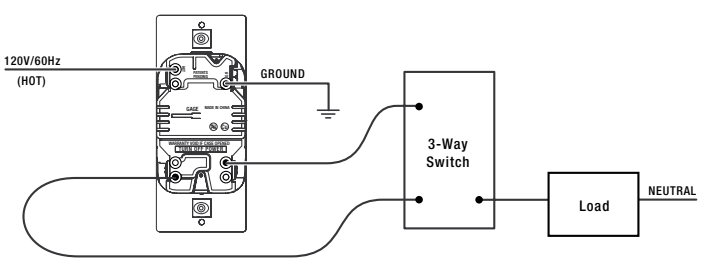
Product Controls



Single-pole Wiring



3-way/Multi-way Wiring



Multi-gang Derating Information

Dimmer Catalog #	Maximum Load	2-Gang Installation (One fin removed from SD-1003)	3-Gang Installation (Both fins removed from SD-1003)
SD-603	600W	No derating required	
SD-1003	1000W	900W	750W

Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> SD-603-W	White	Incandescent 600W Multi-way Slide Dimmer	120 VAC, 60 Hz	50-600W
<input type="checkbox"/> SD-603-I	Ivory			
<input type="checkbox"/> SD-603-A	Almond			
<input type="checkbox"/> SD-603-LA	Lt. Almond			
<input type="checkbox"/> SD-603-G	Grey			
<input type="checkbox"/> SD-603-B	Black			
<input type="checkbox"/> SD-1003-W	White	Incandescent 1000W Multi-way Slide Dimmer	120 VAC, 60 Hz	50-1000W
<input type="checkbox"/> SD-1003-I	Ivory			
<input type="checkbox"/> SD-1003-A	Almond			
<input type="checkbox"/> SD-1003-LA	Lt. Almond			
<input type="checkbox"/> SD-1003-G	Grey			
<input type="checkbox"/> SD-1003-B	Black			

Order wallplate separately.

Incandescent Dual Slide Dimmer (SD2-300)

Dim lighting for increased energy savings

Control incandescent and halogen loads

Use sliders to set light levels



Control two loads independently

Reduce wall clutter

Slide-to-off functionality

PROJECT
LOCATION/TYPE

Product Overview

Description

The SD2-300 Incandescent Dual Slide Dimmer has two sliders for independent control of two loads from one switch location. It is designed to replace single-pole light switches or dimmers and allows users to set the ideal light level for any activity taking place in a space.

Operation

The SD2-300 controls incandescent and halogen loads only. To dim the connected loads, a user moves the appropriate slider down; to brighten the connected loads, the user moves the appropriate slider up. To turn either load off, the user moves the appropriate slider all the way down, to the off position.

Dual Slide

The SD2-300 allows control of two loads from a single-gang wall switch location. Each connected load can be controlled independently, allowing for different light level settings for the two loads.

Applications

The SD2-300 can be used in retrofit applications where wallbox space is limited, or in new construction to reduce wall clutter. It is especially convenient for spaces with lighting on two switched legs. For example, a dual slide dimmer would be ideal for a bathroom with individually controlled overhead lights and lights over the vanity.

Features

- Replaces individual and dual single-pole switches
- Operates incandescent and halogen loads
- Slider control for easy dimming
- Provides independent control of two loads simultaneously
- Low-profile styling
- No current leakage to load in off mode for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

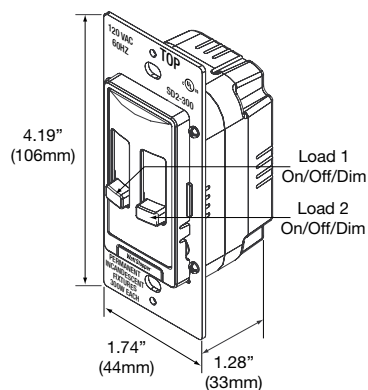


Specifications

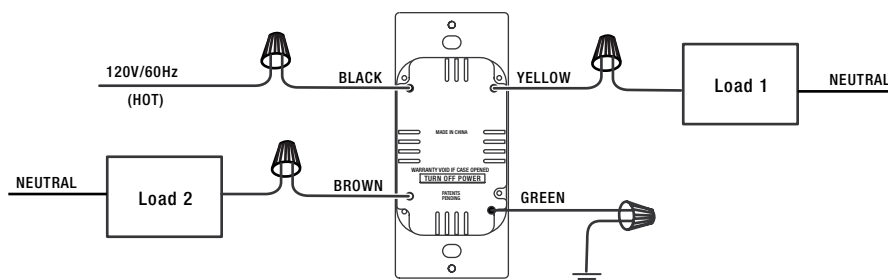
- 120 VAC; 60 Hz
- No neutral required
- Load ratings: 25-300W incandescent (for each load); no derating required for multi-gang installations
- Filtered output for RFI suppression
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

Product Controls



Wiring Diagram



Ordering Information

	Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/>	SD2-300-W	White	Incandescent 300W Dual Slide Dimmer	120 VAC, 60 Hz	25-300W
<input type="checkbox"/>	SD2-300-I	Ivory			
<input type="checkbox"/>	SD2-300-A	Almond			
<input type="checkbox"/>	SD2-300-LA	Lt. Almond			
<input type="checkbox"/>	SD2-300-G	Grey			
<input type="checkbox"/>	SD2-300-B	Black			

Order wallplate separately.



Magnetic Low Voltage Multi-way Slide Dimmer (SDMLV-603)

Dim lighting for increased energy savings

Adjustable low-end trim

Use slider to set light levels



For single-pole or multi-way applications; no neutral required

On/Off/Preset control

Ideal for commercial and residential applications

PROJECT
LOCATION/TYPE

Product Overview

Description

The SDMLV-603 Magnetic Low Voltage Multi-way Slide Dimmer provides easy preset dimming control via a slider and an on/off switch. It is designed to replace a standard light switch or dimmer, and allows users to set the ideal light level for any activity taking place in a space.

Operation

The SDMLV-603 controls magnetic low voltage lighting loads and fits in a standard wallbox. Once installed, the device is controlled by the slider and the switch. The user dims the connected load by moving the slider down, and brightens the load by moving the slider up. A press of the switch turns the connected load on or off. The load will turn back on to the preset light level, determined by the position of the slider. No derating is required for multi-gang installations.

Multi-way Operation & Low-end Trim

An SDMLV-603 can be used in both three-way and multi-way circuits. In a three-way installation, the SDMLV-603 dimmer is connected in one location and a three-way switch in the other location. This allows dimming and on/off control from the dimmer, and on/off control from the switch. For a multi-way application, one or more four-way switches are connected between the dimmer and three-way switch. The SDMLV-603 allows the low-end trim to be set to accommodate a variety of transformers. With the wallplate removed, the calibration dial can be adjusted as needed. This ensures that the ideal light level can be set for any magnetic low voltage transformer.

Applications

The SDMLV-603 can be used in many different applications to ensure both energy savings and ideal light levels. It can also be used to meet certain energy code requirements, such as elements contained in California Title 24-2008 for residential buildings. The SDMLV-603 will help save energy and cut utility bill costs even when dimmed by only 10%.

Features

- Replaces standard single-pole or 3-way switch
- Operates magnetic low voltage loads
- Large switch turns connected load on or off
- Slider control for easy dimming or brightening
- Provides multi-way control when used with standard three- and four-way switches
- No current leakage to load when switch is in off position for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

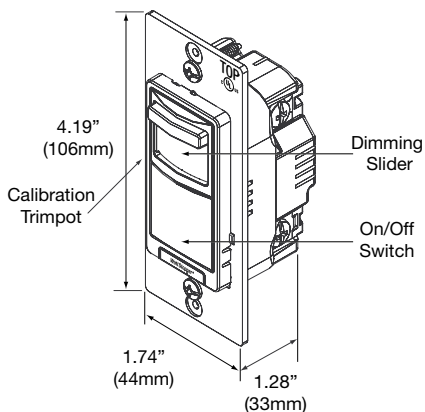


Specifications

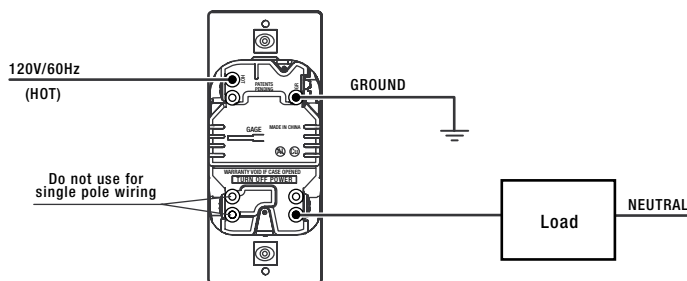
- 120 VAC; 60 Hz
- No neutral required
- Load rating (magnetic low voltage): 25-600VA, no derating required for multi-gang installations
- Use only one dimmer in a 3-way/multi-way circuit
- Filtered output for RFI suppression
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

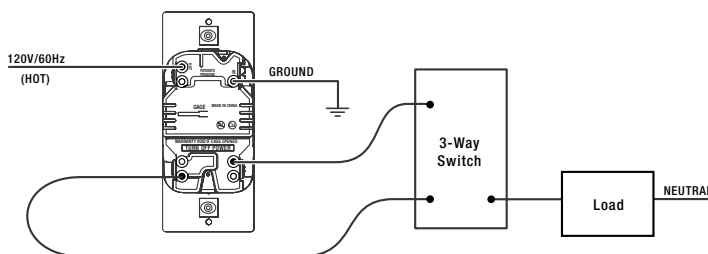
Product Controls



Single-pole Wiring



3-way/Multi-way Wiring



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> SDMLV-603-W	White	Magnetic Low Voltage 600VA Multi-way Slide Dimmer	120 VAC, 60 Hz	25-600VA
<input type="checkbox"/> SDMLV-603-I	Ivory			
<input type="checkbox"/> SDMLV-603-A	Almond			
<input type="checkbox"/> SDMLV-603-LA	Lt. Almond			
<input type="checkbox"/> SDMLV-603-G	Grey			
<input type="checkbox"/> SDMLV-603-B	Black			

Order wallplate separately.



Multi-way Slide Fan Speed Control (SDFC-5A)

Control one or more ceiling paddle fans from a convenient location

Adjust fan speed easily with slider control

On/Off switch quickly recalls preset speed setting



For single-pole or multi-way applications; no neutral required

Available in six decorator colors

Ideal for both commercial and residential applications

PROJECT
LOCATION/TYPE

Product Overview

Description

The SDFC-5A Slide Fan Speed Control allows users to set and maintain the ideal fan speed in any space. It is comprised of a simple slider for fully variable speed control, and an on/off switch. The SDFC-5A replaces a standard switch for ceiling paddle fans.

Operation

The SDFC-5A Slide Fan Speed Control installs easily into any standard single- or multi-gang wallbox. Once installed, the device can be easily controlled by the slider and the switch. To increase or decrease fan speed, a user simply moves the slider up or down. The controlled fan is turned on or off by pressing the switch. When the fan is powered on, it will operate at the preset speed, as set by the slider position.

Multi-way Operation

The SDFC-5A can be used in three-way or multi-way circuits. In three-way applications, a fan speed control is installed in one location and a three-way switch is installed in the other location. If an additional control location is required, a four-way switch is installed in the middle of the circuit. A three-way or multi-way installation provides the user with on/off and speed control from the SDFC-5A, and on/off control from the switch(es).

Applications

High capacity SDFC-5A Slide Fan Speed Controls are ideal in either commercial or residential spaces. Users can control multiple fans with a single unit. Sometimes, large rooms such as banquet facilities, restaurants, hotel lobbies and enclosed patios contain multiple fans. In these types of spaces, controlling the speed of multiple fans with one control can effectively ensure even airflow throughout the room. The installer must verify that the combined fan load does not exceed the maximum load rating of the device.

Features

- Replaces a standard fan switch (solid-state fan speed controls only)
- One device controls multiple fans
- Provides slide control to easily obtain any fan speed
- On/Off switch quickly recalls the last user setting
- No current leakage to load when switch is in off position for safety
- Choice of six decorator colors (NEMA White, NEMA Ivory, Almond, Light Almond, Grey and NEMA Black)
- Compatible with decorator wallplates

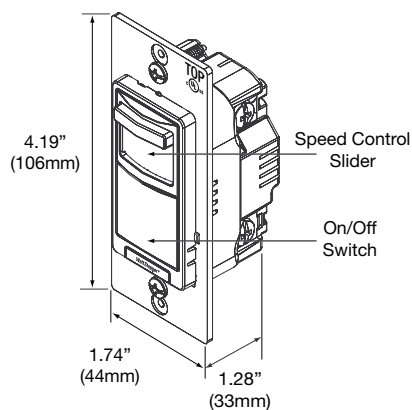


Specifications

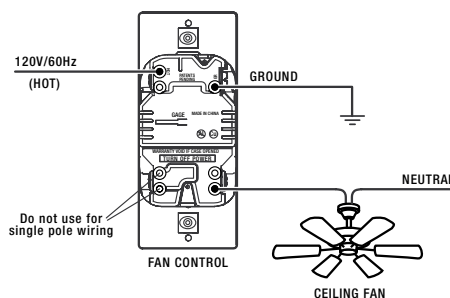
- 120 VAC; 60 Hz
- No neutral required
- Load rating: 0.33-5A
- Use only with fans marked suitable for use with solid state fan speed controls
- Use only one fan speed control in a 3-way/multi-way circuit
- For indoor use only
- UL and cUL listed
- Five year warranty

Controls & Wiring

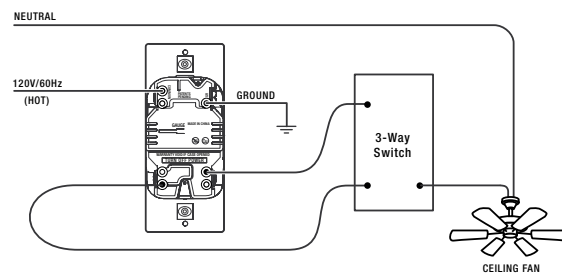
Product Controls



Single-pole Wiring



3-way/Multi-way Wiring



Ordering Information

Catalog No.	Color	Description	Voltage	Load Rating
<input type="checkbox"/> SDFC-5A-W	White	Multi-way Slide Fan Speed Control	120 VAC, 60 Hz	0.33-5A
<input type="checkbox"/> SDFC-5A-I	Ivory			
<input type="checkbox"/> SDFC-5A-A	Almond			
<input type="checkbox"/> SDFC-5A-LA	Lt. Almond			
<input type="checkbox"/> SDFC-5A-G	Grey			
<input type="checkbox"/> SDFC-5A-B	Black			

Order wallplate separately.





Simple one-touch control of lighting and plug loads

WattStopper's revolutionary family of wireless radio frequency (RF) lighting control products facilitates energy savings through single-button control, with the added advantages of dimming and scene control. Wireless Miro features one-touch system control, preset dimming, remote control of lighting, plug loads, screens, shades, fans and more.

Matching wired (non-RF) products, including dimmers and fan controllers, are available for locations that do not require wireless remote control.



Table of Contents

Wireless Lighting Controls Overview	H3-H6
Designing with Wireless Miro	H7-H8
Wireless Miro Matrix	H9
Wired (non-RF) Dimmers and Controllers Matrix	H10
Product Details	H11-H53



Wireless Miro is easy to install and operate

Wireless Miro is the easiest and most cost effective scene control or whole house system to specify, install, operate and expand. It even fits where other controls can't, replacing switches without any rewiring.

Miro is ideal for applications ranging from offices or meeting rooms to lobbies, restaurants, galleries, hotels, houses of worship, residences and more. Wireless Miro delivers convenient, easy-to-use control:

- One-touch system ON/OFF
- Dims energy-efficient sources including fluorescents and LEDs
- Coordinated control of lamps, ceiling fans, shades and small appliances
- Group, room and house level control
- Frequency-agile RF wireless communications instead of control wiring
- Integration with systems including AV, security, energy and home automation
- UL listed with five year warranty
- Winner of Electronic House Product of the Year

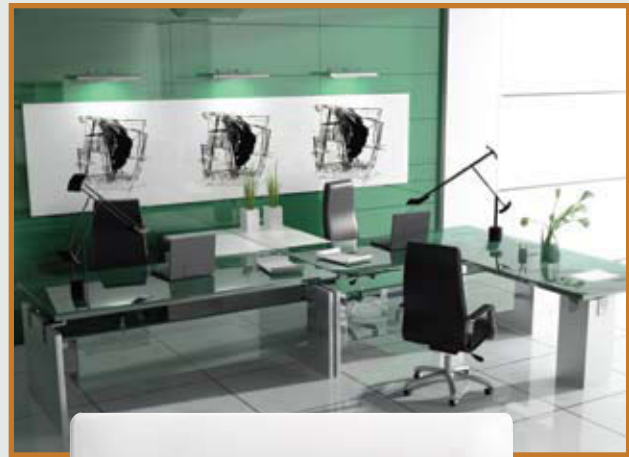




Wireless RF communications

Wireless Miro uses a revolutionary RF (radio frequency) communications protocol (Topdog™) broadcast over the 900 MHz band to create a fast, reliable and invisible control network. Topdog is up to 1,000 times faster than power line technologies.

Frequency-agile Miro devices exchange messages over the clearest channels, and validate messages using sophisticated error checking, to prevent interference from other 900MHz equipment. A unique, automatically assigned, 'house ID' ensures that devices will not communicate with neighboring Miro installations.



Miro styling

Decorator styling ensures that Miro devices fit and blend with other wall box devices, whether installed in the same box, or simply in close proximity. All of the wall box products described in this guide fit a standard decorator opening.



Discover the benefits of Miro

Flexibility and scalability

Miro features distributed intelligence, with processing power in each device. There's no expensive central panel. Because scene memory is stored in the dimmers and switches, Miro is completely scalable.

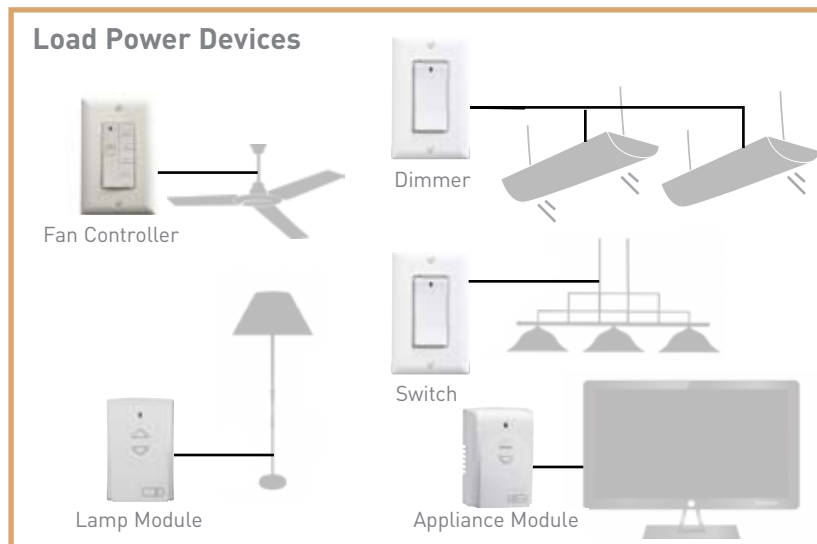
Users can add to a Miro network over time, or reconfigure an existing Miro system if their needs change.

Lowest installed cost

With no panel, and no need for control wiring, costs for materials and labor are reduced. Miro can be installed and configured by any electrician,



integrator or DIYer and there's no reason for factory technicians to visit the site. Miro is easily the lowest total cost, feature-for-feature, when compared with traditional wired systems.



With Miro, each load is connected to a load power device. Scene Controllers and Multilocation Controllers communicate with the load power devices over the RF network, and have no load limitations. No control wiring is required.



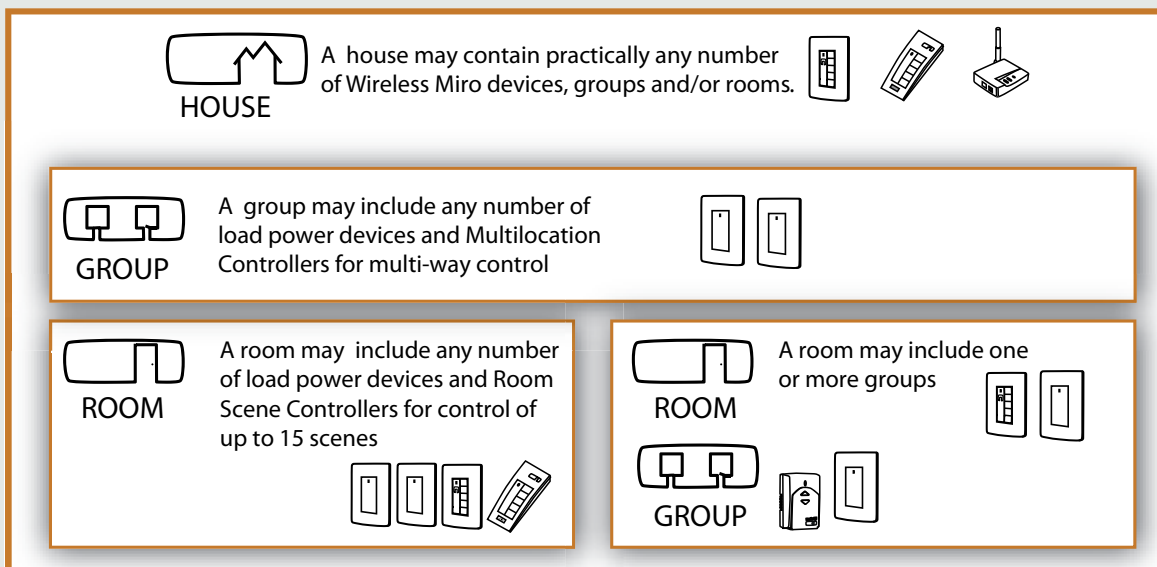
Simplified energy saving

Miro dimmers save energy whenever the lights are in use. One-touch off helps users save energy when lighting is not needed, by enabling control of a whole system from a single location.

