

# LumaWatt Pro

powered by  
Enlighted



## design and application guide







Connected Lighting  
simplified by Eaton



# Table of Contents

## Wireless Connected Lighting System

LumaWatt Pro Connected Lighting System	4
Connected Lighting	5-7
Built-in energy saving lighting control strategies	8
Non-residential indoor applications	9
Solutions overview	10-11
LumaWatt Pro Connected Lighting benefits	12
System architecture	13-14
System components	15-17
Compatible fixtures	18-25
Suggested code requirements by space type	26
Design layout steps	27-31
Best practices/FAQs	32-33
LumaWatt Pro integrated sensor	34-35
Wallstation	36
Compact sensor	37
Plug load controller	38
ControlSpec design tool	39-40

## Applications

Healthcare	42
Industrial	43
Education (University)	44
Retail	45
Commercial Office	46

## Typical Applications

Private Office	48
Open Office	49
Conference Room	50
Classroom	51
Parking Garage	52
Area and Site	53



# LumaWatt Pro Connected Lighting System

## A lighting system that transforms into an enterprise network

Eaton's LumaWatt Pro powered by Enlighted is the connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of building resources, beyond lighting.



## Better data. Better decisions. Beyond brilliant.

### A high-efficiency lighting system that doubles as an enterprise network.

- Create a building-wide wireless network infrastructure with LED lighting and advanced lighting controls
- Make more informed decisions about building operations using real-time data and analytics
- Manage and maintain the lighting in a building, campus, or global property portfolio with one connected lighting system
- Improve safety, security and productivity with value-added applications



# Connected Lighting



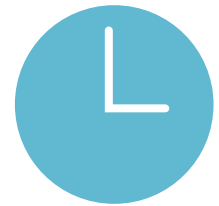
**Location**

Connected Lighting fixtures and controls are placed with grid-like uniformity throughout interior and exterior spaces, creating a connected infrastructure that spans the entire built environment.



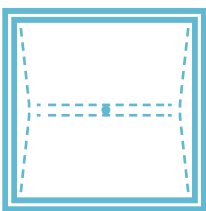
**Connectivity**

Connected lighting is constantly powered, enabling the sensors to detect and share data-rich details about system performance and space use without interruption. Even if the lights are off, the lighting system is connected.



**Time**

Achieve impressive energy savings and create a building-wide network infrastructure by selecting a connected lighting system that delivers both.



**Digital Sensors**

LED lighting with integrated smart sensors collect granular data in real time.



**Granular Data**

Software applications transform data into actionable insights.



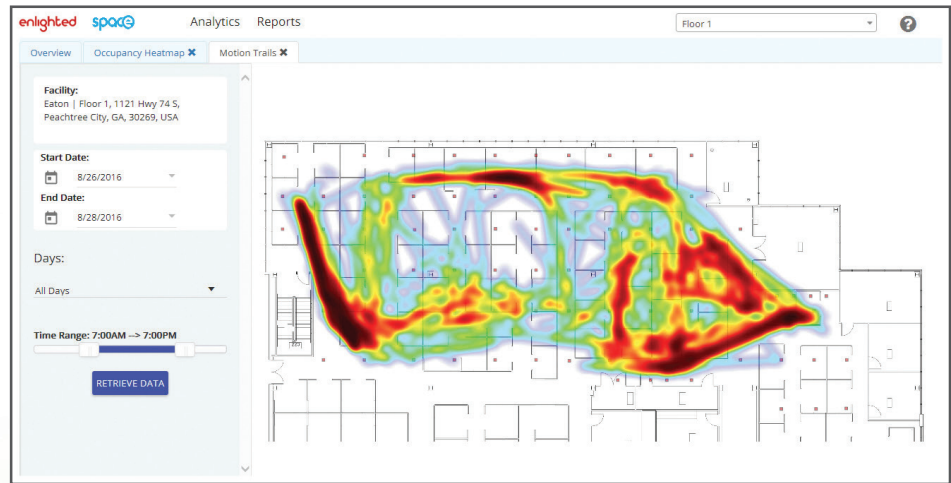
**Smart Buildings**

Improvements in productivity, efficiency and safety lead to smarter buildings.



# Beginning LumaWatt Pro's Space

The Space application uses occupancy data collected by LumaWatt Pro sensors to create heat maps that detail space use and occupancy patterns, highlighting areas that may be overused or under-utilized. With this tool, facility managers can address congested areas and identify spaces that may be used more effectively.



space

***Motion trails** illustrate how people move through a space over time.*



***Heat maps** offer insights into building use by displaying occupancy patterns.*

The utilization rate for leased spaces is less than 50%



# Are monthly heating and cooling costs rising?

The Aire app saves energy by offering more precise control of the HVAC system. Using the occupancy data and air temperatures detected by the LumaWatt Pro sensor network, facility managers can easily modify space temperatures and ensure that heating and cooling energy is only being used to condition occupied spaces.