Miro dimmers save energy and extend lamp life		
Dimmed level	Energy saving	Increased lamp life
10%	10%	2x
25%	20%	4x
50%	40%	20x
75%	60%	>20x

Levels for convenient control

Miro's unique hierarchical control structure provides three levels of control for unprecedented flexibility.



House Level Control

An entire installation may be controlled from a single location for convenience and energy savings.

Group Level Control

Miro permits wireless full-function control of load power devices from as many locations as needed, and eliminates the need for 3-way and 4-way traveler wires.

Room Level Control

Any number of load power devices may be bound to one or more room scene controllers for wireless scene control.



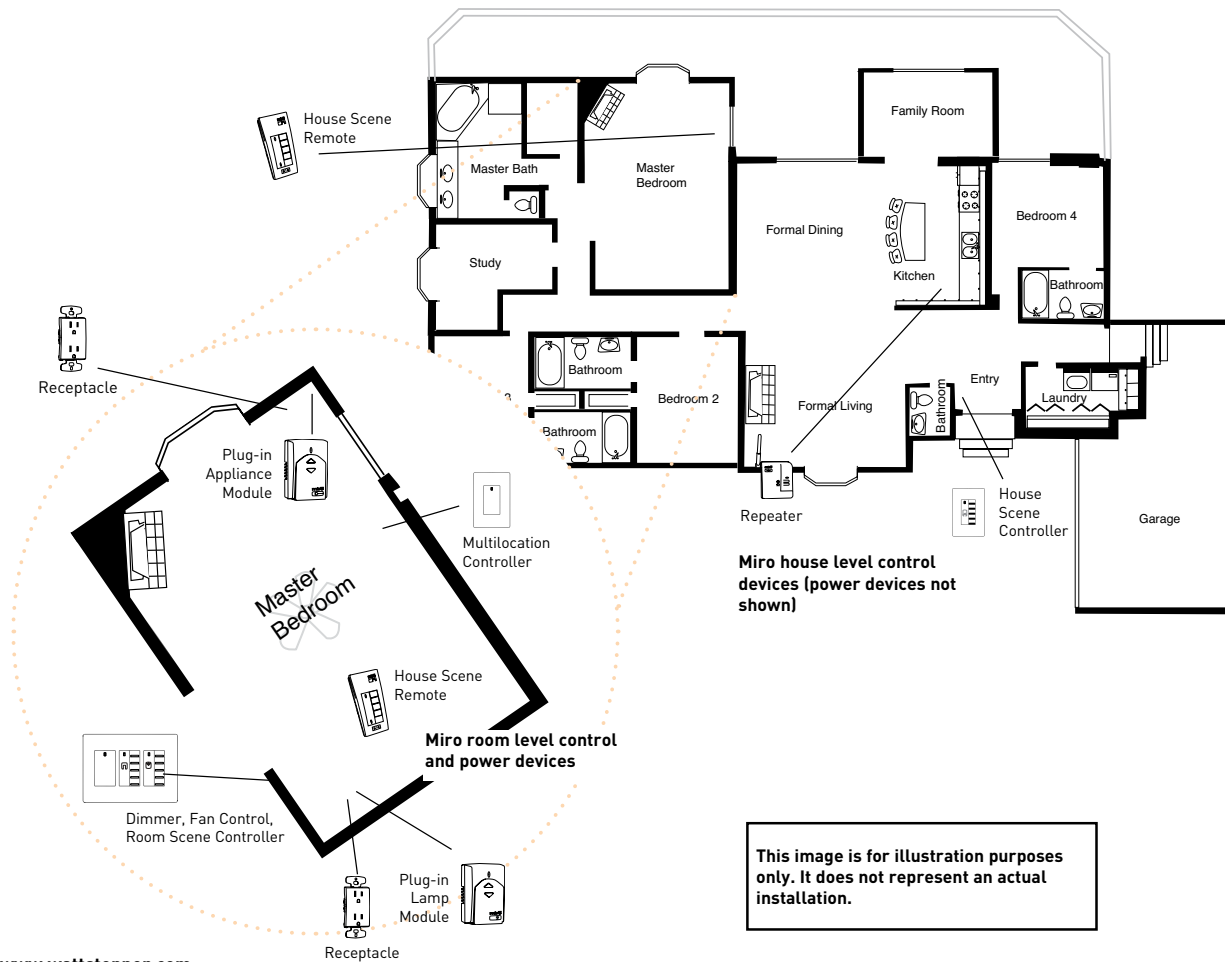
Designing with Wireless Miro

Specifying a Miro system is as easy as choosing power devices for the loads, the right number of controllers and, if needed, interfaces to other systems. One Miro system may include up to 1,023 devices and 127 rooms.

All Wireless Miro products are RF-enabled and communicate among one another without any control wiring. The wireless range in typical installations is up to 100 feet, and can be extended using repeaters.



Typical residential system layout



This image is for illustration purposes only. It does not represent an actual installation.



1. Specify load power devices

Identify the loads you wish to control through the Miro system. Load power devices are available to dim or switch virtually any load, including lighting, shades, fans and plug loads. And, Miro's versatile Universal Dimmers can dim most lighting loads.

Scene memory is stored in the load power devices. These devices may be controlled remotely by Multilocation and/or Scene Controllers.

Load power devices are wired to the loads just like traditional devices.

2. Specify controllers

Scene Controllers simply recall 5 of the 15 room scenes or 10 house scenes stored in the power devices. No central processor is needed.

Controllers can communicate with any number of power devices. There is no practical limit to the number of control zones per room, or per system. It is this versatility that makes Miro systems simple to specify, expand or reconfigure.



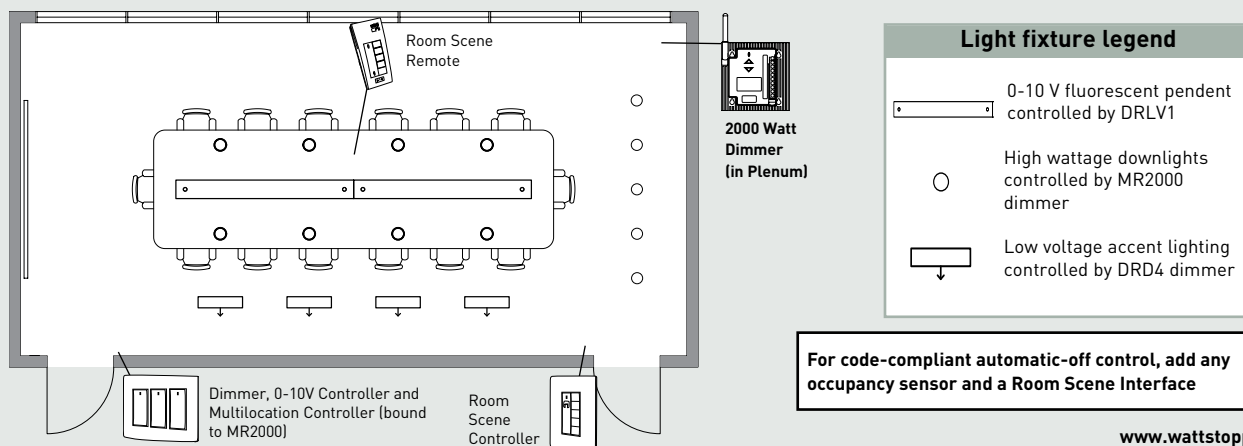
3. Create a schedule for the controllers

Specify how the devices should be bound and the scenes configured. Since Miro is so easy to operate, this can be done on the walk-through with the client.

4. Specify interfaces









Interfaces transmit signals from other controls and building systems across the Wireless Miro network. Integrating controls can save energy and simplify operations.

Typical conference room layout





Wireless RF load power devices

Catalog #	Description	Page
 DRD4-A DRD4-B DRD4-I DRD4-W	Universal dimmer 25 - 600W, 120V, 60Hz	H13-14
 DRD2-A DRD2-B DRD2-I DRD2-W	Two-wire dimmer (incandescent only) 60 - 600W, 120V, 60Hz	H15-16
 DRLV1-A DRLV1-B DRLV1-I DRLV1-W	0-10V controller for dimming, on/off or shade control 35 mA, 24VDC requires power pack(s) *	H17-18
 DRD3-A V2 DRD3-B V2 DRD3-I V2 DRD3-W V2	Switch for on/off control 1500W @ 120V, 3000W @ 277V; 60Hz	H19-20
 DRD9-A DRD9-B DRD9-I DRD9-W	Fan controller 1.5A, 120V, 60Hz	H19-20
 MRP6-W	Plug-in dimming module 25 - 300W, 120V, 60Hz	H21-22
 MRP7-W	Plug-in switch module 800W, 120V, 60Hz	H21-22
 MR2000	2000W universal remote dimmer 100VA - 2000VA @ 120V, 200VA - 4432VA @ 277V; 60Hz	H23-24













NEW!

Neutral required for all wall box devices, except Two-wire Dimmers. Universal Dimmers are recommended for all dimming applications except where a neutral is not present.

* Use BZ series power pack for low voltage dimming or switching applications. Use A120C-P and S120/277/347E-P power packs for shade control.

Wall plates must be ordered separately.





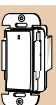
Wireless RF controllers and interfaces


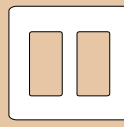
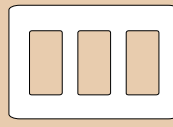
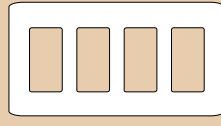
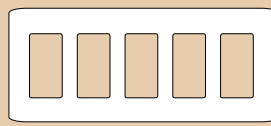
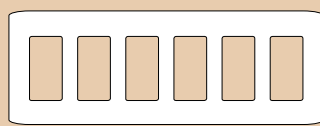
Catalog #	Description	Page
 DRD8-A V2 DRD8-B V2 DRD8-I V2 DRD8-W V2	Multilocation controller 120V/277V, 60Hz	H25-26
 DRD6-A V2 DRD6-B V2 DRD6-I V2 DRD6-W V2	In-wall room scene controller 120V/277V, 60Hz	H27-28
 MRH6-G	Remote room scene controller 3 AAA batteries included	H27-28
 DRD5-A V2 DRD5-B V2 DRD5-I V2 DRD5-W V2	In-wall house scene controller 120V/277V, 60Hz	H29-30
 MRH5-G	Remote house scene controller 3 AAA batteries included	H29-30
 MKFOB	Key fob with visor clip 3V lithium battery included	H31-32
 MRR2-G	Repeater Increases range, occupancy emulation	H33-34
 MRRC3-G	Room level scene interface	H35-36
 MRHC3-G	House level scene interface	H35-36
 MRIR1	IR interface	H37-38
 MR232-G	RS232 serial interface	H39-40
 MSC-100	Astronomic time clock	H41-42



Wired (non-RF) dimmers and controllers

Wall plates

Catalog #	Description	Page
 DCD267-A DCD267-B DCD267-I DCD267-W	Universal dimmer 25 - 600W, 120V, 60Hz	H45-46
 DCD26-A DCD26-B DCD26-I DCD26-W	Two-wire dimmer (incandescent only) 40 - 600W, 120V, 60Hz	H47-48
 DCF8-A DCF8-B DCF8-I DCF8-W	Fan controller 1.5A, 120V, 60Hz	H49-50
 DCD68-A DCD68-B DCD68-I DCD68-W	Multilocation controller 120V, 60Hz	H45-46 H47-48
 DCLV1-A DCLV1-B DCLV1-I DCLV1-W	0-10V controller for dimming, on/off or shade control 35 mA, 24VDC requires power pack(s) *	H51-52 NEW!

Catalog #	Page H53	Description
	DPP1-A DPP1-B DPP1-I DPP1-W	Single Gang Plate
	DPP2-A DPP2-B DPP2-I DPP2-W	2-Gang Plate
	DPP3-A DPP3-B DPP3-I DPP3-W	3-Gang Plate
	DPP4-A DPP4-B DPP4-I DPP4-W	4-Gang Plate
	DPP5-A DPP5-B DPP5-I DPP5-W	5-Gang Plate
	DPP6-A DPP6-B DPP6-I DPP6-W	6-Gang Plate

Wired devices operate similarly to Wireless Miro devices but are not RF enabled and do not respond to scene controllers.

* Use BZ series power pack for low voltage dimming or switching applications. Use A120C-P and S120/277/347E-P power packs for shade control.

Dimmer derating

The maximum load for each dimmer is determined by the type of load and the presence of other dimmers, or fan controllers, in a multi-gang installation. Limit loads on dimmers as shown below. Do not mix different load types on one dimmer.

600 watt dimmers	Plastic or metal back box		
	Single Dimmer	Dimmer at end of multi-gang	Dimmer in middle of multi-gang
Incandescent/quartz halogen	600W	500W	400W
ELV (forward phase compatible), MLV, cold cathode/neon, two-wire fluorescent (Advance Mark 10 or equivalent)	500W	400W	300W

Specify color when ordering:

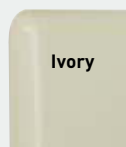
-A for Light Almond



-B for Black



-I for Ivory



-W for White







Miro wireless RF devices

Versatile load power devices including Dimmers, Switches, Low Voltage Controller and Fan Controller

- Exclusive Universal Dimmers operate most dimmable load types (incandescent, MLV, ELV, neon/cold cathode, fluorescent, LED)
- Plug-in modules enable floor and table lamps to be included in scenes, and permit one-touch off of phantom loads
- Controller for 0-10V fluorescents and LEDs, or line voltage shade motors; includes occupancy sensor input
- Dimmers designed for convenience and longevity:
 - Ability for true multi-way dimming control
 - Patented overload and short circuit protection
 - Default 2 second fade rate
 - Last level recall (preset)
 - Soft start circuitry to extend lamp life
 - 16-bit fade engine for smooth fades
 - Surge protection to 6,000 volts
 - Square law dimming curve
 - Long life status/locator LED
 - Air gap switch for safe relamping

Multilocation and Scene Controllers provide wireless remote control

- Multilocation Controllers for full dimming control including last level recall and group raise/lower
- Room and House Scene Controllers available in wall mount and battery-powered remote models
- Scene Controllers include preprinted scene labels

Interfaces combine systems

- Allow Miro scenes to be recalled via contact closures, for energy savings, security or convenience
- Facilitate integration with occupancy sensors and time clocks
- Allow control by an AV system via an infrared (IR) signal
- Allow system control via RS232



Wireless Miro Decorator Universal Dimmers

Industry-exclusive universal dimmer controls most load types

Last level recall

Decorator styling compatible with screwless or standard wall plates



Optional fluorescent mode activates second dimming curve

Controllable from multiple locations over RF network; no control wiring

Air-gap switch ensures safe relamping

PROJECT
LOCATION/TYPE

Product Overview

Description

Wireless Miro Decorator Universal Dimmers are power devices for coordinated operation of most dimmable lighting loads. They drive incandescent, magnetic low voltage, electronic low voltage (forward phase compatible), neon and cold-cathode, and dimmable two-wire linear and compact fluorescent (Advance Mark 10 or equivalent) loads. They also operate selected LED loads (contact the manufacturer to determine compatibility). Wireless dimmers allow seamless control of lighting loads by Multilocation and Scene Controllers from an unlimited number of locations without the need for control wires.

Operation

Users operate Miro dimmers by pressing up or down on the paddle to raise or lower light levels. They may also recall the preset light level by tapping once on the paddle. Dimmers may be bound to and controlled by Multilocation Controllers, Room Controllers, House Controllers, or other Wireless devices within RF range.

Fluorescent Mode

Universal Dimmers have two dimming curves, square law (default) and fluorescent, so that various loads on different dimmers will perform similarly. Fluorescent dimming is smooth, with a typical low level of approximately 5% (consult ballast manufacturer for specifics).

Applications

Universal Dimmers offer a single product solution for multiple dimming requirements and are recommended for all commercial, hospitality and residential applications, except those without a neutral wire at the dimmer location. This product is ideal where control is required from multiple locations or where scene control is desired as part of a Wireless Miro system.

Features

- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Large surface-mounted antenna ensures maximum broadcast coverage
- Recalls last-used lighting level (preset)
- Stores 15 room and 10 house scenes
- Supports Panic mode operation
- Two-second fade rate (default)
- Square law or fluorescent dimming curve
- Soft start technology significantly extends lamp life by limiting inrush current
- Patented overload and short circuit protection
- Compatible with most load types
- Power failure restore to last-used level
- Long-life status LED
- Compatible with decorator wall plates



Specifications

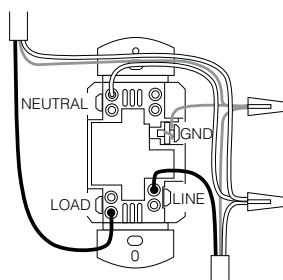
- 120 VAC; neutral required
- Minimum load: 25 watts
- 900MHz radio, bidirectional
- Dimensions: 2.64" x 1.75" x 1.98" (67.1mm x 44.5mm x 50.3mm) L x W x D; depth in wall 1.65" (41.9mm)
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

Dimmer Ratings

Dimmer derating			
The maximum load for each dimmer is determined by the type of load and the presence of other dimmers, or fan controllers, in a multi-gang installation. Limit loads on dimmers as shown below. Do not mix different load types on one dimmer.			
600 watt dimmers	Plastic or metal back box		
	Single Dimmer	Dimmer at end of multi-gang	Dimmer in middle of multi-gang
Incandescent/quartz halogen	600W	500W	400W
ELV (forward phase compatible), MLV, cold cathode/neon, two-wire fluorescent (Advance Mark 10 or equivalent)	500W	400W	300W

Installation & Operation

Wiring Diagram

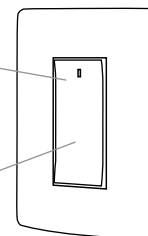


Mounting dimmers in deep electrical boxes is recommended. For optimal performance, Miro devices should be distributed throughout an application. If dimmers are clustered together, a Repeater should be installed nearby. See ClusteringTechNote at [www.wattstopper.com \(http://www.wattstopper.com/getdoc/2414/ClusteringTechNote.pdf\)](http://www.wattstopper.com/getdoc/2414/ClusteringTechNote.pdf), or search on "clustering."

Operation

1 tap = last used level
2 taps = full output
Press and hold = raise light level

1 tap = fade to OFF
Press and hold = reduce light level



Ordering Information

Catalog No.	Color	Product Description	Voltage	Min Load	Max Load
<input type="checkbox"/> DRD4-A	Light Almond	Wireless Miro Decorator Universal Dimmer	120 VAC	25W	600W*
<input type="checkbox"/> DRD4-B	Black				
<input type="checkbox"/> DRD4-I	Ivory				
<input type="checkbox"/> DRD4-W	White				

*Subject to derating when more than 1 dimmer is ganged together or when using non-incandescent load types. Order wall plates separately.

Wireless Miro Decorator Two-wire Dimmer

No neutral connection required;
controls incandescent loads

Last level recall

Decorator styling compatible
with screwless or standard
wall plates



Controllable from multiple locations
over RF network; no control wiring

Air-gap switch ensures safe relamping

PROJECT

LOCATION/TYPE

Product Overview

Description

Wireless Miro Decorator Two-wire Dimmers are power devices for coordinated operation of incandescent and quartz halogen lighting loads. Wireless dimmers allow seamless control of lighting loads by Multilocation and Scene Controllers from an unlimited number of locations without the need for control wires.

Operation

Users operate Miro dimmers by pressing up or down on the paddle to raise or lower light levels. They may also recall the preset light level by tapping once on the paddle.

Wireless Remote Control

Wireless RF (radio frequency) control facilitates 3-, 4- and multi-way control, scene control and whole house one-touch control for convenience and energy saving. Wireless Miro Dimmers may be bound to and controlled by any number of Multilocation Controllers, Room Controllers, House Controllers, or other Wireless devices within RF range.

Applications

Two-wire Dimmers are recommended for retrofit applications where no neutral wire is available in the switch box.

Features

- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Large surface-mounted antenna ensures maximum broadcast coverage
- Recalls last-used lighting level (preset)
- Stores 15 room and 10 house scenes
- Supports Panic mode operation
- Two second fade rate (default)
- Square law dimming curve
- Soft start technology significantly extends lamp life by limiting inrush current
- Patented overload and short circuit protection
- Compatible with incandescent and quartz halogen loads
- Power failure restore to last-used level
- Long-life status LED
- Compatible with decorator wall plates



Specifications

- 120 VAC; no neutral required
- Minimum load: 60 watts
- 900MHz radio, bidirectional
- Dimensions: 2.64" x 1.75" x 1.98" (67.1mm x 44.5mm x 50.3mm) L x W x D; depth in wall 1.65" (41.9mm)
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

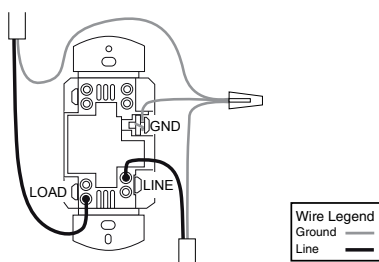
Dimmer Ratings

Dimmer derating
The maximum load for each dimmer is determined by the presence of other dimmers, or fan controllers, in a multi-gang installation. Limit loads on DRD2 dimmers as shown below.

600 watt dimmers	Plastic or metal back box		
	Single Dimmer	Dimmer at end of multi-gang	Dimmer in middle of multi-gang
Incandescent/quartz halogen	600W	500W	400W

Installation & Operation

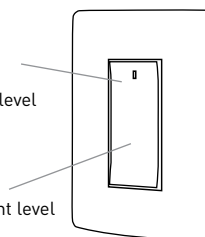
Wiring Diagram



Operation

1 tap = last used level
2 taps = full output
Press and hold = raise light level

1 tap = fade to OFF
Press and hold = reduce light level



Mounting dimmers in deep electrical boxes is recommended. For optimal performance, Miro devices should be distributed throughout an application. If dimmers are clustered together, a Repeater should be installed nearby. See ClusteringTechNote at www.wattstopper.com (<http://www.wattstopper.com/getdoc/2414/ClusteringTechNote.pdf>, or search on "clustering."

Ordering Information

Catalog No.	Color	Product Description	Voltage	Min Load	Max Load
<input type="checkbox"/> DRD2-A	Light Almond	Wireless Miro Decorator 2-wire Dimmer (for incandescent loads only)	120 VAC	60W	600W*
<input type="checkbox"/> DRD2-B	Black				
<input type="checkbox"/> DRD2-I	Ivory				
<input type="checkbox"/> DRD2-W	White				

*Subject to derating when more than 1 dimmer is ganged together. Order wall plates separately.

Wireless Miro Decorator 0-10V Controller

Controls 0-10VDC lighting loads or line voltage shades

Input for optional occupancy sensor or photosensor

Last level recall

Controllable from multiple locations over RF network

Decorator styling compatible with screwless or standard wall plates

Long-life status LED



PROJECT
LOCATION/TYPE

Product Overview

Description

The Wireless Miro 0-10V Controller is a low voltage (Class 2) device with two field-selectable modes of operation. It may be included in a Miro RF network for scene control. In dimming mode, it provides a nominal 0-10VDC signal to smoothly dim up to 100 DC controlled fluorescent dimming ballasts (Advance Mark 7, or equivalent) or compatible LED systems. In shade control mode, it controls line voltage shade motors (Somfy, or equivalent). Auxiliary power pack(s) are required. Controller includes a sensor input for automatic operation.

Operation

Users operate the Controller by pressing up or down on the paddle to raise or lower light level or shade position. They may also recall the preset level by tapping the paddle. If installed, sensors will fade lights on to the preset level and fade off, based on occupancy. The Wireless 0-10V Controller may be bound to and controlled by Multilocation Controllers, Scene Controllers and other Wireless devices within RF range. Only a fully up or down shade state may be recorded in a scene.

Features

- Enables 0-10VDC controllable fluorescent lighting or LEDs to be included in Miro scenes
- Enables line voltage shades to be included in Miro scenes
- Sinks up to 50mA, to control up to 100 ballasts wired in parallel (each ballast sourcing 0.5mA)
- Controls two external maintained relays
- May be used for on/off lighting control
- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Large surface-mounted antenna ensures maximum broadcast coverage
- Recalls last-used light level (preset)
- Stores 15 room and 10 house scenes
- Two second fade rate (default)
- Power failure restore to last-used level

Code-compliant Fluorescent Dimming

Fluorescent dimming is smooth, with a typical low level of approximately 5% (consult ballast manufacturer for specifics). When the controller signal output drops to 0, the auxiliary relay (WattStopper power pack) will turn the controlled fixtures off after one to two seconds.

For code-compliant automatic-off lighting control, an occupancy sensor input may be wired to the controller. Both the sensor and the Controller may be powered from a single power pack. Lighting will fade on when the sensor detects occupancy and off after the space has been vacated.

Applications

Common applications include restaurants, offices, conference and meeting spaces, training centers and specialty stores. The Wireless Miro 0-10V Controller is ideal where control is required from multiple locations or where scene control is desired as part of a Wireless Miro system.

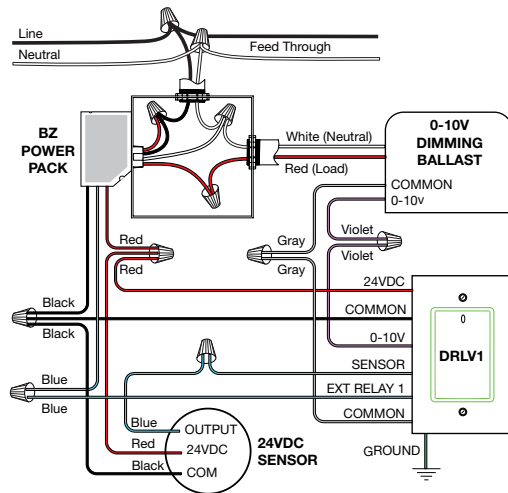


Specifications

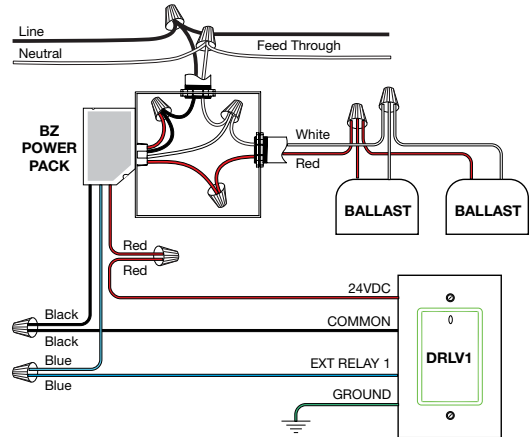
- Input voltage: 24VDC, 35mA
- Control output for 0-10VDC ballasts:
Sinks up to 50mA; maximum voltage, 9.5VDC, minimum voltage, 0.5VDC
- Two outputs for external maintained relays
- 900MHz radio, bidirectional
- Dimensions: 2.64" x 1.75" x 1.98" (67.1mm x 44.5mm x 50.3mm) L x W x D; depth in wall 1.65" (41.9mm)
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listing pending
- Five year warranty

Installation & Operation

Wiring



Wiring for dimming control of 0-10V ballasts and optional occupancy sensor

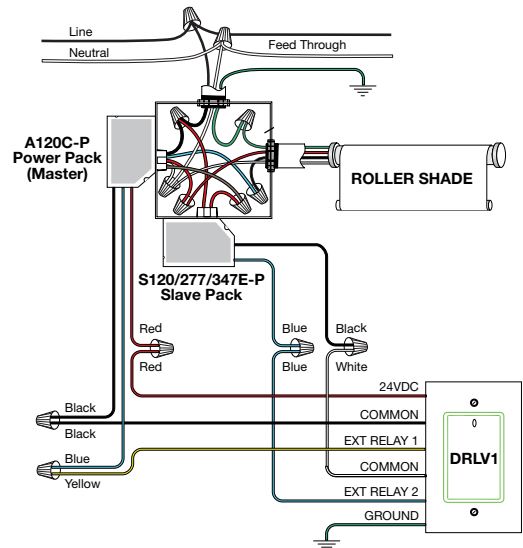
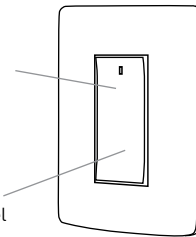


Wiring for on/off control of ballasts or other loads

Product Controls

1 tap = last used level
 2 taps = full output
 press and hold = raise level

1 tap = fade to OFF
 press and hold = reduce level



Wiring for control of MechoShade / Somfy motorized roller shades

Ordering Information

Catalog No.	Color	Product Description	Input Voltage
<input type="checkbox"/> DRLV1-A	Light Almond	Wireless Miro Decorator 0-10V Controller	24VDC
<input type="checkbox"/> DRLV1-B	Black		
<input type="checkbox"/> DRLV1-I	Ivory		
<input type="checkbox"/> DRLV1-W	White		

NOTE: Must order power packs separately. Available in 120V or 277V. Order wall plates separately.

Wireless Miro Decorator Switch and Fan Controller

Allow control of switched loads and fans over RF network; no control wiring

Fan controller is factory-preset with four speeds plus off

Decorator styling compatible with screwless and standard wall plates



Operate remotely using Multilocation or Scene Controllers

Silent or 'de-humming' technology for buzz-free fan operation

PROJECT
LOCATION/TYPE

Product Overview

Description

The Wireless Miro Decorator Switch and Fan Controller are power devices to coordinate operation of switched loads and ceiling fans with lighting loads. They may be controlled by Multilocation and Scene Controllers from an unlimited number of locations without the need for control wires.

Operation

The Wireless Miro Switch uses a zero crossing air-gap relay to operate lighting loads, motors and appliances. The load is turned on or off by pressing the Switch paddle up or down.

A Wireless Miro Fan Controller can operate two ceiling fans from a single location. Fan speed may be increased or decreased by pressing up or down on the paddle, or by tapping one of five preset pushbuttons that provide four speed choices ranging from 25-100% and OFF. The previously preset fan speed may be recalled by tapping once on the paddle.

Wireless Remote Control

Wireless RF (radio frequency) control facilitates 3-, 4- and multi-way control, scene control and whole house one-touch control for convenience and energy saving. Wireless Miro Switches and Fan Controllers may be bound to and controlled by any number of Multilocation Controllers, Room Controllers, House Controllers, or other Wireless devices within RF range.

Applications

Wireless Miro Switches and Fan Controllers may be used when their loads are to be included in a scene(s) with other Wireless Miro devices, or when easy-to-install multi-way control is desired.

The Fan Controller is exclusively designed for use with ceiling fans and should not be used to control: lighting, receptacles or transformer-operated devices; a fan and a light wired together on the same load wire or in the same circuit as a GFCI breaker or receptacle; or a fan that requires the manufacturer's fan speed controller.

Features

- No control wiring necessary
- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Large, surface-mounted antenna ensures maximum broadcast coverage
- Stores 15 room and 10 house scenes
- Switches support Panic mode operation
- Fan Controller recalls last-used speed (preset)
- Patented overload and short-circuit protection
- Air gap switch (Fan Controller) or relay (Switch)
- Power failure restore to last-used speed or state
- Long-life status LED
- Compatible with decorator wall plates



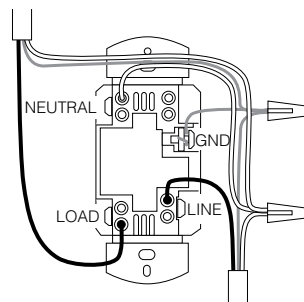
Specifications

- **DRD3 V2:** 120/277 VAC; neutral required
 - 0-1500 W @ 120 VAC
 - 0-3000 W @ 277 VAC
- **DRD9:** 120 VAC; neutral required; 1.5A
- 900MHz radio, bidirectional
- Dimensions:
 - DRD3 V2:** 2.64" x 1.75" x 1.76" (67.1mm x 44.5mm x 44.7mm) L x W x D; depth in wall 1.5" (38.1mm)

- **DRD9:** 2.64" x 1.75" x 2.17" (67.1mm x 44.5mm x 55.2mm) L x W x D; depth in wall 1.86" (47.2mm)
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

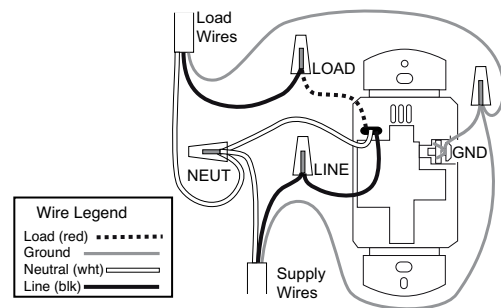
Wiring Diagrams

Wiring for Switch



For optimal performance, Miro devices should be distributed throughout an application. If load power devices are clustered together, a Repeater should be installed nearby. See ClusteringTechNote at www.wattstopper.com (<http://www.wattstopper.com/getdoc/2414/ClusteringTechNote.pdf>), or search on "clustering."

Wiring for Fan Controller



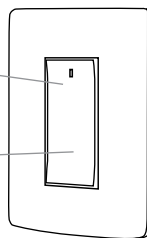
Mounting in a deep electrical box is recommended

Operation

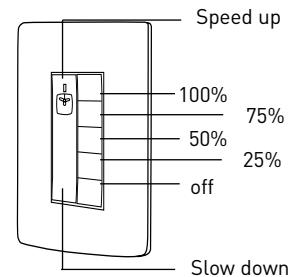
Switch Operation

Tap once or press and hold to turn circuit on.

Tap once or press and hold to turn circuit off.



Fan Controller Operation



Ordering Information

Catalog No.	Color	Product Description	Voltage	Max Load	Min Load
<input type="checkbox"/> DRD3-A V2	Light Almond	Wireless Miro Decorator Switch	120 VAC 277 VAC	1500W 3000W	N/A
<input type="checkbox"/> DRD3-B V2	Black				
<input type="checkbox"/> DRD3-I V2	Ivory				
<input type="checkbox"/> DRD3-W V2	White				
<input type="checkbox"/> DRD9-A	Light Almond	Wireless Miro Decorator Fan Controller	120 VAC	1.5A	N/A
<input type="checkbox"/> DRD9-B	Black				
<input type="checkbox"/> DRD9-I	Ivory				
<input type="checkbox"/> DRD9-W	White				

Order wall plates separately.

Wireless Miro Plug-in Modules

Provides control of dimmable or non-dimmable plug loads

300W Lamp Module dims most lighting loads; features last level recall

800W Appliance Module switches lighting or motor loads; zero crossing air gap relay



Controllable from multiple locations over RF network; no control wiring

Auto-on feature powers load if occupant turns switch on manually

Plugs into any grounded 120V outlet

PROJECT
LOCATION/TYPE

Product Overview

Description

Wireless Miro Plug-in Modules are power devices for coordinated operation of plug loads, such as lamps and appliances, with hardwired loads. They may be controlled by Multilocation and Scene Controllers from an unlimited number of locations without the need for control wires. The Lamp Module is a universal dimmer and drives incandescent, magnetic low voltage, electronic low voltage (forward phase compatible), neon and cold-cathode, and dimmable two-wire fluorescent (Advance Mark 10 or equivalent) loads. It also operates selected LED loads (contact the manufacturer to determine compatibility).

Operation

Users may operate the Lamp Module by pressing the up or down buttons to raise or lower light levels, and may also recall the preset light level by tapping once on the up button. The Appliance Module is operated by tapping the up and down buttons to turn the load on or off. The Module's LED communicates binding and operational status. A Multilocation Controller may be used for convenient control, especially with the Lamp Module.

Features

Lamp and Appliance Module:

- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Stores 15 room and 10 house scenes
- Supports Panic mode operation
- Patented overload protection
- Power failure restore to last-used level or state
- Long-life status LED

Wireless Remote Control

Wireless RF (radio frequency) control facilitates multi-way control, scene control and whole house one-touch control for convenience and energy saving. Wireless Plug-in Modules may be bound to and controlled by any number of Multilocation Controllers, Room Controllers, House Controllers or other Wireless devices within RF range.

Applications

Use Lamp and Appliance Modules to integrate a wide range of plug loads into a Wireless Miro network. Lamp Modules may be used to add dimming functionality to table, floor and task lamps. These loads can also be included in room and house scenes for one-touch scene control when a space is occupied, and one-touch off when it will be vacated. Appliance Modules can control stereos, water features, televisions and phantom loads, both for scene control and convenient one-touch off control to ensure energy savings. The Seek function on a Remote Room Scene Controller can be used to directly control individual Plug-in Modules.

Lamp Module only:

- Recalls last-used lighting level (preset)
- Two second fade rate (default)
- Square law or fluorescent dimming curve
- Soft start technology significantly extends lamp life by limiting inrush current
- Patented short circuit protection



Specifications

- 120 VAC; grounded outlet required
- **MRP6:** 25-300W dimmable load
- **MRP7:** 800W or 1/8 Hp maximum load
- 900MHz radio, bidirectional
- Dimensions: 3.56" x 2.30" x 1.59" (90.4mm x 58.4mm x 40.4mm) L x W x D
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

Wiring & Controls

Connection to Loads

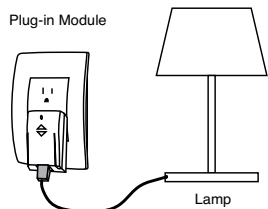
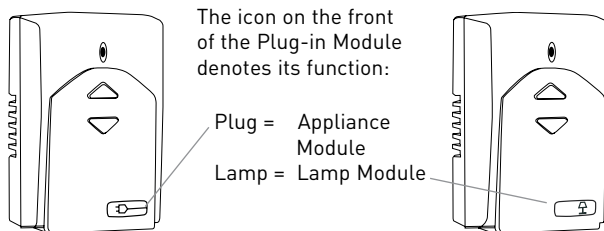


Table lamp with Wireless Lamp Module



Television with Wireless Appliance Module

Product Controls

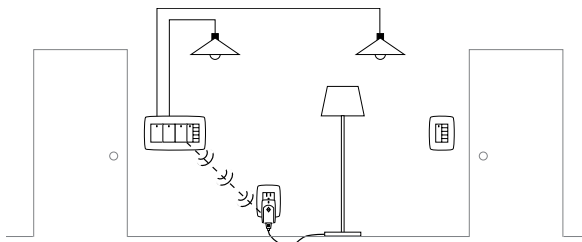


The icon on the front of the Plug-in Module denotes its function:

Plug = Appliance Module
Lamp = Lamp Module

Application

Typical Application



A Lamp Module in conjunction with a Scene Controller provides coordinated control of all lighting in a room. A Multilocation Controller may be used for convenient individual dimming control of the Lamp Module, but is not required.

Ordering Information

Catalog No.	Color	Product Description	Voltage
<input type="checkbox"/> MRP6-W	Warm White	Plug-in Lamp Module	120 VAC
<input type="checkbox"/> MRP7-W	Warm White	Plug-in Appliance Module	

Wireless Miro 2000 Watt Universal Dimmer

Industry-exclusive universal dimmer controls most load types

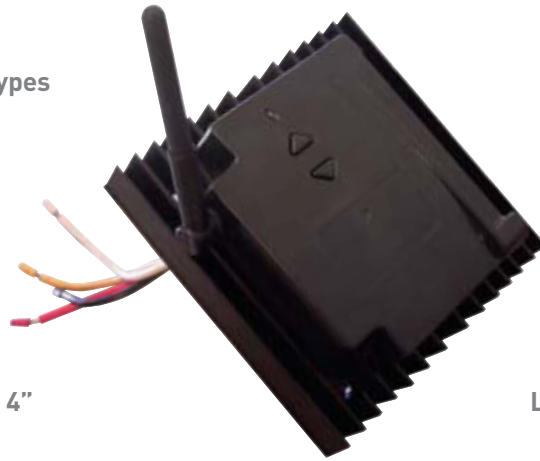
Optional fluorescent mode activates second dimming curve

Dual voltage (120/277 VAC)

Controllable from multiple locations over RF network; no control wiring

Plenum-rated; mounts in 4" square box

Last level recall



PROJECT
LOCATION/TYPE

Product Overview

Description

The Wireless Miro 2000W Universal Dimmer is a high capacity power device for operating dimmable lighting loads. It drives incandescent, magnetic low voltage, electronic low voltage (forward phase compatible), neon and cold-cathode, and dimmable two-wire linear and compact fluorescent (Advance Mark 10 or equivalent) loads. It also operates selected LED loads (contact the manufacturer to determine compatibility). Wireless dimmers can be controlled by Multilocation and Scene Controllers from an unlimited number of locations without the need for control wires.

Dimmer Operation

Users may operate the Dimmer by pressing the up or down buttons to raise or lower light levels, and may also recall the preset light level by tapping once on the up button. The Dimmer may be bound to and controlled by Multilocation Controllers, Scene Controllers, House Controllers and other Wireless devices within RF range. The Dimmer's LED communicates binding and operational status.

Fluorescent Mode

Universal dimmers have two dimming curves, square law (default) and fluorescent, so that various loads on different dimmers will perform similarly. Fluorescent dimming is smooth, with a typical low level of approximately 5% (consult ballast manufacturer for specifics).

Applications

The Wireless Miro 2000W Dimmer is appropriate for applications where the load exceeds the capacity of Wireless wall box dimmers. The dual voltage 2000W Dimmer is also used when 277V loads are included in dimming scenes. Since the Dimmer is typically mounted in an equipment closet or plenum, a Multilocation Controller is recommended for convenient control.

For optimal performance, Miro devices should be distributed throughout an application. If dimmers are clustered together, a Repeater should be installed nearby. See ClusteringTechNote at www.wattstopper.com for more information (<http://www.wattstopper.com/getdoc/2414/ClusteringTechNote.pdf>, or search on "clustering."

Features

- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Recalls last used lighting level (preset)
- Stores 15 room and 10 house scenes
- Supports Panic mode operation
- Two second fade rate (default)
- Square law or fluorescent dimming curve
- Soft start technology significantly extends lamp life by limiting inrush current
- Compatible with most load types
- Power failure restore to last used level
- Long-life status LED
- Wall, plenum, or semi-recess mountable



Specifications

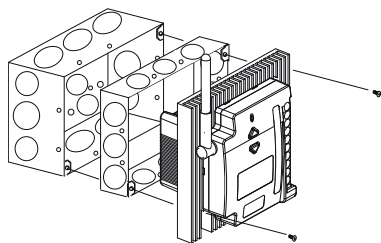
- Dual voltage 120/277 VAC; neutral required
- Normally open air-gap relay at load output
- Plenum-rated
- 900MHz radio, bidirectional
- Dimensions: 4.92" x 4.92" x 3.78" (125mm x 125mm x 96mm) L x W x D
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 0-95% RH, non-condensing
- UL and cUL listed
- Five year warranty

Load Ratings

LOAD TYPE	120V	120V	277V	277V
	Minimum Load	Maximum Load	Minimum Load	Maximum Load
Incandescent/Quartz halogen	100W	2000W	--	--
MLV	100VA	2000VA	200VA	4432VA
ELV (forward phase compatible)	100VA	2000VA	--	--
Neon/Cold cathode	100VA	2000VA	--	--
Two-wire fluorescent (linear or compact, Advance Mark 10 or equivalent)	100VA	2000VA	200VA	4432VA

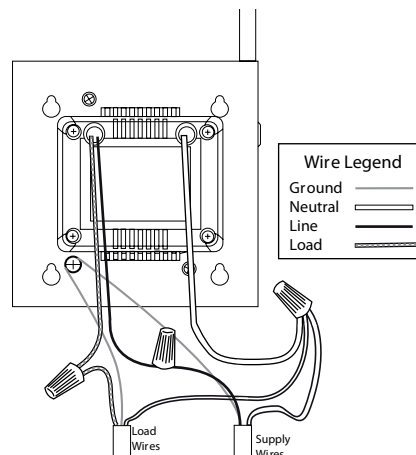
Mounting & Wiring

Mounting



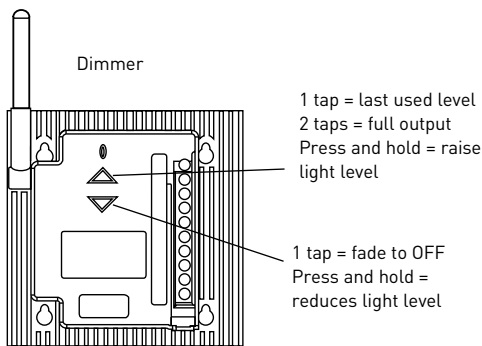
Mount the Miro 2000W dimmer vertically and provide 6" clearance above and below the dimmer for airflow. Requires 100 BTW/hour ventilation. Backbox (4" x 2-1/8") may be surface or recess mounted. Extension (1-1/2") must extend out from the wall.