## Losing time looking for the right tools?

With LumaWatt Pro's asset tracking feature, the first place you look will be the last. Save time looking for misplaced equipment using Bluetooth connection points, which locate items with integrated data tags attached. The system will reveal its exact whereabouts through a cloud-based app.

The distributed network of smart LED lighting, gives the ability for reliable tracking, saving time looking for equipment.


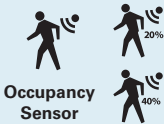







Nurses lose  
up to 15%  
productivity  
searching for  
equipment



# Built-in energy saving lighting control strategies


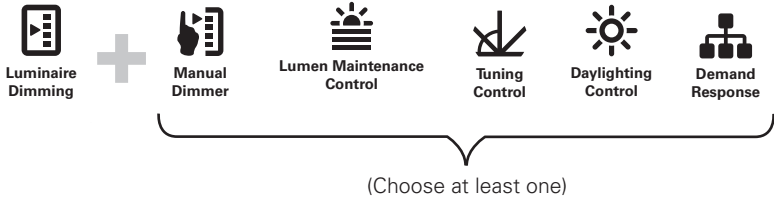
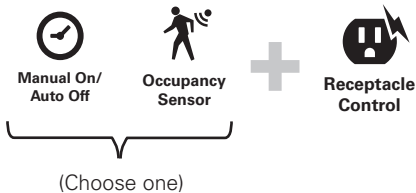

LumaWatt Pro provides these energy saving strategies with a simple configuration software.

STRATEGY	DESCRIPTION	ESTIMATED SAVINGS
 Manual Dimmer	Manual dimming control is one of five methods that satisfy the multi-level lighting control requirements.	10-20%
 Occupancy Sensor	Occupancy/vacancy control turns lights Off (or partially Off) when a room is unoccupied. Lights can be turned On automatically or manually, when a person enters a room.	20-60%
 Daylighting Control	Daylighting control automatically adjusts lighting levels in response to the amount of daylight available in the space.	20-45%
 Receptacle Control	Plug load control turns controlled receptacles On, when the space is occupied, and Off, when the space is vacant.	15-50% Controlled loads
 Tuning Control	High-end tuning lowers the maximum light level, creating energy savings.	10-30%
 Demand Response	Demand Response reduces light levels in response to a signal from an OpenADR device or BMS closure.	10-40%
 Remote Signal Control	Remote signal control sends occupancy-based signals to the HVAC system.	20%



# Non-residential indoor applications

Below are basic non-residential code requirements for indoor spaces. Throughout the rest of this design guide you will see these icons used to highlight when LumaWatt Pro meets each code requirement.

SPACE LEVEL (AREA CONTROL)	REFERENCE
<ul style="list-style-type: none"> <li>Must be accessible to occupants to operate the lighting</li> </ul> <div data-bbox="808 478 951 575">  <p>Manually Switched ON/OFF</p> </div>	<p>ASHRAE 90.1 2016 9.4.1(a)</p> <p>Title 24 2016 130.1(a),(b)</p> <p>IECC 2015 C405.2.2.3</p>
MULTI-LEVEL LIGHTING	REFERENCE
<ul style="list-style-type: none"> <li>Luminaire must provide uniform dimming</li> <li>Capable of reducing power by at least one of five control functions</li> <li>When a dimming luminaire is present, a manual dimmer is recommended. Other functional options available</li> </ul> <div data-bbox="496 905 1265 1100">  <p>(Choose at least one)</p> </div>	<p>ASHRAE 90.1 2016 9.4.1.1(b)</p> <p>Title 24 2016 130.1(a),(b)</p> <p>IECC 2015 C405.2.2.3</p>
SHUTOFF CONTROL	REFERENCE
<ul style="list-style-type: none"> <li>Luminaires turned off when vacant</li> <li>120V receptacles only, one within 6 feet of uncontrolled receptacle</li> <li>Each 5,000 sq. ft. to have shutoff controls</li> </ul> <div data-bbox="649 1318 1062 1509">  <p>(Choose one)</p> </div>	<p>ASHRAE 90.1 2016 9.4.1.1(g)(i), 9.4.11.1(h), 8.4.2</p> <p>Title 24 2016 130.1(c).6, 130.1(c).5, 130.5(b)</p> <p>IECC 2015 C405.2.1.2, C405.2.1.1, C405.2.2.1, C405.2.4</p>
AUTOMATIC DAYLIGHTING CONTROL	REFERENCE
<ul style="list-style-type: none"> <li>Eliminate energy waste when natural light present</li> <li><u>Exceptions</u> when daylighting control not required: <ul style="list-style-type: none"> <li>No skylights</li> <li>Glazing &lt;24 sq. ft.</li> <li>Daylit zone is less than 120W</li> </ul> </li> </ul> <div data-bbox="755 1745 1000 1843">  </div>	<p>T24-2016 130.1(d)</p> <p>ASHRAE 90.1-2016 9.4.1.1.e, 9.4.1.1.f,</p> <p>IECC 2015 C405.2.3</p>

# Solutions overview

Eaton provides many lighting system solutions designed to satisfy code requirements and meet the unique needs of any project. LumaWatt Pro is distinct in its ability to offer a building-wide wireless network infrastructure, enterprise-level integration, and the supporting software and analytics that enable better operational decisions to be made.