Wiring Diagram

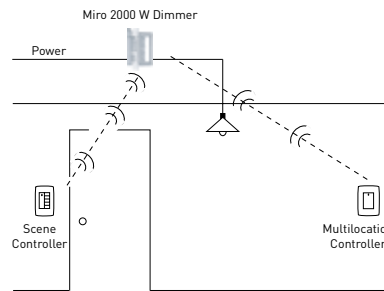


Operation & Application

Product Controls



Remote Mounting Application



This 2000W Miro Dimmer, mounted in the plenum, is controlled wirelessly by the Multilocation Controller and the Scene Controller.

Ordering Information

Catalog No.	Product Description	Voltage
<input type="checkbox"/> MR2000	Miro 2000W Dimmer	120/277 VAC

Wireless Miro Decorator Multilocation Controller

Controls Wireless Dimmers, Switches, Plug-in Modules or Fan Controllers from an unlimited number of locations



Provides true multi-way dimming

• Long-life status LED

Operates over RF network; no control wiring necessary

Decorator styling compatible with screwless or standard wall plates

PROJECT
LOCATION/TYPE

Product Overview

Description

Wireless Miro Decorator Multilocation Controllers offer convenient control from multiple access points when used in conjunction with any Wireless Miro Dimmer, Switch, Fan Controller, Plug-in Module or 0-10V Controller.

Operation

A Multilocation Controller is bound into a 'group' with one or more Wireless Miro devices. This links the devices together so that each member of the group controls all the grouped devices. When a Multilocation Controller is grouped with a Miro Dimmer it operates exactly like the Dimmer. Users press up or down on the paddle to raise or lower light levels or tap once on the paddle to recall the preset light level. When grouped with a Miro Switch, a Multilocation Controller provides on/off control. A Multilocation Controller grouped with a Fan Controller can turn the fan on or off, increase or decrease its speed, or recall its previous speed. Groups may also be bound into room and house scenes.

Simplicity and Full Control

Multilocation Controllers provides seamless multi-way dimming without the wiring or operational issues often associated with combining dimmers and 3-way switches. Multilocation Controllers provide full-function control of a grouped Dimmer from an unlimited number of locations, and no control wiring is needed.

Applications

Multilocation Controllers may be used wherever additional points of control are desired for a given load or group of loads, such as at either end of a hallway or in rooms with multiple entrances. A Multilocation Controller grouped with a Plug-in Module provides a convenient way to control plug loads from wall-mounted locations. Similarly, a Multilocation Controller offers convenient control of a remotely mounted 2000 Watt Dimmer.

Features

- No control wiring necessary
- Topdog™ RF (radio frequency) communication protocol; 900MHz bidirectional
- Large surface-mounted antenna ensures maximum broadcast coverage
- Recalls last-used light level (preset)
- Raises/lowers level of all grouped devices
- Two-second fade rate (default)
- Accesses dimming level or fan speed from multiple locations
- Compatible with decorator wall plates

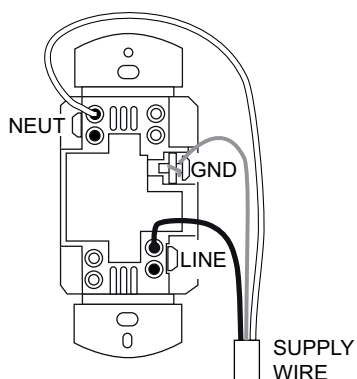


Specifications

- 120/277 VAC; neutral required
- 900MHz radio, bidirectional
- Dimensions: 2.64" x 1.75" x 1.76" (67.1mm x 44.5mm x 44.7mm) L x W x D; depth in wall 1.5" (38.1mm)
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

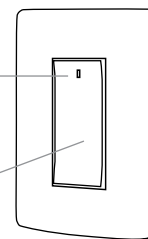
Wiring & Operation

Wiring Diagram



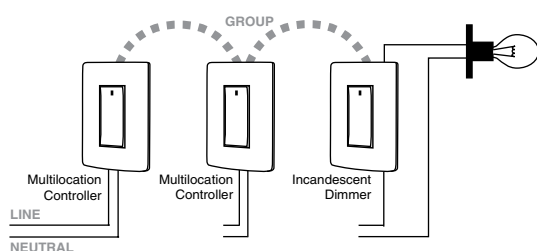
Operation

- One tap = last used light level or fan speed
- Two taps = full output
- Press & hold = raise light level or increase fan speed
- One tap = fade to off
- Press & hold = reduce light level or decrease fan speed

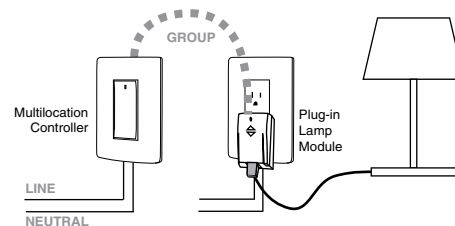


Applications

Using Multilocation Controllers in Groups



All three devices are grouped together to provide full-function dimming control from three locations.



Plug-in Modules often end up behind furniture. Group any number of Lamp or Appliance Modules with a wall mounted Multilocation Controller to provide control where you want it.

Ordering Information

Catalog No.	Color	Product Description	Voltage
<input type="checkbox"/> DRD8-A V2	Light Almond	Wireless Miro Decorator Multilocation Controller	120/277 VAC
<input type="checkbox"/> DRD8-B V2	Black		
<input type="checkbox"/> DRD8-I V2	Ivory		
<input type="checkbox"/> DRD8-W V2	White		

Order wall plates separately.

Wireless Miro Decorator Room Scene Controllers

Programs or recalls room scenes, adjusts on/off settings and proportionally raises/lowers light levels

Accesses five of up to 15 stored room scenes

Configuration lock prevents tampering with programmed scenes

Controls wireless devices over RF network; no control wiring necessary

Battery-powered Remote Controller or In-wall Controller



PROJECT
LOCATION/TYPE

Product Overview

Description

As components of a Wireless Miro lighting control system, Wireless Miro Decorator Room Scene Controllers provide seamless, coordinated control of numerous loads.

Operation

A Room Scene Controller provides fingertip control of up to five 'scenes' (a set of light levels and fade time information for every Miro device bound to the Controller). Any number of Wireless Miro devices (except House-level devices or Repeaters) can be bound to a room scene, which has a default fade time of two seconds. The paddle activates the user-defined on/off function and will proportionally raise or lower room light levels. Remote Room Scene Controllers operate exactly like In-wall Room Scene Controllers, with the added ability to adjust individual loads remotely using the Seek function.

Additional Scene Ranges

Wireless Miro supports up to 15 scenes per room, in sets, or 'ranges' of five. In-wall Room Scene Controllers can access one of all three scene ranges while Remote Controllers can access one of the first two ranges. Control options may be expanded by using multiple Room Scene Controllers for simultaneous access to the second and third ranges of scenes.

Applications

Room Scene Controllers are an integral part of most Miro projects whenever multiple preset scenes (which usually include multiple dimmers) are required. Room Scene Controllers allow users to activate different lighting looks at the touch of a single button. In-wall Room Scene Controllers are designed for placement at room entrances, whereas a Remote Room Scene Controller provides the convenience of portable control.

Features

- No control wiring necessary
- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Recalls scene information stored in Wireless Miro load power devices
- Configuration lock prevents unwanted tampering with programmed scenes
- Long-life status LED
- Remote Controller's Seek button provides individual control of all connected loads in the room
- Remote Controller includes wall holder for convenient, secure storage
- Preprinted scene labels included with In-wall Room Scene Controller
- In-wall Room Scene Controller compatible with screwless or standard wall plates

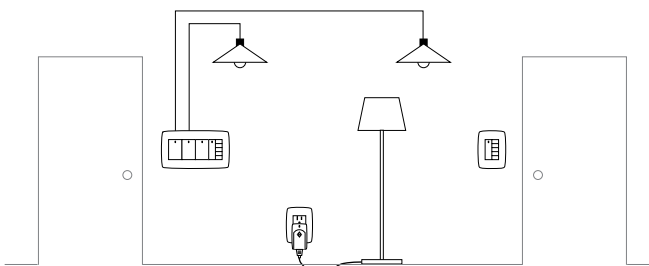


Specifications

- **MRH6:** Battery powered; three alkaline AAA batteries included
- **DRD6 V2:** 120/277 VAC; neutral required
- 900MHz radio, bidirectional
- Dimensions:
 - **MRH6:** 5.09" x 2.63" x .78" (129.3mm x 66.8mm x 19.8mm) L x W x D; Wall Holder 3.54" x 2.65" x 1.0" (89.9mm x 67.3mm x 25.4mm) L x W x D
 - **DRD6 V2:** 2.64" x 1.75" x 1.76" (67.1mm x 44.45mm x 44.7mm) L x W x D; depth in wall 1.5" (38.1mm)
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

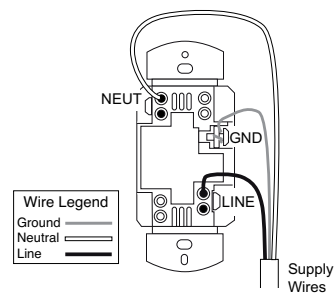
Application & Wiring

Application



Room Scene Controllers at each doorway provide access to preset scenes, allowing convenient control of all the Miro Wireless Dimmers and Switches in the room from both locations.

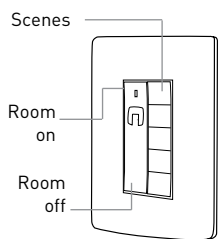
Wiring Diagram



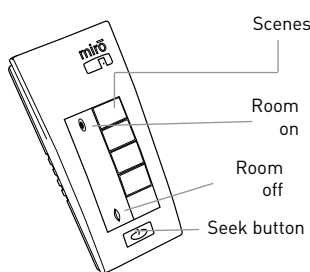
In-wall Room Scene Controller

Operation

Product Controls and Operation



In-wall Room Scene Controller (with optional screwless face plate)



Remote Room Scene Controller

Scene Buttons

Tap any button to recall scene

Room on (top of paddle)

Tap to bring room lights on full
Press and hold to raise current scene (or raise previous scene from off)

Room off (bottom of paddle)

Tap to fade off

Press and hold to lower current scene

Seek Button (Remote Controller only)

Press and hold to cycle room lights

Release to select light

Raise/lower paddle to adjust level

Ordering Information

Catalog No.	Color	Product Description	Voltage/Power
<input type="checkbox"/> MRH6-G	Charcoal Gray	Remote Room Scene Controller	Battery, three AAA alkaline
<input type="checkbox"/> DRD6-A V2	Light Almond	In-wall Room Scene Controller	120/277 VAC
<input type="checkbox"/> DRD6-B V2	Black		
<input type="checkbox"/> DRD6-I V2	Ivory		
<input type="checkbox"/> DRD6-W V2	White		

Order wall plates separately.

Wireless Miro Decorator House Scene Controllers

Programs or recalls house scenes, sets whole house on/off

Accesses five of up to 10 stored house scenes

Configuration lock prevents tampering with programmed scenes

Battery-powered Remote Controller or In-Wall Controller



Controls wireless devices over RF network; no control wiring necessary

PROJECT
LOCATION/TYPE

Product Overview

Description

As components of a Wireless Miro lighting control system, Wireless Miro Decorator House Scene Controllers provide seamless, coordinated control of selected loads throughout an installation.

Operation

A House Scene Controller provides fingertip control of the Wireless Miro devices included in five of the 10 Miro house scenes. Scenes are recalled using the five-button keypad. The paddle accesses the user-defined house on/off function. A Panic button at the bottom of the Remote House Scene Controller activates a whole-house response, such as flashing lights. Commonly programmed scenes include a pathway of light throughout the installation, a balanced look for the whole house, an arrival scene and whole house off. By including an MRR2-G Wireless Miro Repeater, House Scene Controllers can also be used to emulate occupancy when the home is unoccupied.

Additional Scene Ranges

Wireless Miro supports up to 10 scenes per house, in sets, or 'ranges' of five. A Wireless Miro House Scene Controller can access either range of five scenes. Control options may be expanded by using multiple House Scene Controller for simultaneous access to the second range of scenes.

Applications

In-wall House Scene Controllers are designed for placement near each main entrance of a home or a business such as a restaurant. These may be supplemented by Remote House Scene Controllers to provide convenient, portable control. A Remote House Scene Controller is most frequently located at a bedside for convenient, one-touch house control for energy savings and security.

Features

- No control wiring necessary
- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Recalls scene information stored in Wireless Miro load power devices
- Emulates occupancy for security when used with Wireless Miro Repeater
- Configuration lock prevents unwanted tampering with programmed scenes
- Long-life status LED
- Panic button on Remote House Scene Controller provides whole-house response, such as flashing lights
- Remote House Scene Controller includes wall holder for convenient, secure storage
- Preprinted scene labels included with In-wall House Scene Controller
- In-wall House Scene Controller compatible with screwless or standard wall plates



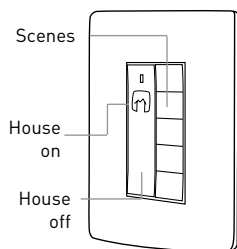
Specifications

- **MRH5:** Battery powered; three alkaline AAA batteries included
- **DRD5 V2:** 120/277 VAC; neutral required
- 900MHz radio, bidirectional
- Dimensions:
 - MRH5:** 5.09" x 2.63" x .78" (129.3mm x 66.8mm x 19.8mm) L x W x D; Wall Holder 3.54" x 2.65" x 1.00" (89.9mm x 67.3mm x 25.4mm) L x W x D
 - DRD5 V2:** 2.64" x 1.75" x 1.76" (67.1mm x 44.52mm x 44.7mm) L x W x D; depth in wall 1.50" (38.1mm)
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

Operation & Wiring

Product Controls and Operation

In-wall House Scene Controller
(with optional screwless face plate)



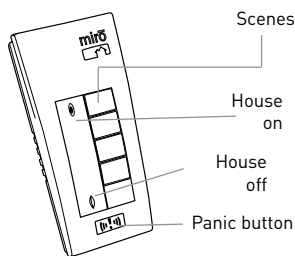
Scene Buttons

Tap any button to recall scene.

House on (top of paddle)

Tap to recall house on.

Remote House Scene Controller



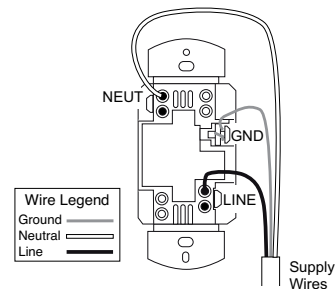
House off (bottom of paddle)

Tap to fade off.

Panic button (Remote Controller only)

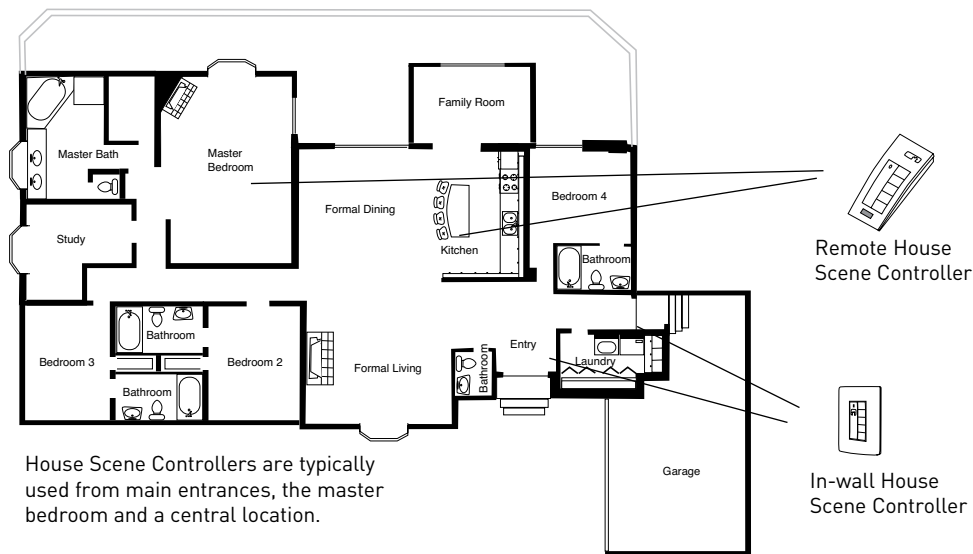
Press to flash selected lights.
Tap to restore normal operation.

Wiring Diagram



In-wall House Scene Controller

Application Example



House Scene Controllers are typically used from main entrances, the master bedroom and a central location.

Ordering Information

Catalog No.	Color	Product Description	Voltage/Power
<input type="checkbox"/> MRH5-G	Charcoal Gray	Remote House Scene Controller	Battery, three AAA Alkaline
<input type="checkbox"/> DRD5-A V2	Light Almond	In-wall House Scene Controller	120/277 VAC
<input type="checkbox"/> DRD5-B V2	Black		
<input type="checkbox"/> DRD5-I V2	Ivory		
<input type="checkbox"/> DRD5-W V2	White		

Order wall plates separately.

Wireless Miro Key Fob



Product Overview

Description

An optional component of a Wireless Miro system, the Key Fob is a battery-powered, three-button, remote device, which can be used to recall lighting scenes within the home from approximately 100 feet away. The Key Fob may be attached to a key ring or to a car visor (clip provided).

Operation

When pressed by the user, the Key Fob buttons recall room or house scenes or activate the Panic feature (flashing lights). Specific button functions are defined during system setup. The device may be locked to prevent being inadvertently reset to factory defaults. No auxiliary interfaces are required. An unlimited number of Key Fobs can be added to any existing Wireless Miro installation.

User Selectable Operating Modes

The user can configure each Key Fob to recall either three house level scenes, two house level scenes plus Panic or two room level scenes and one house level scene (see chart on back page). Each Key Fob can be configured differently so that users who might frequent different entrances to the home can personalize operation.

Applications

The primary application for the Key Fob is to control all or selected Wireless Miro controls from outside the home, generally from the security of one's car. A typical setup would be to use button one to create a pathway of light (for example to the master bedroom or kitchen). Button two would be used to turn off all but security/night lights and button three to turn off all lights.

Features

- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Recalls room or house scene information stored in Wireless Miro load power devices
- Configuration lock prevents unwanted or accidental setting changes
- Does not require auxiliary interface
- Will not interfere with or be interfered with by other RF devices
- Compact size for easy carrying
- Includes car visor clip
- Tri-color LED communicates status



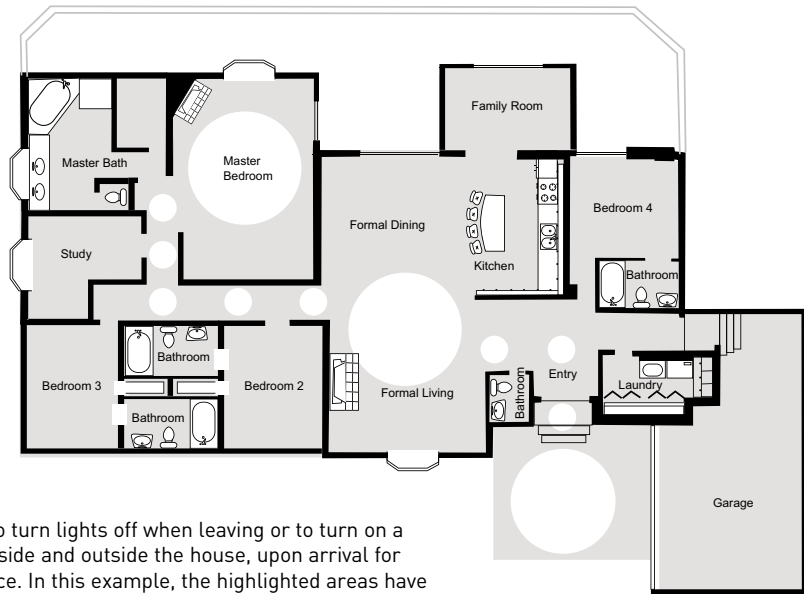
Specifications

- Battery powered; 3V lithium battery included
- Dimensions:
Key Fob: 2.24" x 1.41" x .73" (57mm x 36mm x 19mm) L x W x D

- **Visor Clip:** 2.88" x 1.46" x 1.78" (73mm x 37mm x 45mm) L x W x D
- Five year warranty

Application Example

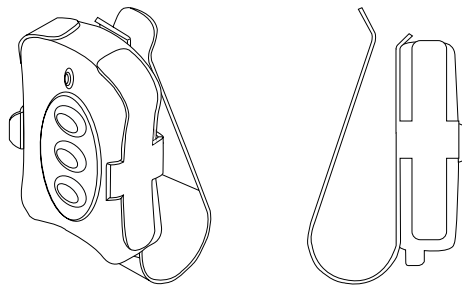
Convenience and Security



Use the Miro Key Fob to turn lights off when leaving or to turn on a path of lighting, both inside and outside the house, upon arrival for security and convenience. In this example, the highlighted areas have been illuminated by the key fob.

Mounting

Visor Clip

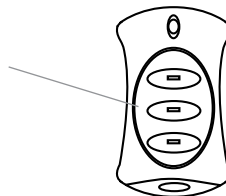


Use the visor clip provided to mount the Miro Key Fob in a car or attach to a key ring.

Operation

Button Functions

Tap button 1, 2 or 3 to recall the appropriate lighting level. Button function is defined by the selected operating mode as shown in the chart below.



	Mode 1	Mode 2	Mode 3
Button 1	House Scene 1	House Scene 1	Room Scene 1
Button 2	House Scene 5 (default is OFF)	House Scene 5 (default if OFF)	Room Scene 5 (default is OFF)
Button 3	House OFF	Panic	House Scene 5 (default is OFF)

Ordering Information

Catalog No.	Product Description
<input type="checkbox"/> MKFOB	Wireless Miro Key Fob with Visor Clip

Wireless Miro Repeater

Increases effective range of wireless RF network

No control wiring

Wall or table mount



Provides occupancy emulation for security

12V power supply included, plugs into 120V outlet

PROJECT
LOCATION/TYPE

Product Overview

Description

The Wireless Miro Repeater increases the effective RF (radio frequency) coverage of a Wireless Miro lighting control system network. A Repeater may be used in larger installations or where metallic J-boxes are used. The Repeater also stores real-time network activity in a dynamic seven-day loop, enabling realistic occupancy emulation when the home is unoccupied.

Operation

The Miro Repeater's power supply plugs into any standard 120V outlet. Once the user links the Repeater to the RF network, no further action is needed for the Repeater to function. The Repeater stores a seven day record of actual network traffic to be played back when occupancy emulation is activated. This is constantly kept up to date to account for seasonal variations in load use.

Occupancy Emulation

To activate occupancy emulation, the user presses the Away button. After a one minute delay, the Repeater begins to play back a seven day loop of Wireless Miro commands. Pressing the Home button on the Repeater, or any button on any Wireless Miro device in the installation, will cancel occupancy emulation.

Applications

The Miro Repeater is designed for applications that require an extended radio range, or where the radio signal is inhibited by structures such as concrete walls, or where occupancy emulation is desired. Two repeaters will extend the typical range from 100 to 300 feet (see diagram). It is also recommended where load power devices are mounted remotely from the controllers, or are mounted in clusters of more than five or six devices. Repeaters are typically not required for smaller applications.

Features

- Occupancy emulation for security
- No control wiring necessary
- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Each Repeater increases effective RF range up to 100 feet
- Wireless Miro network supports up to two Repeaters
- Long-life status LED

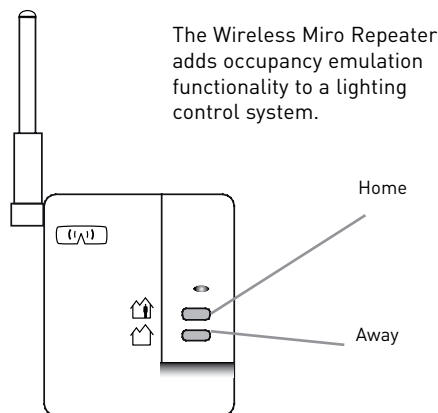


Specifications

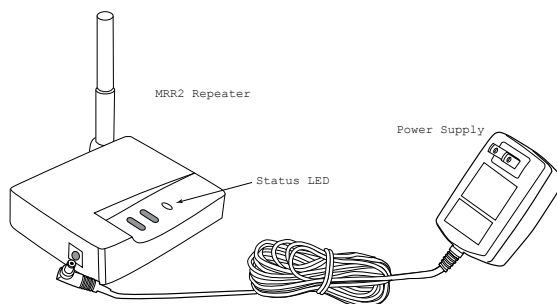
- Input voltage: 12 VDC, 50 mA
- 120 VAC, 60 Hz to 12 VDC plug in adapter provided
- Occupancy emulation
- Dimensions: 3.7" x 3.2" x .97" (94mm x 81.3mm x 24.6mm) L x W x D
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL listed
- Five year warranty

Controls & Installation

Product Controls



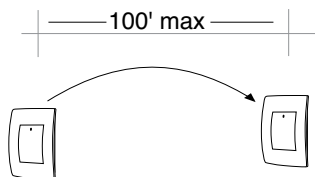
Installation



The Wireless Miro Repeater easily plugs into any standard outlet. It is best installed in a central location.

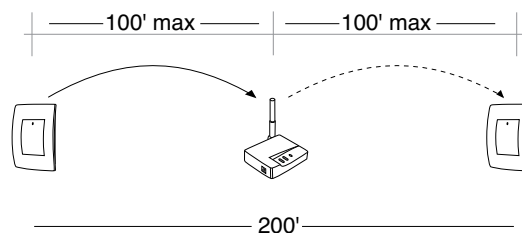
Location & Coverage

100 Feet



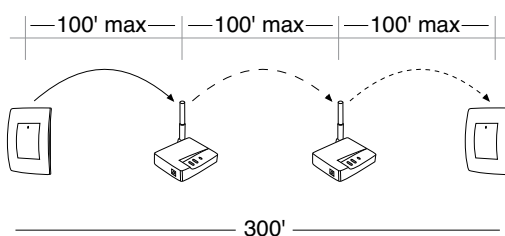
The transmitting and receiving range of a Wireless Miro network is up to 100 feet.

200 Feet



Adding a Repeater can extend the transmitting and receiving range up to 200 feet.

300 Feet



With two Repeaters, a Miro network can encompass up to 300 feet between the two most distant Miro devices.

For optimal performance, Miro load power devices should be distributed throughout an application. If devices, typically dimmers and/or switches, are clustered together, a Repeater should be installed 6-10' away from the cluster, or clusters. A cluster should not exceed 10 devices. See ClusteringTechNote at www.wattstopper.com for more information (<http://www.wattstopper.com/getdoc/2414/ClusteringTechNote.pdf>, or search on "clustering."

Ordering Information

Catalog No.	Color	Product Description	Voltage
<input type="checkbox"/> MRR2-G	Charcoal Gray	Wireless Repeater with power supply	

Wireless Miro Scene Interfaces

Enables external devices to evoke Miro scenes

Accepts momentary or maintained contact inputs

Three inputs access up to six functions



Available for room or house level control

Interfaces occupancy sensors, security systems, BMS and time clocks to Wireless RF network

24V power supply included, plugs into 120V outlet

PROJECT
LOCATION/TYPE

Product Overview

Description

Miro Scene Interfaces enable Wireless Miro networks to accept inputs from external systems. These can include home automation, BAS and alarm systems as well as devices such as garage door openers, occupancy sensors, daylighting controllers or time clocks. Models are available to control room scenes or house scenes.

Operation

The Room and House Scene Interfaces evoke preset scenes in response to signals applied to one of the three input terminals. For instance, a common application would involve connecting a Room Scene Interface terminal to a Time Clock. Activating the Time Clock would engage the relay, evoking the scene a user programmed via a Room Scene Controller.

Users may install a Scene Interface at any point in a Miro network, although the best location would be in proximity to the system supplying the input.

Room and House Interfaces

Specify a Room Scene Interface where recall of room scenes is desired and a House Scene Interface where recall of house scenes is desired. Each provides modes for maintained or momentary contact closures, source terminals to power external equipment (24 VDC, 150 mA) and three inputs accessing up to six functions.

Applications

Scene Interfaces allow the Miro network and other automation devices, such as time clocks and motion sensors, to be interfaced to one another. Installation of a time clock will recall desired scenes according to a preset schedule. Interfacing an occupancy sensor and a Scene Interface typically recalls a set scene when the sensor is activated, but an occupancy sensor may be wired for manual-on operation.

Features

- Wireless Miro network supports an unlimited number of Scene Interfaces
- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- No network control wiring necessary
- Two operating modes (maintained or momentary type inputs)
- Three inputs accessing up to six functions
- 24 VDC, 200 mA power supply included
- 2-wire contact closure connection from other control systems or devices
- Source terminals to power external equipment (24 VDC, 150mA)
- Long-life status LED

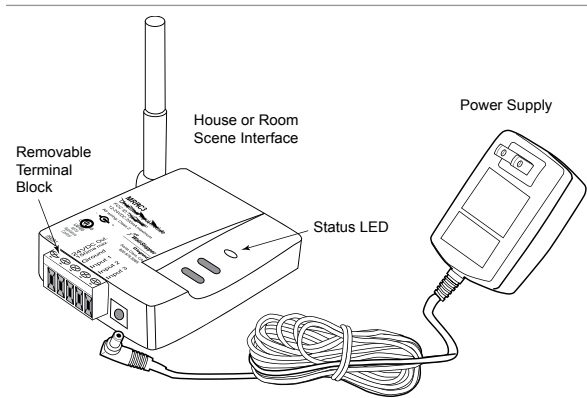


Specifications

- Operating voltage: 12-24 VDC, 200 mA
- 120 VAC, 60 Hz to 24 VDC plug in adapter provided
- Output voltage: 24 VDC, 150mA
- Removable screw terminals
- Dimensions: 3.7" x 3.2" x .97" (94mm x 81.3mm x 24.6mm) L x W x D
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL listed
- Five year warranty

Controls & Operating Modes

Product Controls



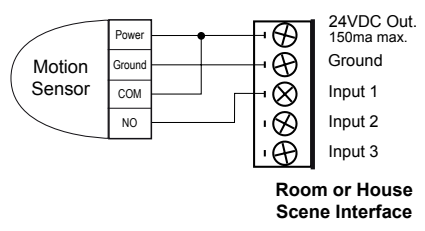
Wireless Miro Scene Interfaces provide an interface between the RF network and other automation devices. Typically, a module will be located near the external device (i.e., time clock) with which it is interfaced.

Multiple Miro Scene Interface modules may be used in a Miro network.

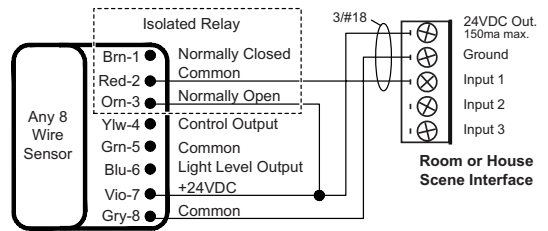
Interface Terminal	Mode A		Mode B	
	MRHC3	MRRC3	MRHC3	MRRC3
Input 1	House Scene 6	Room Scene 6	House Scene 6 House Scene 7	Room Scene 6 Room Scene 7
Input 2	House Scene 8	Room Scene 8	House Scene 8 House Scene 9	Room Scene 8 Room Scene 9
Input 3 (always requires maintained signal)	House On House Off	Room On Room Off	Scene Inhibit Scene Active	Panic On Panic Off

Wiring

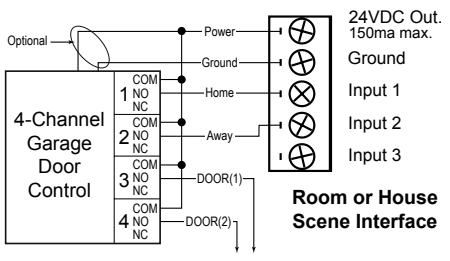
Typical Wiring Diagrams



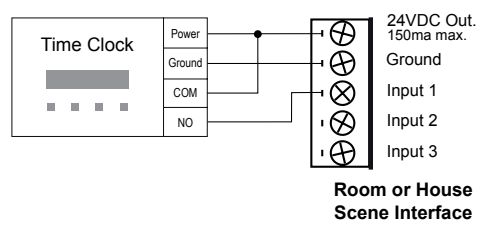
Three-wire sensor connected to a Scene Interface.



Eight-wire occupancy sensor connected to a Scene Interface and wired for energy-saving manual-on control.



Garage door opener connected to a Scene Interface.



Time clock connected to a Scene Interface.

Ordering Information

Catalog No.	Color	Product Description	Contact Closure Inputs
<input type="checkbox"/> MRHC3-G	Charcoal Gray	House Scene Interface with power supply	Limited low voltage (3-24VDC)
<input type="checkbox"/> MRRC3-G	Charcoal Gray	Room Scene Interface with power supply	

Wireless Miro IR Interface

Integrates IR systems with RF network for lighting control via universal IR remote

Industry standard 36KHz infrared (IR) frequency

Includes teaching remote for programming of other universal remotes



Controls any room or house scenes and on and off

12V power supply included, plugs into 120V outlet

3.5mm jack to support optional external IR sensor

PROJECT
LOCATION/TYPE

Product Overview

Description

An optional component of a Wireless Miro lighting control system, the IR Interface is a house or room scene controller that works with external IR systems or components to integrate lighting control with other automation systems, such as AV systems, whole house audio or home theater systems.

Operation

The MRIR1 IR Interface accepts IR data via an internal IR sensor, or an external IR sensor connected to a 3.5mm jack, and then transmits control signals to the appropriate devices on the Wireless Miro network. The interface is supplied with an external 12V power supply as well as a programming remote.

IR Remote Options

The included programming remote may be used to directly control the MRIR1 or to teach a user-supplied learning remote its IR codes. This allows the preferred IR remote to evoke Miro house and room scenes and also control AV components.

Applications

Select a Miro IR Interface to enable a single universal remote to control lighting in addition to other automation systems. The interface allows users to create a realistic theater experience, by simply pressing a single button to start a movie while gradually dimming the lights, all from the convenience of a favorite chair. Similarly, users can simultaneously pause the movie and slowly raise the lights via a single touch.

Features

- No control wiring necessary
- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Pre-configured IR codes for all 10 house scenes, 15 room scenes and ON and OFF scenes
- Supports proportional ramping
- May evoke Panic mode to flash all or selected lights
- Power failure restore to last-used scene
- Tri-color LED on interface communicates status
- LED on remote shows battery status
- Supplied with 12V power supply
- Designed for wall mounting or surface placement

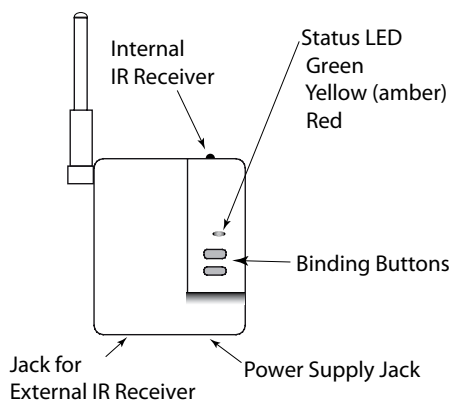


Specifications

- Input voltage:
MRIR1 Interface: 12VDC, 50mA; 120 VAC, 60Hz to 12 VDC plug in adapter provided
IR Programming Remote: Battery powered; battery included
- IR Frequency: 36KHz
- Control Inputs: Internal IR receiver, 3.5mm jack for connection to optional external IR sensor or IR repeater system
- Dimensions:
MRIR1 Interface: 3.7" x 3.2" x .97" (94mm x 81.3mm x 24.6mm) L x W x D
IR Programming Remote: 3.8" x 2.1" x .25" (97mm x 53mm x 6.4mm) L x W x D
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

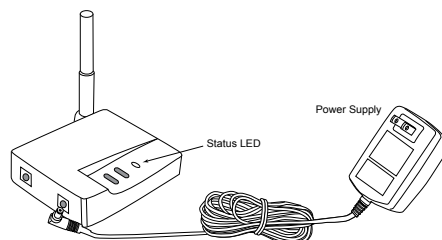
Installation

Location and Wiring



Locate the MRIR1 away from devices that may cause radio frequency interference or block radio reception such as TV sets, computers, refrigerators, microwave ovens, range hoods, safes, etc.

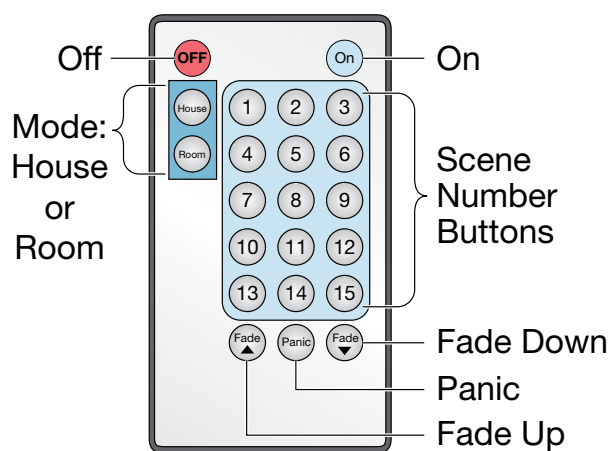
The infrared receiver must have a clear line of sight to the areas where the IR remote control will be operated.



The MRIR1 may be wall mounted or placed on a flat surface. Plug power supply into jack and into outlet. If an external IR receiver (by others) is used, plug into IR jack.

Operation

Programming Remote Controls



Ordering Information

Catalog No. Product Description

MRIR1 Wireless Miro IR Interface with programming remote and power supply

Wireless Miro RS232 Serial Interface

Interfaces automation systems to
Wireless Miro RF network

Accepts ASCII commands
via RS-232 signal

Compatible with PC-based controllers
including security and AV systems

Allows access to all Wireless
Miro devices on the RF network

DB9 port for serial connection
to control system

9V power supply included, plugs
into 120V outlet



PROJECT
LOCATION/TYPE

Product Overview

Description

The Wireless Miro RS232 Serial Interface provides convenient interconnectivity between a Wireless Miro lighting control system and other automation systems, such as multimedia and home theater controls. With the Interface, users can transmit control commands to the RF network via most automation system devices.

Operation

The Miro RS232 Serial Interface easily installs, plugging into any standard outlet and an automation controller or PC through an industry-standard DB9 port. Once the user links the device to the RF network, it can be interfaced with the automation control system. To set up the interface and identify the available control points, the Serial Interface is accessed through any PC running a terminal emulator. These control points can then be programmed into the automation system(s) for a seamless control environment between the Wireless Miro network and other automation system(s).

Communication Protocol

The Miro MR232 communicates via standard RS-232 serial communication protocol at a 38.4K baud rate. Easy-to-understand text (ASCII) commands are sent to the Miro communication network through the proprietary Topdog 900MHz bidirectional RF system.

Applications

Use the MR232 whenever RS232 communication with an external control system is required. Primary applications include controlling Wireless Miro lighting control devices along with HVAC, security or home theater systems via conveniently located keypads or touch screens.

Features

- Topdog™ RF (radio frequency) communication protocol; 900MHz, bidirectional
- Compatible with RS232 standard
- Communicates via standard ASCII communication protocol
- 38.4Kbd baud rate
- Long-life status LED

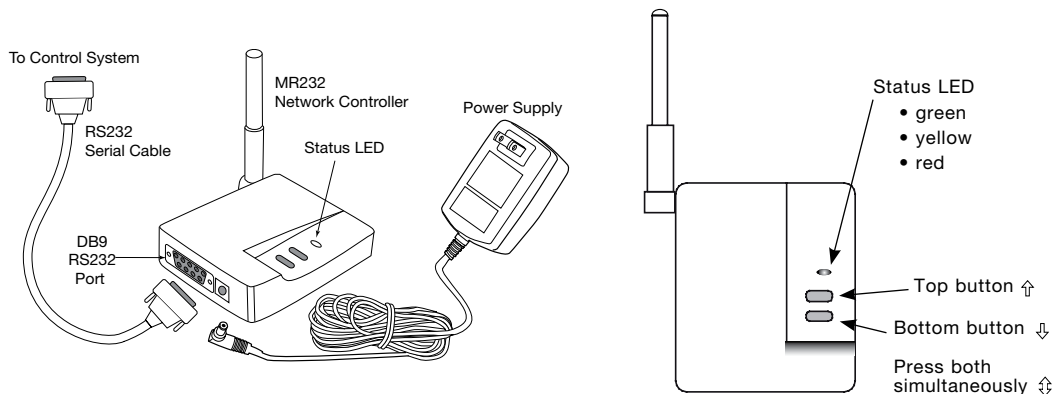


Specifications

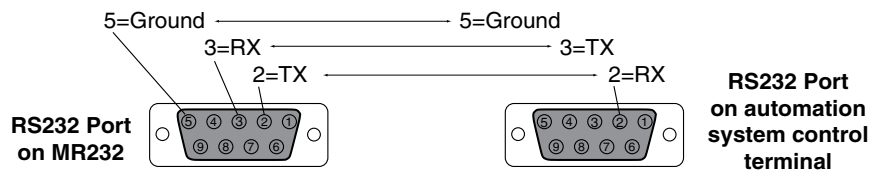
- Input voltage: 9-12 VDC, 50 mA
- 120 VAC, 60 Hz to 9 VDC plug in adapter provided
- Output 9 VDC, 50 mA
- Dimensions: 3.7" x 3.2" x .97" [94mm x 81.3mm x 24.6mm] L x W x D
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- UL and cUL listed
- Five year warranty

Controls & Connections

Product Controls



Connection



Ordering Information

Catalog No.	Color	Product Description
<input type="checkbox"/> MR232-G	Charcoal Gray	RS232 Serial Interface with power supply

MSC-100 Astronomic Time Clock

Provides time-scheduled control

Advanced holiday scheduling capability

Automatic daylight savings time adjustment



Multiple control channels

Connects to Room and House Scene Interfaces

LCD display screen

PROJECT

LOCATION/TYPE

Product Overview

Description

WattStopper's MSC-100 Astronomic Time Clock is a five-channel clock used for fully automating a Wireless Miro lighting control system. It offers simple programming, yet advanced control features. The Time Clock is used with at least one Wireless Miro Scene Interfaces.

Operation

The MSC-100 provides ON/OFF control signals based on time of day, day of week, holiday, and calculated sunrise/sunset (astronomic) time. Control signals are transmitted via hardwire connection to relay channels, giving the clock the ability to work in a range of applications from simple to complex. Clock schedules are programmed events that command channels on or off. Each schedule is assigned a number, type, time of day, channel, day, and may include other information for specific clock event operation. Schedules can be assigned to operate any combination of days or holiday types.

Features

- Single date, perpetual date, perpetual day of week and perpetual Easter holidays
- 32 holidays, each up to 120 days with three holiday schedule types
- Temporary schedules that execute once then self-delete
- Repeating schedule 5 minutes to 10 hours
- 120 schedules assignable to one or more weekday or holiday
- Duration time scheduling from 1 second to 18 hours
- Continually self-adjusting astronomic control based on sunrise and sunset times
- Astronomic offset +/- 120 minutes
- Manual ON/OFF override from keypad
- Selectable 12- or 24-hour format
- Adjustable channel stagger from 1-60 seconds

Programming

Programming the MSC-100 is easy. Users simply complete fill-in-the-blank prompts on the device keypad and can follow along on the LCD screen. Each clock channel can be programmed independently. All programming is securely stored in non-volatile memory.

Applications

When used in conjunction with Wireless Miro lighting controls, one MSC-100 will support connection to up to two Scene Interfaces, depending on the number of scenes required. Unused channels can be used to control third-party devices such as fountains or sprinklers.

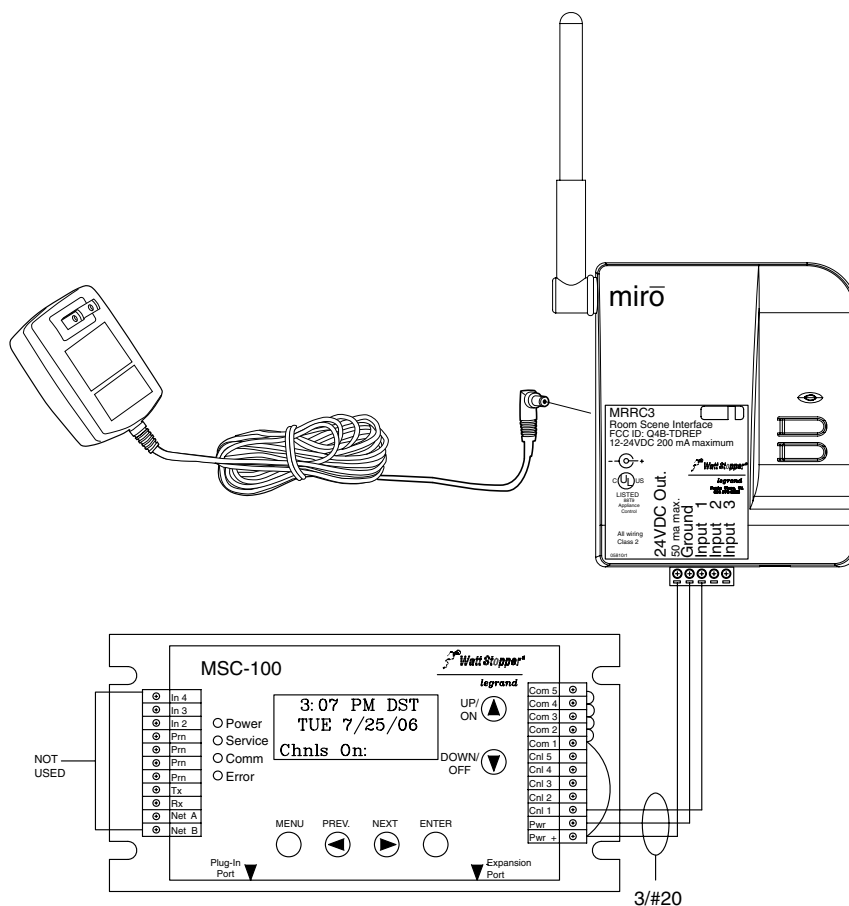


Specifications

- Input voltage: 24 VAC or 24 VDC
- Five normally open isolated relays rated 1 amp 24 VAC/VDC, assigned to channels 1-5
- Battery backed clock operation for up to 8 years
- Non-volatile program memory storage
- Power-up sequence, executes missed schedules following power outage
- Dimensions: 3.6" x 6.7" x 1.3" (91.4mm x 177.8mm x 33mm) L x W x D
- FCC compliant; CE certified
- One year warranty

System Layout & Wiring

MSC-100 Controls & Wiring



The MSC-100 Time Clock interfaces to the Wireless Miro RF network through a Miro Room or House Scene Interface. The Scene Interface supplies 24 VDC to power the Time Clock. Wiring shown is typical for one channel.

Ordering Information

Catalog No.	Product Description
<input type="checkbox"/> MSC-100	5-channel astronomic time clock
Works in conjunction with:	
Catalog No.	Description
<input type="checkbox"/> MRHC3	House Scene Interface
<input type="checkbox"/> MRRC3	Room Scene Interface





Wired (non-RF) dimmers and controllers

Selected load power devices are available in Miro styling without RF capability. Use these products for applications where scene control or one-touch system control is not needed.

Dimmers

- Exclusive Universal Dimmers operate most dimmable load types (incandescent, MLV, ELV, neon/cold cathode, fluorescent, LED)
- Two-wire Dimmer for incandescent loads
- Soft start extends lamp life
- Preset recalls last lighting level
- Self-diagnostic identifies overload and short circuit
- LED locator light

Fan Controller

- 4 preset speeds plus off
- De-humming circuitry

Multilocation Controller

- Provides wired remote control for Dimmers or Fan Controller from any number of locations

0-10V Controller

- Controls 0-10V fluorescents and LEDs, or line voltage shade motors, from a single location
- Occupancy sensor input for energy-saving lighting control

Screwless wall plates in white, ivory, light almond and black are available to complement any decorator style wall box devices including wireless and wired Miro products.



Miro Decorator Universal Dimmers and Wired Multilocation Controller

Industry-exclusive universal dimmers control most load types

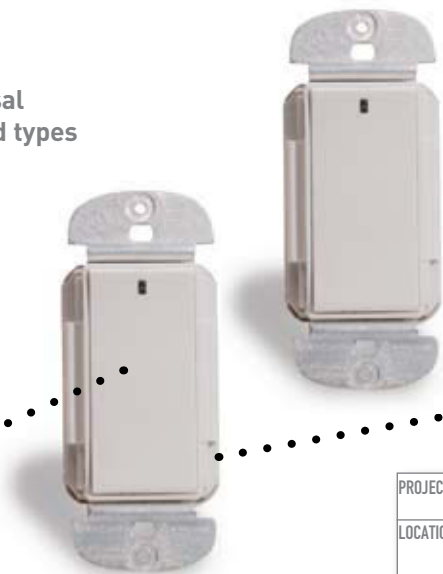
Optional fluorescent mode activates second dimming curve

Last level recall

Multilocation Controller provides full-function control from additional locations

Decorator styling compatible with screwless or standard wall plates

Air-gap switch ensures safe relamping



PROJECT

LOCATION/TYPE

Product Overview

Description

Miro Decorator Universal Dimmers provide full range dimming of most dimmable lighting loads. They drive incandescent, magnetic low voltage, electronic low voltage (forward phase compatible), neon and cold-cathode, and dimmable two-wire linear and compact fluorescent (Advance Mark 10 or equivalent) loads. They also operate selected LED loads (contact the manufacturer to determine compatibility). Multilocation controllers provide convenient, easy-to-wire multi-way control. All devices feature decorator styling identical to Wireless Miro Decorator devices.

Operation

Users operate Miro dimmers by pressing up or down on the paddle to raise or lower light levels. They may also recall the preset light level by tapping once on the paddle. Multilocation Controller operation is identical to dimmer operation.

Features

- Universal Dimmers are compatible with most load types
- Square law or fluorescent dimming curve
- Multilocation Controllers provide full control of Dimmers or Fan Controllers
- Recalls last used lighting level (preset)
- Two-second fade rate
- Patented overload and short-circuit protection
- Air-gap switch ensures safe relamping
- Soft start technology significantly extends lamp life by limiting inrush current
- Long life status LED
- Power failure restore to last-used level
- Compatible with decorator wall plates

Fluorescent Mode

Universal Dimmers have two dimming curves, square law (default) and fluorescent, so that various loads on different dimmers will perform similarly. Fluorescent dimming is smooth, with a typical low level of approximately 5% (consult ballast manufacturer for specifics).

Applications

Universal Dimmers offer a single product solution for multiple dimming requirements. They are recommended as stand-alone replacements for single-pole light switches for all commercial, hospitality and residential applications, except those without a neutral wire at the dimmer location. Multilocation Controllers allow full control of dimmers from additional locations and are connected to dimmers by a traveler wire. Any number of Multilocation Controllers may be connected to a dimmer.



Specifications

- 120 VAC; neutral required for dimmers
- Minimum load on dimmers: 25 watts
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- Dimensions:
DCD267 and **DCD270**: 2.64" x 1.75" x 1.98"

(67.1mm x 44.5mm x 50.3mm) L x W x D; depth in wall 1.65" (41.9mm)

DCD68: 2.64" x 1.75" x 1.76" (67.1mm x 44.5mm x 54.6mm) L x W x D; depth in wall 1.50" (38.1mm)

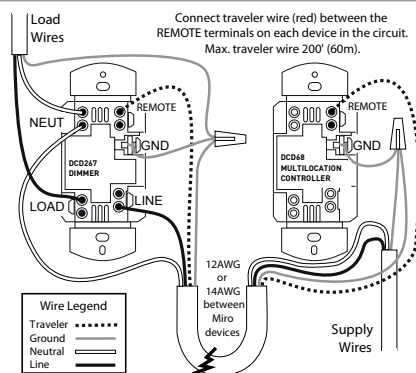
- UL and cUL listed
- Five year warranty

Dimmer Ratings

Dimmer derating			
The maximum load for each dimmer is determined by the type of load and the presence of other dimmers, or fan controllers, in a multi-gang installation. Limit loads on dimmers as shown below. Do not mix different load types on one dimmer.			
600 watt dimmers	Plastic or metal back box		
	Load Type	Single Dimmer	Dimmer at end of multi-gang
Incandescent/quartz halogen	600W	500W	400W
ELV (forward phase compatible), MLV, cold cathode/neon, two-wire fluorescent [Advance Mark 10 or equivalent]	500W	400W	300W

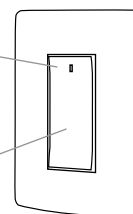
Wiring & Operation

Dimmer Wired to Optional Multilocation Controller



1 tap = last used level
 2 taps = full output
 Press and hold = raise light level

1 tap = fade to OFF
 Press and hold = reduce light level



Mounting in a deep electrical box is recommended but not required

Ordering Information

Catalog No.	Color	Product Description	Voltage	Min Load	Max Load
<input type="checkbox"/> DCD267-A	Light Almond	Miro Decorator Universal Dimmer	120 VAC	25W	600W*
<input type="checkbox"/> DCD267-B	Black				
<input type="checkbox"/> DCD267-I	Ivory				
<input type="checkbox"/> DCD267-W	White				
<input type="checkbox"/> DCD68-A	Light Almond	Miro Decorator Multilocation Controller	120 VAC	N/A	N/A
<input type="checkbox"/> DCD68-B	Black				
<input type="checkbox"/> DCD68-I	Ivory				
<input type="checkbox"/> DCD68-W	White				

*Subject to derating when more than 1 dimmer is ganged together or when using non-incandescent load types. Order wall plates separately.

Miro Decorator Two-wire Dimmer and Wired Multilocation Controller

No neutral connection required;
controls incandescent loads

Multilocation Controller provides
full-function control from additional
locations

Last level recall

Decorator styling compatible
with screwless or standard
wall plates



Air-gap switch ensures safe relamping

PROJECT

LOCATION/TYPE

Product Overview

Description

Miro Decorator Two-wire Dimmers provide full range dimming of incandescent and quartz halogen lighting loads. Multilocation Controllers provide convenient, easy-to-wire multi-way control. All devices feature decorator styling identical to Wireless Miro Decorator devices.

Operation

Users operate Miro dimmers by pressing up or down on the paddle to raise or lower light levels. They may also recall the preset light level by tapping once on the paddle. Multilocation Controller operation is identical to dimmer operation.

Full-function Multi-way Control

Multilocation Controllers allow full control of dimmers from additional locations and are connected to dimmers by a traveler wire. Any number of Multilocation Controllers may be connected to a dimmer.

Applications

Dimmers may be used as stand-alone replacements for single-pole light switches. Two-wire Dimmers are recommended for retrofit applications where no neutral wire is available in the switch box.

Features

- Two-wire Dimmers are compatible with incandescent and quartz halogen loads
- Square law dimming curve
- Multilocation Controllers provide full control of Dimmers or Fan Controllers
- Recalls last used lighting level (preset)
- Two-second fade rate
- Patented overload and short-circuit protection
- Air-gap switch ensures safe relamping
- Soft start technology significantly extends lamp life by limiting inrush current
- Long life status LED
- Power failure restore to last-used level
- Compatible with decorator wall plates



Specifications

- 120 VAC; no neutral required
- Minimum load on dimmer: 60 watts
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- Dimensions:
 - DCD26:** 2.64" x 1.75" x 1.98" (67.1mm x 44.5mm x 50.3mm) L x W x D; depth in wall 1.65" (41.9mm)
 - DCD68:** 2.64" x 1.75" x 1.76" (67.1mm x 44.5mm x 54.6mm) L x W x D; depth in wall 1.50" (38.1mm)
- UL and cUL listed
- Five year warranty

Dimmer Ratings

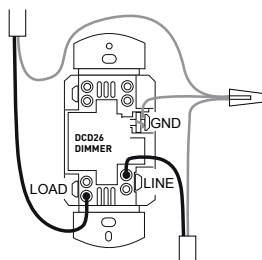
Dimmer derating

The maximum load for each dimmer is determined by the presence of other dimmers, or fan controllers, in a multi-gang installation. Limit loads on DCD26 dimmers as shown below.

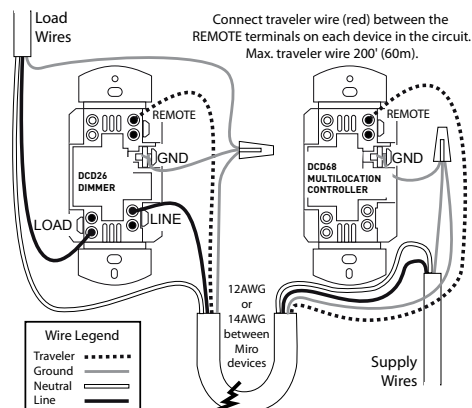
600 watt dimmers	Plastic or metal back box		
	Single Dimmer	Dimmer at end of multi-gang	Dimmer in middle of multi-gang
Load Type			
Incandescent/quartz halogen	600W	500W	400W

Wiring & Operation

Wiring Diagrams



Mounting in a deep electrical box is recommended but not required

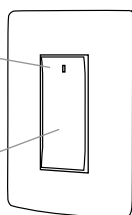


Wiring to optional DCD68 Multilocation Controller

Product Controls

1 tap = last used level
 2 taps = full output
 Press and hold = raise light level

1 tap = fade to OFF
 Press and hold = reduce light level



Ordering Information

Catalog No.	Color	Product Description	Voltage	Min Load	Max Load
<input type="checkbox"/> DCD26-A	Light Almond	Miro Decorator Two-wire Dimmer	120 VAC	60W	600W*
<input type="checkbox"/> DCD26-B	Black				
<input type="checkbox"/> DCD26-I	Ivory				
<input type="checkbox"/> DCD26-W	White				
<input type="checkbox"/> DCD68-A	Light Almond	Miro Decorator Multilocation Controller	120 VAC	N/A	N/A
<input type="checkbox"/> DCD68-B	Black				
<input type="checkbox"/> DCD68-I	Ivory				
<input type="checkbox"/> DCD68-W	White				

*Subject to derating when more than 1 dimmer is ganged together. Order wall plates separately.

Miro Decorator Fan Controller and Wired Multilocation Controller

Controls one or two ceiling fans

Factory preset with four speeds plus off

Decorator styling compatible with screwless or standard wall plates



Multilocation Controller provides on/off and speed control from additional locations

Silent or 'de-humming' technology for buzz-free fan control operation

PROJECT

LOCATION/TYPE

Product Overview

Description

Miro Decorator Fan Controllers provide speed control for one or two ceiling fans. Multilocation Controllers provide convenient, easy-to-wire multi-way control. All devices feature decorator styling identical to Wireless Miro Decorator devices.

Operation

A Miro Fan Controller can operate two ceiling fans from a single location. Fan speed may be increased or decreased by pressing up or down on the paddle, or by tapping one of five preset push-buttons that provide four speed choices ranging from 25-100% and OFF. The previously preset fan speed may be recalled by tapping once on the paddle. Users may also turn fans ON and OFF or adjust fan speed from Multilocation Controllers.

Multi-way Control

Multilocation Controllers allow full control of fans from additional locations and are connected to fan controllers by a traveler wire. Any number of Multilocation Controllers may be connected to a fan controller.

Applications

The Fan Controller is exclusively designed for use with ceiling fans and should not be used to control: lighting, receptacles or transformer-operated devices; a fan and a light wired together on the same load wire or in the same circuit as a GFCI breaker or receptacle; or a fan that requires the manufacturer's fan speed controller.

Features

- Fan Controller operates two ceiling fans
- Silent or 'de-humming' technology for buzz-free operation
- Air-gap switch for safety
- Multilocation controllers provide full control of Dimmers or Fan Controllers
- Recalls last used speed (preset)
- Patented overload and short-circuit protection
- Long life status LED
- Power failure restore to last-used speed
- Compatible with decorator wall plates



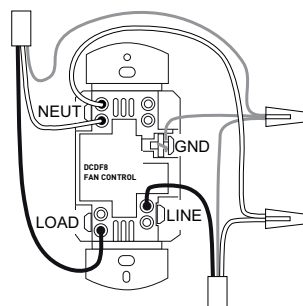
Specifications

- 120 VAC; neutral required for DCF8
- Operating Conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non-condensing
- Dimensions:
DCF8: 2.64" L x 1.75" W x 2.17" D (67.1mm x 44.5mm x 55.2mm; D 47.2mm) L x W x D; depth in wall 1.86" (47.2mm)

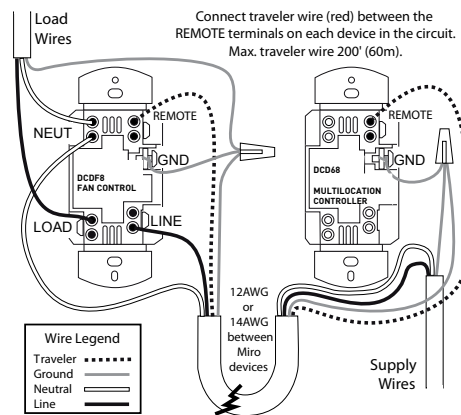
- **DCD68:** 2.64" x 1.75" x 1.76" (67.1mm x 44.5mm x 54.6mm) L x W x D; depth in wall 1.50" (38.1mm)
- UL and cUL listed
- Five year warranty

Wiring

Wiring Diagrams



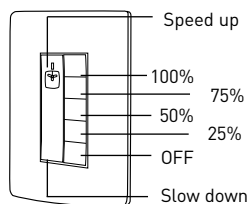
Mounting in a deep electrical box is recommended but not required



Wiring to optional DCD68 Multilocation Controller

Operation

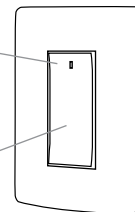
Fan Controller



Multilocation Controller

1 tap = last used speed
 2 taps = full output
 Press and hold = increase speed

1 tap = fade to OFF
 Press and hold = decrease speed



Ordering Information

Catalog No.	Color	Product Description	Voltage	Min Load	Max Load
<input type="checkbox"/> DCF8-A	Light Almond	Miro Decorator Fan Controller	120 VAC	N/A	1.5A
<input type="checkbox"/> DCF8-B	Black				
<input type="checkbox"/> DCF8-I	Ivory				
<input type="checkbox"/> DCF8-W	White				
<input type="checkbox"/> DCD68-A	Light Almond	Miro Decorator Multilocation Controller	120 VAC	N/A	N/A
<input type="checkbox"/> DCD68-B	Black				
<input type="checkbox"/> DCD68-I	Ivory				
<input type="checkbox"/> DCD68-W	White				

Order wall plates separately.

Miro Decorator 0-10V Controller

Controls 0-10VDC lighting loads or line voltage shades

Input for optional occupancy sensor or photosensor

Last level recall

Wired preset device complements Wireless Miro products

Decorator styling compatible with screwless or standard wall plates

Long-life status LED



PROJECT
LOCATION/TYPE

Product Overview

Description

The Miro 0-10V Controller is a low voltage (Class 2) device with two field-selectable modes of operation. In dimming mode, it provides a nominal 0-10VDC signal to smoothly dim up to 100 DC controlled fluorescent dimming ballasts (Advance Mark 7, or equivalent) or compatible LED systems. In shade control mode, it controls line voltage shade motors (Somfy, or equivalent). Auxiliary power pack(s) are required. Controller includes a sensor input for automatic operation.

Operation

Users operate the 0-10V Controller by pressing up or down on the paddle to raise or lower light level or shade position. They may also recall the preset level by tapping the paddle. If installed, sensors will fade lights on to the preset level and fade off, based on occupancy.

Code-compliant Fluorescent Dimming

Fluorescent dimming is smooth, with a typical low level of approximately 5% (consult ballast manufacturer for specifics). When the Controller signal output drops to 0, the auxiliary relay (WattStopper power pack) will turn the controlled fixtures off after one to two seconds.

For code-compliant automatic-off lighting control, an occupancy sensor input may be wired to the controller. Both the sensor and the Controller may be powered from a single power pack. Lighting will fade on when the sensor detects occupancy and off after the space has been vacated.

Applications

Common applications include restaurants, offices, conference and meeting spaces, training centers and specialty stores where load control is required from a single location. For applications requiring control from multiple locations, use the Wireless Miro Decorator 0-10V Controller and Multilocation Controller(s) and/or Scene Controller(s).

Features

- Sinks up to 50mA, to control up to 100 ballasts wired in parallel (each ballast sourcing 0.5mA)
- Controls two external maintained relays
- May be used for on/off lighting control
- Recalls last-used light level (preset)
- Two-second fade rate
- Power failure restore to last-used level
- Compatible with decorator wall plates

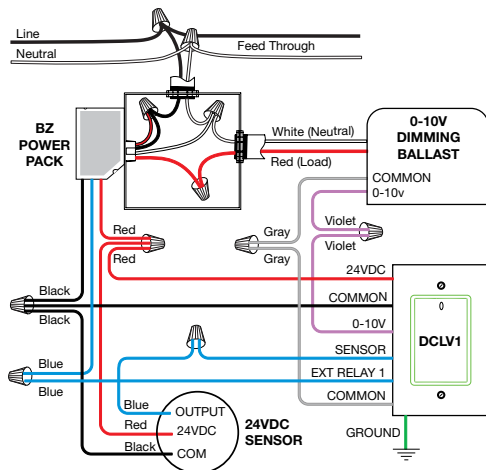


Specifications

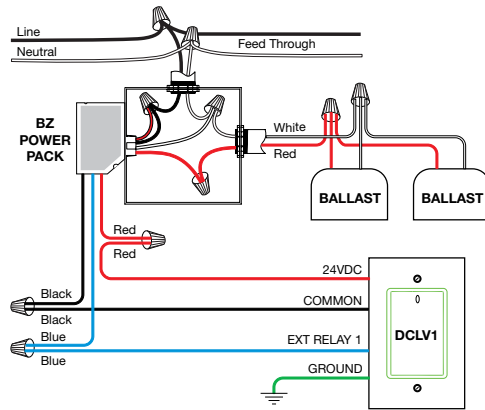
- Input voltage: 24VDC, 35mA
- Control output for 0-10VDC ballasts:
Sinks up to 50mA; maximum voltage, 9.5VDC, minimum voltage, 0.5VDC
- Two outputs for external maintained relays
- Dimensions: 2.64" x 1.75" x 1.98" (67.1mm x 44.5mm x 50.3mm) L x W x D; depth in wall 1.65" (41.9mm)
- Operating conditions: for indoor use only; 32-104°F (0-40°C); 0-80% RH, non condensing
- UL and cUL listing pending
- Five year warranty

Installation & Operation

Wiring



Wiring for dimming control of 0-10V ballasts and optional occupancy sensor

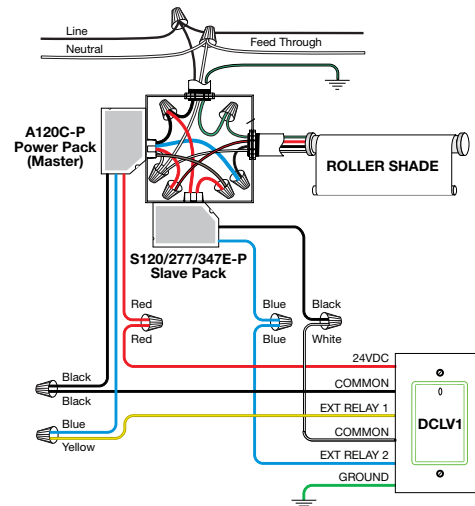
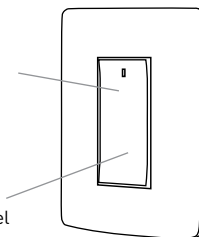


Wiring for on/off control of ballasts or other loads

Product Controls

1 tap = last used level
2 taps = full output
press and hold = raise level

1 tap = fade to OFF
press and hold = reduce level



Wiring for control of MechoShade / Somfy motorized roller shades

Ordering Information

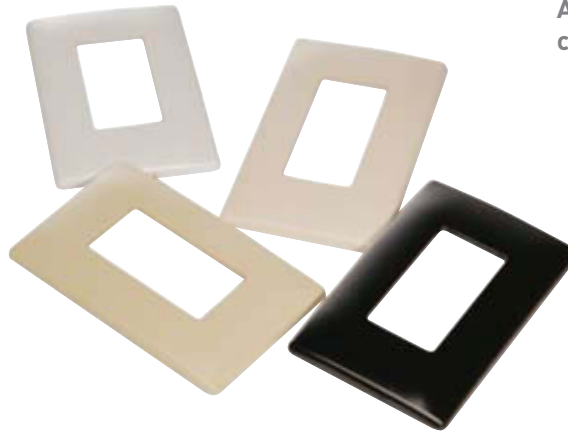
Catalog No.	Color	Product Description	Input Voltage
<input type="checkbox"/> DCLV1-A	Light Almond	Miro Decorator 0-10V Controller	24VDC
<input type="checkbox"/> DCLV1-B	Black		
<input type="checkbox"/> DCLV1-I	Ivory		
<input type="checkbox"/> DCLV1-W	White		

NOTE: Must order power packs separately. Available in 120V or 277V.
Order wall plates separately.

Screwless Decorator Wall Plates

Screwless styling enhances wall plate aesthetics

Four finishes match Miro decorator devices



Available in 1-6 gang configurations

Easy installation eliminates half the mounting screws of conventional plates

PROJECT
LOCATION/TYPE

Product Overview

Description

Screwless Decorator Wall Plates are an optional component of any installation of decorator style wall box devices. Featuring conventional decorator styling, they provide screwless surfaces and finishes that match Miro decorator devices.

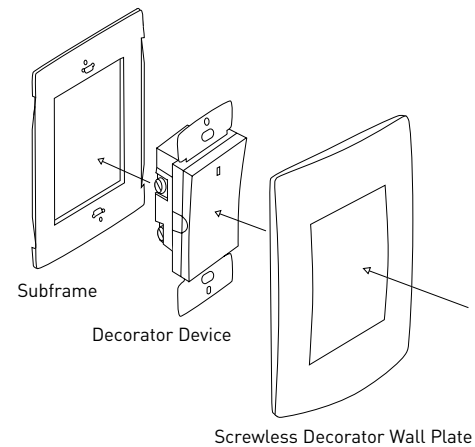
Operation

Screwless Decorator Wall Plates consist of a robust plated steel subframe, used to mount and align the decorator devices, and a decorative cover plate. The subframe is sandwiched between the device(s) and the wall, providing a firm base (no floaters) and accurate alignment with the cover plate. Screwless plates snap on to the subframe.

Dimensions

- 1-Gang: 4.87" L x 3.10" W (124mm x 78.7mm)
- 2-Gang: 4.87" L x 4.91" W (124mm x 125mm)
- 3-Gang: 4.87" L x 6.72" W (124mm x 171mm)
- 4-Gang: 4.87" L x 8.54" W (124mm x 217mm)
- 5-Gang: 4.87" L x 10.35" W (124mm x 263mm)
- 6-Gang: 4.87" L x 12.16" W (124mm x 305mm)

Mounting Diagram



Ordering Information

	White	Ivory	Lt. Almond	Black
1-Gang Plate	DPP1-W <input type="checkbox"/>	DPP1-I <input type="checkbox"/>	DPP1-A <input type="checkbox"/>	DPP1-B <input type="checkbox"/>
2-Gang Plate	DPP2-W <input type="checkbox"/>	DPP2-I <input type="checkbox"/>	DPP2-A <input type="checkbox"/>	DPP2-B <input type="checkbox"/>
3-Gang Plate	DPP3-W <input type="checkbox"/>	DPP3-I <input type="checkbox"/>	DPP3-A <input type="checkbox"/>	DPP3-B <input type="checkbox"/>
4-Gang Plate	DPP4-W <input type="checkbox"/>	DPP4-I <input type="checkbox"/>	DPP4-A <input type="checkbox"/>	DPP4-B <input type="checkbox"/>
5-Gang Plate	DPP5-W <input type="checkbox"/>	DPP5-I <input type="checkbox"/>	DPP5-A <input type="checkbox"/>	DPP5-B <input type="checkbox"/>
6-Gang Plate	DPP6-W <input type="checkbox"/>	DPP6-I <input type="checkbox"/>	DPP6-A <input type="checkbox"/>	DPP6-B <input type="checkbox"/>



WIRELESS LIGHTING CONTROLS

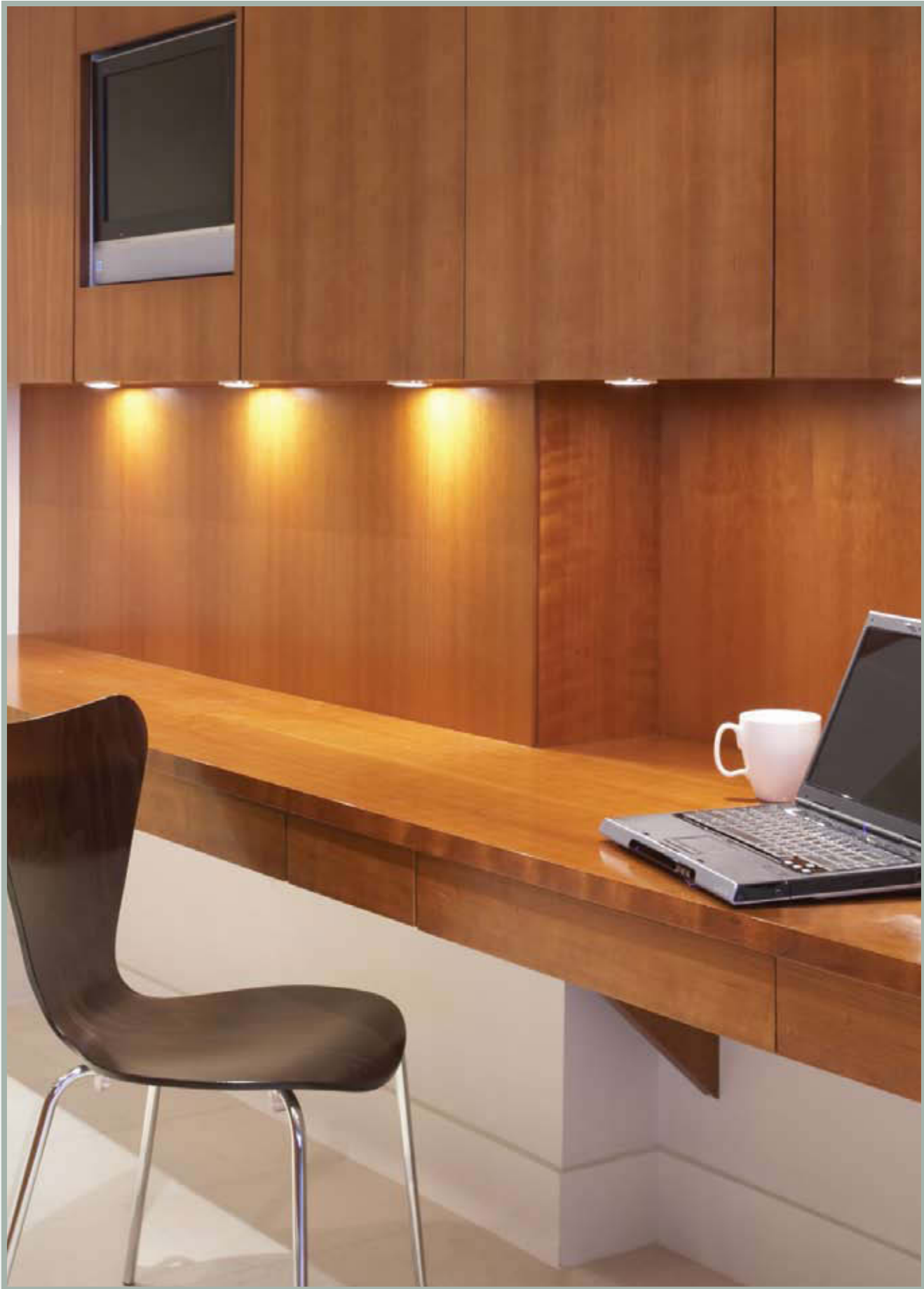






Table of Contents

Glossary	13-114
Discontinued and Replacement Product Index	116

Glossary of terms

A **After-hours** - the time period in a building that is outside of normal business or operating hours when occupancy is expected to be very low.

Air Gap Isolation - a mechanical method of turning off a dimmer for safety during relamping.

ANSI/ASHRAE/IESNA Standard 90.1 - an energy standard for buildings except low-rise residential buildings, adopted by the Department of Energy as the commercial building reference standard for state building energy codes under the federal Energy Policy Act.

Aperture - an opening in a photosensor that allows light to enter. The aperture may be adjustable.

ARRA - American Recovery and Reinvestment Act of 2009. Provides funding for improving energy efficiency of public works projects at federal, state, and local levels.

Artificial light - light produced by electric lights.

Astronomic control - a method of calculating dusk/sunset and dawn/sunrise times that change with the year's seasons, based on latitude/longitude global position and time zone. This method may be used instead of photocell control as a basis for ON/OFF control of exterior lighting.

Audible warning - an automated method of warning occupants of impending lighting shutoff by sounding a tone. Sometimes referred to as "beep warning."

Auto ON/OFF - a control strategy used with occupancy sensors of turning lights on and off automatically; off when a space is unoccupied and on whenever occupancy is detected.

Auto On to 50% - a specific type of bi-level switching in which all general lighting in a space is controlled by occupancy sensors. While 50% of lighting turns on automatically upon occupancy detection, the remainder of lighting requires manual operation.

Automatic control switch - a type of switch that can receive control signals over the building's normal power wiring system.

Automatic shutoff - a scheduled shutdown of lighting by a lighting control system, preceded by either a visible or audible warning.

B **BACnet** - a building automation and control network communication protocol developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). BACnet is an American national standard, a European pre-standard, and an ISO global standard.

Ballast - a device used with an electric-discharge lamp to obtain the necessary circuit conditions (voltage, current, and waveform) for starting and operating.

Ballast factor - the ratio of the light output of a fluorescent lamp or lamps operated on a ballast to the light output of the lamp(s) operated on a standard (reference) ballast.

Beep warning - see "audible warning."

Bi-level switching - a control strategy that focuses on switching individual lamps within a luminaire, or groups of luminaires to achieve a reduced, balanced lighting level.

Blink warning - an automated method of warning occupants of impending lighting shutoff by turning lights off and then back on quickly. Sometimes referred to as “flick warning.”

BMS/BAS - Building management system/building automation system.

C **Cat 5e cable** - a twisted pair high signal integrity cable type used to carry many types of communications signals.

Central/centralized control - a control method where control for a system is located in one central location. Usually all control commands come from this location and wiring connections originate at this location.

CFL - compact fluorescent lamp. CFLs are a type of fluorescent lamp that provide similar light levels compared with incandescent lamps but offer longer lifecycles and consume less electricity.

Channel - in scheduled control systems, an automation structure that enables lighting or devices that control lighting to be grouped for common control. Also, a selection of lighting fixtures or lamps controlled in unison. Sometimes referred to as “group” or “zone.”

Class 1 - a Class 1 circuit is the portion of the wiring system between the load side of the overcurrent device or power-limited supply and the connected equipment. The voltage and power limitations of the source are in accordance with NEC 725.21 (2002). All Class 1 conductors must be insulated for the maximum voltage of any conductor in the cable, tray, enclosure or raceway.

Class 2 - a Class 2 circuit is the portion of the wiring system between the load side of a Class 2 power source and the connected equipment. Due to its power limitation, in most cases a Class 2 circuit need not reside in conduit to comply with safety requirements both from a fire initiation standpoint and in terms of acceptable protection from electric shock.

Cleaning scenario - a control scenario that enables maintenance crews to control needed lighting without interfering with regularly scheduled control of other building lighting.

Clerestory windows - windows within the part of a building that rises clear of the roof or other parts, usually designed to introduce daylight into the interior space.

Closed loop system - a daylighting control system that measures and uses data on the total light level from all sources (i.e., natural and artificial light levels) in the controlled area to adjust artificial lighting levels.

Color temperature - describes the appearance of light in terms of warmth or coolness. Color temperature is measured in kelvins (K), which represent the color emitted by a theoretically perfect radiator as it is heated to a certain temperature. Low color temperature sources such as incandescent or warm fluorescent lamps (about 3000 K) are on the red end of the spectrum. Higher color temperature sources such as cool white fluorescent lamps (4000 K and higher) are in the middle of the spectrum. Daylight is toward the blue end of the spectrum and has a high color temperature of approximately 5500 K.

Glossary of terms

Commissioning - the formal process of certifying a building's operation according to the design intention, usually completed by a commissioning agent. Comprehensive process of reviewing design documentation, verifying installation, testing equipment and system performance, training building operators, and analyzing the operation of building systems.

Configuration lock - a control attribute to protect system configurations, such as scenes, so that they can only be altered by someone who knows how to unlock the system.

Constant setpoint - use of a single setpoint for daylighting controls. As daylight increases or decreases, the control device attempts to maintain this setpoint.

Contactors - an electrically operated device that provides on/off switching control. It is generally operated by line voltage power and usually will switch multiple circuits or wiring segments simultaneously. (See "relay.")

Continuous dimming - lighting control method that is capable of varying light output of lamps over a continuous range from maximum to minimum output. (Also referred to as "dimming.")

Control group or zone - see "group."

Control interlock signal - in daylighting control, the capability of a control to hold lighting OFF when the area is not being used. This capability is usually accomplished via an interlock between the daylighting controller and a building management system, time clock, or occupancy sensor.

Control scenario - a preprogrammed control strategy usually designed for a common commercial or industrial application.

Convertible occupancy sensor - an occupancy sensor that can be set for either automatic-on or manual-on operation. It is not compliant with California Title 24-2008 provisions for use in residential applications.

Coverage pattern - the shape and size of an area throughout which occupancy is detectable by a sensor. The pattern is determined by the technology, the lens design (if applicable) and the mounting position of the sensor.

D DALI - Digital Addressable Lighting Interface. A communication protocol developed primarily for fluorescent dimming systems. Part of an IEC standard.

DIN rail - metal component found in enclosures used for mounting control devices or power packs.

DMX512 - a control communication protocol used primarily for theatrical lighting systems, ANSI E1.11-2004, Entertainment Technology - USITT DMX512-A - Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories.

Daisy chain topology - see "topology."

Dataline - the wire that connects a system of lighting control panels and compatible devices (i.e., dataline switches and automation modules) through which data communication takes place. It is also often used as a term for network communications. (See "networking.")

Daylight - light produced by solar radiation. This includes daylight components such as sunlight scattered by the atmosphere, light reflected from the ground, and light reflected from interior surfaces of a building.

Daylight factor - ratio of daylight illumination on a horizontal point indoors to the horizontal illumination outdoors, expressed as a percentage, excluding direct sunlight.

Daylighting control - a lighting control method that changes the amount of light provided by lighting fixtures as the contribution of ambient daylight changes.

Deadband - in daylighting control, a control margin above and/or below a fixed setpoint in which minute variations in light levels (footcandles) will not trigger an ON or OFF response from the daylighting controller. This prevents lamp cycling.

Demand charge - the charge levied by an electrical utility on its customer(s) based on that user's highest electrical demand (peak load) within a specified period of time.

Demand reduction - reducing energy demand through conservation, commonly done at peak hours using strategies such as load shedding.

Dimmer derating - the reduced maximum load for a dimmer in a specific application. When dimmers are used in a multigang application they run hotter and therefore must be derated depending upon the number of dimmers being used and their locations within the box.

Dimming - see "continuous dimming."

Dimming response - a setting which determines the proportional response of a daylighting control to a change in measured light level. For instance, increasing the dimming response setting causes the control to dim lights more in response to a smaller light level increase.

Distributed control - a control architecture where the control device is located at or near the load being controlled. This is the opposite of centralized control. The benefits of this approach are often better modularity, convenience, and reduced wiring costs.

Distributed intelligence - a system where the intelligence resides within each device, rather than in a central location.

Distributed processing - the capability of a panel or other network components to operate independently of other networked panels while still retaining the ability to share information over the system data-line. This keeps isolated unit failures from affecting other panels and devices in the system. (Also referred to as "distributed intelligence.")

Dry contact closure - any pair of contacts that carry no live voltage, commonly used to interface between two devices or systems (i.e., occupancy sensor-HVAC system; lighting control panel-alarm system). May be dry or wet.

Dual relay - control device containing two relays that enables simultaneous but independent control of two different loads.

Dual technology - the combination of passive infrared and ultrasonic technologies used to detect occupancy.

Glossary of terms

E **EMI** - Electromagnetic Interference. High frequency interference caused by electronic components or fluorescent lamps that interferes with the operation of electrical equipment. Must be controlled to meet FCC limits.

Efficacy - the ratio of light output from a lamp to the electrical input power, expressed in lumens per watt (LPW).

Egress delay - a time delay specifically designed to hold lighting ON for an interval of time after a control signal would otherwise have shut lighting OFF, thereby providing illumination for occupants departing from a building.

Electrically held - describes a type of switching device, contactor, or relay which requires a supply of constant electrical power to keep or hold it in the ON or OFF state.

Electronic dimming ballast - a variable output electronic fluorescent ballast.

Emergency lighting - lighting that is separately circuited from general lighting and is mandatory in all public buildings to facilitate egress and protect life safety. In general, emergency lighting is required to come on automatically within ten seconds after a loss of power and must operate for a minimum of 90 minutes.

EPAct - Energy Policy Act of 2005. Many of the provisions providing tax incentives for the purchase of energy efficiency products in buildings have been extended by subsequent legislation.

Expansion panel - a lighting control panel that has no intelligent control capability on its own, but receives some control and command signals through wiring from a main lighting control panel.

F **False trigger** - the erroneous switching of lighting by a sensor either in the presence or absence of occupancy, often due to poor placement, product selection or adjustment.

Fade rate - the rate at which one or more loads transition smoothly from one level to the requested level when initiated by a momentary action, typically stated as distance/time, ie: percent/second, steps/second, etc.

Fade time - the fixed period of time it takes for one or more loads to transition smoothly from one level to the requested level with all loads arriving at the requested level at the same time when initiated by a momentary action.

Footcandle (fc) - a standard measurement of illumination, which represents the amount of illuminance over a surface one foot square on which there is a uniformly distributed flux of one lumen. Metric unit is the lux (one fc = 10.764 lux).

Free topology - see "topology."

Fresnel lens - a lens recognized by its concentric rings that is used for passive infrared sensors.

G **Group** - a selection of lighting fixtures or lamps controlled in unison either by a wiring scheme or a protocol. Sometimes referred to as a "channel" or a "zone."

Grace period - see time delay.

H **HID** - high intensity discharge. HID lamps include groups of lamps such as mercury, metal halide, and high-pressure sodium.

Hold-Off - capability in occupancy sensors that prevents lighting from turning on with occupancy detection when daylight levels are adequate. This functionality will not turn lighting off but simply prevent it from turning on.

Home run wiring - wiring that is run all the way back to a central lighting control or breaker panel from each control point without branching or breaking off in other directions.

Illuminance - Luminous flux (lighting level) per unit area, expressed in footcandles (English unit), or lux (metric unit).

Inrush current - the maximum current drawn by a device during the starting period.

IECC - the International Energy Conservation Code, developed by the International Code Council® (ICC®), that provides the minimum energy efficiency provisions for residential and commercial buildings. It is written so that state and local jurisdictions can easily adopt the model as their energy code.

Isolated relay - a relay with isolation between coil circuit and contacts. (See “relay.”)

Lamp cycling - unnecessary and undesirable ON/OFF switching of lamps.

LEED - Leadership in Energy and Environmental Design, a voluntary program administered by the U.S. Green Building Council. Projects achieve Certified, Silver, Gold, or Platinum ratings by satisfying standard prerequisites and going beyond this threshold to earn points in specific categories.

Last level recall - a dimming control feature that restores lights to their previous levels after either a manual or automatic shutoff.

Latching - see “mechanically held.”

Light meter - an instrument, generally handheld, that is used for measuring light levels.

Light shelf - horizontal architectural element positioned above eye level to reflect daylight onto the ceiling and into the space.

Lighting control measure (LCM) - a lighting control sequence of operation put in place for reducing electrical lighting demand beyond the baseline. The baseline is a minimum for a code compliant solution. Additional steps planned or taken to increase energy efficiency of a system are considered LCMs.

Lighting control panel - a complete assembly, consisting of a panel interior with relays or contactors and power supply in an enclosure, that is designed specifically to control lighting in a building.

Line voltage - the AC voltage supply that provides the prime source of electrical power for a facility. Typically 120 or 277 volts AC, at 60 hertz in North America, 120/347 volts in Canada. In Europe, the line voltage is nominally specified as 240 volts AC, at 50 hertz.

Linear topology - see “topology.”

Load shedding - a lighting control strategy for selectively reducing the output of lighting fixtures or lamps on a temporary basis as a means to reduce peak demand charges.

Glossary of terms

LonMark® Interoperability Association - an organization that promotes LonMark® products, recommends design guidelines for interoperable LonWorks® based products, and verifies that products meet the Association's guidelines for interoperability.

LonTalk® - a standard protocol for device-level communications in control systems.

LonWorks® - a networking platform for control systems created by Echelon Corporation that standardizes how devices communicate with each other.

Loop topology - see "topology."

Low voltage - a stepped down supply voltage (<50 volts), often 24VDC, used to power devices such as sensors.

Low voltage switch - a switch capable of switching a remote device, such as a relay, by means of a low voltage signal.

Lumen (lm) - basic metric unit of luminous flux, or quantity of light.

Lumen maintenance - an energy saving lighting control strategy which focuses on maintaining an even level of illumination throughout the lifespan of the lamps. It relies on reducing initial light levels at the outset of the lifespan and gradually increasing light levels as lamps age.

Luminaire - a complete lighting unit consisting of lamp and ballast(s) (when applicable) together with the parts designed to distribute the light, to position and protect the lamps, and to connect the lamps to the power supply.

Lux (lx) - metric unit of illuminance. One lux is one lumen per square meter and equals .0929 footcandles.

M

Manual ON - an energy saving control strategy requiring an occupant to manually activate the lights. Required for selected applications under California Title 24-2008.

Manual override - a control feature allowing occupants to temporarily or permanently select lighting levels other than those programmed.

Main panel - a lighting control panel containing all control and command signal capability. It can operate as a stand-alone panel and can also provide control signals to expansion panels.

Maximum output - the percentage of voltage directed to the load relative to the total amount the device is capable of providing. For instance, if a 120V device transmits 120V to the load 120V, it is operating at maximum output (also referred to as 100% trim level). If the device is set to maximum output (trim level) of 87% then the device will only give the load a maximum voltage of 104.4V.

Mechanically held (also called latching) - describes a type of switching device, contactor or relay that requires a momentary signal of electrical power to change the switch from one ON/OFF state to the other. After the state change, power is no longer required to hold it in the ON or OFF state.

Memory backup - the capacity of a lighting controller to retain programming information and restore lights to an appropriate state following a power failure.

Minimum load requirement - the minimum electrical load required by certain devices to insure proper operation.

Motion sensor - a device controlling outdoor lighting systems that automatically turns lights on when motion is detected and off soon after an area is vacated. When the device is used to control indoor lighting systems, it is termed an occupant sensor, occupancy sensor or occupant-sensing device.

Multi-phase switching - the ability to switch and/or power a device on different phases. This can occur when the device is receiving power from phase 1 but the user is switching a device on phase 2.

Multi-pole - a switch, contactor, or breaker that makes or breaks the connection of more than one current carrying conductor.

Multi-way switching - the ability to switch the same lighting fixtures or lighting zones from multiple switch locations.

Nanometer - a millionth of a millimeter. This term is used to describe the wavelengths of the energy spectrum. The visual spectrum falls between 400 to 700 nanometers. Often abbreviated to nm.

Networking, network communication - a type of communication between lighting control devices where electronic information is transmitted and received, usually over a pair of wires.

Normally closed - a relay or contactor whose manufactured design is to be closed in the resting state.

Normally open - a relay or contactor whose manufactured design is to be open in the resting state.

O **Occupancy emulation** - capability of capturing lighting usage over a specified period of time and repeating it to simulate the effect of occupancy.

Occupancy sensor - a device that switches light on and off or dims and brightens lights based on the presence or absence of people.

Occupied/Unoccupied - strategy where control scenarios are based on whether a facility or specific area within the facility is operating during normal business hours when occupants are expected to be present (Occupied), or after regular working hours when occupancy is expected to be very low (Unoccupied). Sometimes called normal hours/after hours.

OFF delay - in daylighting control, the time interval between when the light level sensor detects the adequate level of light to when the controlled lights actually switch off. This interval prevents controlled lights from cycling on and off in response to transient light levels (i.e. lightning flashes, car headlights, glare, etc.).

ON delay - in daylighting control, the time interval between when the light level sensor detects an inadequate light level to when the controlled lights actually switch on. This interval prevents false triggering, such as would occur with transient cloud cover.

ON/OFF switching - control method that uses light level data or other control parameters to determine whether lights should be switched on or off, either singly or grouped in zones.

Glossary of terms

Open loop system - a daylighting control system that measures only daylight to adjust artificial lighting levels.

PIR - Passive Infrared. Technology to detect occupancy by sensing the difference in heat emitted by a person in motion from that of the background space. Requires direct line of sight.

Panel interior - the principal hardware infrastructure of the lighting control panel, which provides the mounting framework for the panel's relays or contactors, power supply, control modules, and the panel intelligence boards or cards. In addition, it provides isolation between the line and low voltage sections of the panel. It mounts into a corresponding tub or enclosure.

Panic mode - an operational mode that causes selected lights to flash ON/OFF indicating that there is a panic situation.

Photocell - a device that senses the level of light for the purpose of controlling interior or exterior lighting in response to daylight and/or electric light.

Photocell lockout - a control operation that keeps off or "locks out" lighting from being on because a photocell detects adequate contribution of daylight.

Photosensitive controls - ON/OFF or dimming control devices that sense levels of daylight and adjust artificial lighting levels, based on the adequacy of the available daylight.

Photometer - an instrument for measuring light intensity and distribution.

Photopic curve - a graphical representation of the visual sensitivity of the human eye under daylight, or bright light, conditions.

Photosensor - a self-contained daylighting control device that contains a photocell as well as the control logic component.

Pilot contact - a switch that follows the operation of a device to provide status of the device to a system or monitoring apparatus. Also, a switch that directs the operation of another device.

Plenum - a ceiling compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system.

Plenum rated - a device rated and approved for installation in the plenum environment.

Plug load - a portable electrical load such as a task light or a PC, that plugs into an electrical outlet to receive its power.

Plug n' Go - a capability of Digital Lighting Management that automatically configures all installed DLM components to the most energy-efficient operating mode.

Power pack - a high current relay and transformer designed to provide the correct operating voltage (usually 24 VDC) to devices such as sensors.

Power supply - a transformer or power conditioning circuit designed to provide the correct operating voltage for devices such as sensors, panels, etc.

Preset - see "scene."

Proportional light ramping - increasing or decreasing all lights in a scene proportionally.

Push n' Learn - a process inherent in Digital Lighting Management whereby the default operation of digital devices on a local network can be modified through simple button presses.

R **RF control** - radio frequency control. Systems that use RF communication to propagate control messages between devices and/or throughout the system.

RFI - radio frequency interference. Interference to the radio frequency band caused by other frequency generating equipment or devices in the immediate area.

Ramp - a control process initiated by a maintained action, such as depressing and holding a switch button, where a load level is increased or decreased at a fixed rate, typically ramp up or ramp down. In a ramp, the target level is not known and is dependent on the duration of the maintained action (e.g., press, hold and release).

Ramp rate - the rate at which one or more loads increase or decrease in level when initiated by a maintained action (press & hold), typically stated as distance/time, percent/second, steps/second, etc.

Relay - an electrically operated device that provides ON/OFF switching control. It generally uses low power signals to operate and switches just a single circuit or wire segment. (See contactor.)

RoHS - Restriction of Hazardous Substances Directive, this directive restricts the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment. It has been adopted by the European Union and in modified form by some jurisdictions in the U.S.

S **SCCR** - short circuit current rating.

Scene - light level settings established for a particular task that can be recalled by a dimming controller, also referred to as "preset."

Scene control - a control capability that uses dimming controllers to provide quick access to several different preset lighting settings.

Scheduling - an energy saving lighting control strategy that employs time-based intervals at which lighting is automatically turned on or off, such as time of day and day of week.

Self-diagnostic - systems that test for and identify problems independently so that corrective action may be taken.

Setpoint - user-defined thresholds for when control events will occur (i.e., light level parameters, time delays).

Shutoff/sweep off - a lighting control event that is intended to shut off lighting; particularly targeted to turn off lighting that has been left on and is not needed. Sometimes this event can repeat at regular intervals to turn lighting off that may have been left on.

Shutoff warning - an audible or visual signal to occupants of an impending lighting shutoff.

Sidelighting - daylight provided by windows.

Single pole - a switch or breaker that makes or breaks the connection of one current carrying conductor.

Single pole, double throw - a single conductor switch that can direct the circuit in either one of two directions.

Sliding setpoint - in daylighting control, the use of two setpoints, one for non-daylight conditions (i.e., night time), and one for daylight conditions (daytime). As daylight increases or decreases, control "slides" between the two setpoints.

Smartwiring - the ability to link automation channels or dataline switches to a relay or group of relays simply by pushing buttons without the need for external programming tools or software.

Glossary of terms

Spatial sensitivity - description of how a photosensor reacts to light striking it from different angles.

Spectral response - the measure of the ability of a device to differentiate among wavelengths and characteristics emanating from a light source.

Spectral sensitivity - a description of how a photocell measures energy over different portions of the electromagnetic spectrum.

Specular surface - surface from which reflection is predominantly directional. Specular surfaces are mirror like or shiny, as opposed to diffuse.

Square law dimming curve - a dimmer output curve designed so that the perceived light is proportional to the amount of travel in the dimmer slider or the dimmer level.

Star topology - see "topology."

Status LED - a light emitting diode that provides a visual indication of the state of a device.

Stepped dimming - controlling individual lamps within the same fixture, usually by switching them ON or OFF. It may also refer to the control of entire fixtures or group of fixtures that evenly reduces the lighting in an area. This strategy can be employed with standard, dimming, or step dimming ballasts.

Sustainability - efficient design practices that minimize construction related impacts on the environment and decrease the ongoing demand for natural resources.

TCP/IP connectivity - data communications using Transmission Control Protocol/Internet Protocol, the suite of communications protocols used to connect hosts on the Internet.

Terminal wiring - a space and time-saving method of making electrical connections.

Time delay - a period of time when a load is energized or de-energized. At the end of the desired time period the load changes state (i.e; ON or OFF). Sometimes referred to as a "grace" period.

Time out switch - an electronic or electro-mechanical control used to automatically turn lighting off at the conclusion of a preset interval.

Toplighting - daylight provided by skylights.

Topology - the method in which nodes of a network are connected by links. When a certain topology is specified, proper wiring is essential to ensure reliable signals reaching all devices. The following topologies are used in lighting control applications:

- **bus topology** - all devices are connected to a central cable, called the bus or backbone. Bus networks are relatively inexpensive and easy to install for small networks. Ethernet systems use a bus topology.
- **daisy chain, or linear, topology** - a method of wiring devices where the wire runs in a straight line fashion from one device to another.
- **free topology** - a method of wiring devices that allows connections, wire runs, and branching in any location and in any direction without compromising the reliability of the dataline communications.
- **ring, or loop, topology** - another type of daisy chain topology in which all devices are connected to one another in the shape of a closed loop, so that each device is connected directly to two other devices, one on either side of it.
- **star topology** - all devices are connected to a

central hub. Star networks are relatively easy to install and manage, but bottlenecks can occur because all data must pass through the hub.

- **tree topology** - a tree topology combines characteristics of linear bus and star topologies. It consists of groups of star-configured workstations connected to a linear bus backbone cable.

True override time period - a timed override of lighting that begins timing from the moment an occupant initiates the override until the override time expires. This is in contrast with an override that only persists until the next scheduled system event.

Tuning - an energy saving lighting control strategy in which the light output of an individual fixture or group of fixtures is adjusted to provide the correct amount of light for a local task.

Ultrasonic - technology to detect occupancy using high frequency (ultrasonic) sound waves and measuring the changes in the returning waves. Can sense around partitions.

Universal dimmers - dimmers that will operate a wide range of light sources which may include incandescent, low voltage, neon, cold cathode and fluorescent loads.

Vacancy sensor - a device that operates as a standard ON/OFF switch that will automatically turn lights off if the space becomes vacant. Required for certain residential applications under California Title 24.

Walk-through mode - this functionality reduces the time delay after a transient occupancy, such as when a person re-enters an office to retrieve a forgotten item then immediately exits. For instance, a sensor using this functionality will turn the lighting OFF three minutes after the area is initially occupied, if no further motion is detected after the first 30 seconds. If occupancy detection continues beyond the first 30 seconds, the set time delay applies.

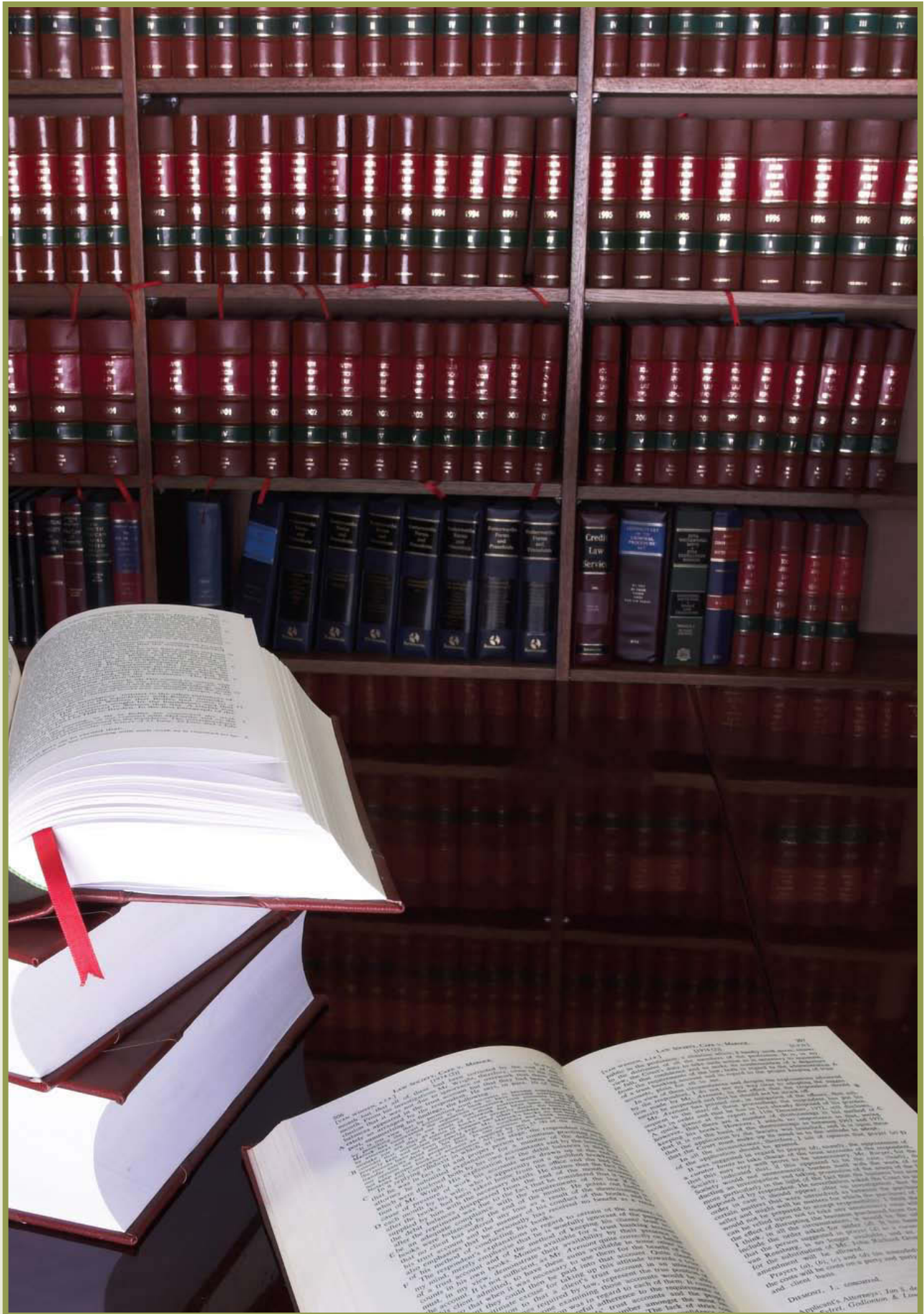
Watertight - constructed so that moisture will not enter the enclosure under specified test conditions.

Weatherproof - constructed or protected so that exposure to the weather will not interfere with successful operation.

Zero crossing switching - a technique used by switching devices, relays, contactors, etc., that reduces wear and increases life by switching at the instant the AC voltage is zero.

Zone - an area in which lighting may be controlled in unison by a control device for purposes of energy code compliance, daylighting levels, or other control objectives. Sometimes used interchangeably with the concepts of "group" and "channel."

Zone control - the ability to assign different fixtures into discrete control groups, which have different lighting control objectives, for purposes of lighting control. This accommodates different types of tasks as well as different space characteristics.



Discontinued and Replacement Product Index

Catalog #	Replacement
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Lighting Control Panel Systems

AA-BASE	no replacement
AA-TS	no replacement

Commercial Occupancy Sensors & Controls

B-120 Power Pack	BZ-50
B-230 Power Pack	BZ-50
B-277 Power Pack	BZ-50
BZ-100 Power Pack	BZ-150
EN Outdoor Motion Sensor	no replacement
WS-200	WS-250
WP-605	WT-605
WP-1105	WT-1105
WP-2205	WT-2205
WP-2255	WT-2255

Residential Vacancy Sensors & Controls

RD-200	RD-250
RH-200	RH-250
RS-100BA	CS-50
RS-100U	RS-250
RS-150BA	CS-50
RS-150U	RS-250
RS-250-N	RS-150BA-N, CS-350-N
RS-350	CS-350-N

Fixture Sensors & Controls

FS-105	no replacement
FS-255	FS-355 + FS-L6
FS-305 v2	no replacement
FS-405	FS-305-RJ + FS-L6
HB-300C	no replacement
HB-330C	no replacement
HB-340C	no replacement
HB-350C	no replacement

Daylighting Sensors & Controls

LS-101	LS-102
LS-4C	LS-3C, LS-5C

Catalog #	Replacement
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ezDALI

DLCSS4	no replacement
DPS150	no replacement
DRM	no replacement
DSS4	no replacement

Wireless Lighting Controls

MCD26	DCD26
MCD267	DCD267
MCD68	DCD68
MCF8	DCF8
MDB	no replacement
MDR24	no replacement
MDR246	no replacement
MDR247	no replacement
MDS246	no replacement
MDS266	no replacement
MDS248	no replacement
MDS268	no replacement
MDS269	no replacement
MNA4	no replacement
MNM2	no replacement
MNM4	no replacement
MNM5	no replacement
MPA2	no replacement
MP1	no replacement
MP2	no replacement
MP3	no replacement
MP4	no replacement
MPP1	no replacement
MPP2	no replacement
MPP3	no replacement
MPP4	no replacement
MPP5	no replacement
MPP6	no replacement
MRD2	DRD2
MRD3	DRD3
MRD4	DRD4
MRD5	DRD5
MRD6	DRD6
MRD8	DRD8
MRD9	DRD9
MRDC10	no replacement
MRDS10	DRD5, DRD6, DRD8, MRH5, MRH6