	Room Controller	DLVP
<b>Space type</b>	Interior	Interior
<b>Stand-alone or Network</b>	Both	Stand-alone
<b>Need-based feature progression</b>		
<b>Basic compliance only</b>	●	●
<i>Occupancy sensing</i>	●	●
<i>Daylight harvesting</i>	●	●
<i>Zone control</i>	●	●
<i>Scheduling</i>	●	●
<i>0-10V dimming</i>	●	●
<i>Individual fixture control</i>	●	●
<b>Retrofit+Building Integration</b>		●
<i>Total wireless connectivity</i>		
<i>A/V integration</i>		
<i>BMS integration</i>		
<i>UI options (touchscreen, apps, etc.)</i>		
<b>Enterprise-level building integration</b>		
<i>Facility management and tools</i>		
<b>Value-added services</b>		
<i>Asset tracking/Management</i>		
<i>API integration</i>		
<i>Analytics/higher problem solving</i>		

<b>Cost progression</b>		
<i>*\$ per sq. ft. (product)</i>	\$0.75	\$1.25
<i>Installation cost</i>	\$\$	\$
<i>Commissioning cost</i>	\$	\$
<b>Return on investment</b>	+	++

\*\$ per sq. ft., based on typical bill of material of a 10K sq. ft. installation.



WaveLinx	Fifthlight	PoE	LumaWatt Pro	ConnectWorks
Interior	Interior	Interior	Any	Roadway
Both	Network	Network	Network	Network
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	
●			●	●
	●	●	●	
	●	●	●	
●	●	●	●	●
	●	● (IT based)	●	
	●	●	●	●
			●	
			●	●
			●	●
			●	●

# LumaWatt Pro Connected Lighting

## System Architecture

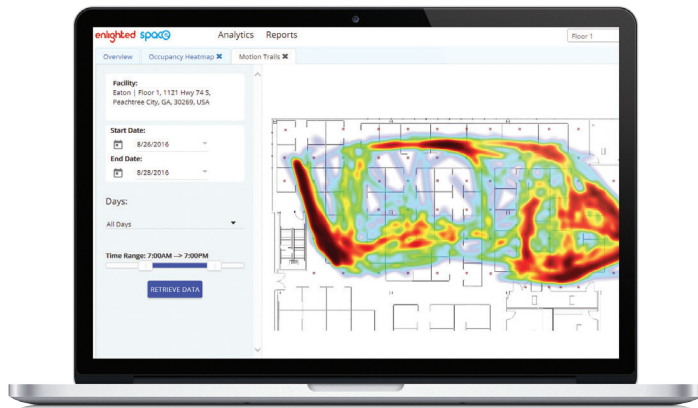
- Wireless sensor at every light fixture provides granular sensor/positioning network
- All components are individually addressable and network back to the system
- Configuration is persistent in each device, providing control even when the energy manager is not present
- Wireless connected system makes large-scale data collection possible

## Scalability

- Capable of managing over 10,000 sensors per building
- Deployed for Connected lighting control only or add higher value applications as needed



## Energy Manager



## High-Value Applications

- Advanced lighting control dramatically reduces energy use
- Aire optimizes HVAC to maximize occupant comfort and energy efficiency
- Space optimizes workspace utilization, improves workflow and productivity
- Coming Soon. Asset tracking that reduces capital costs, improves safety and security

## Future-Proof Smart Building

- Software upgradeable
- Security enhancements to changing risks
- System provides future proof feature availability
- System evolves with energy codes

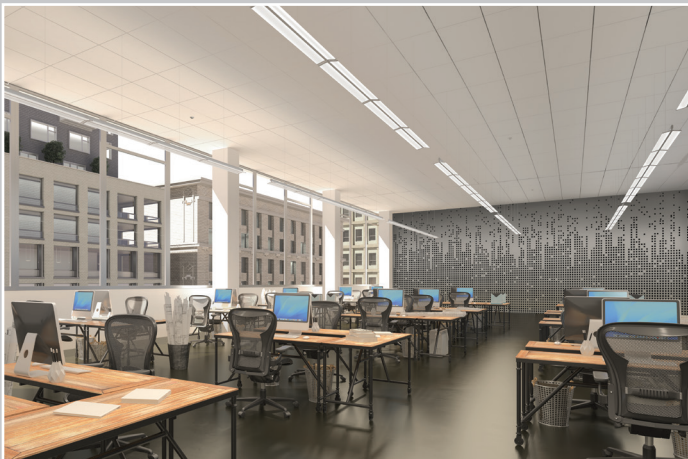
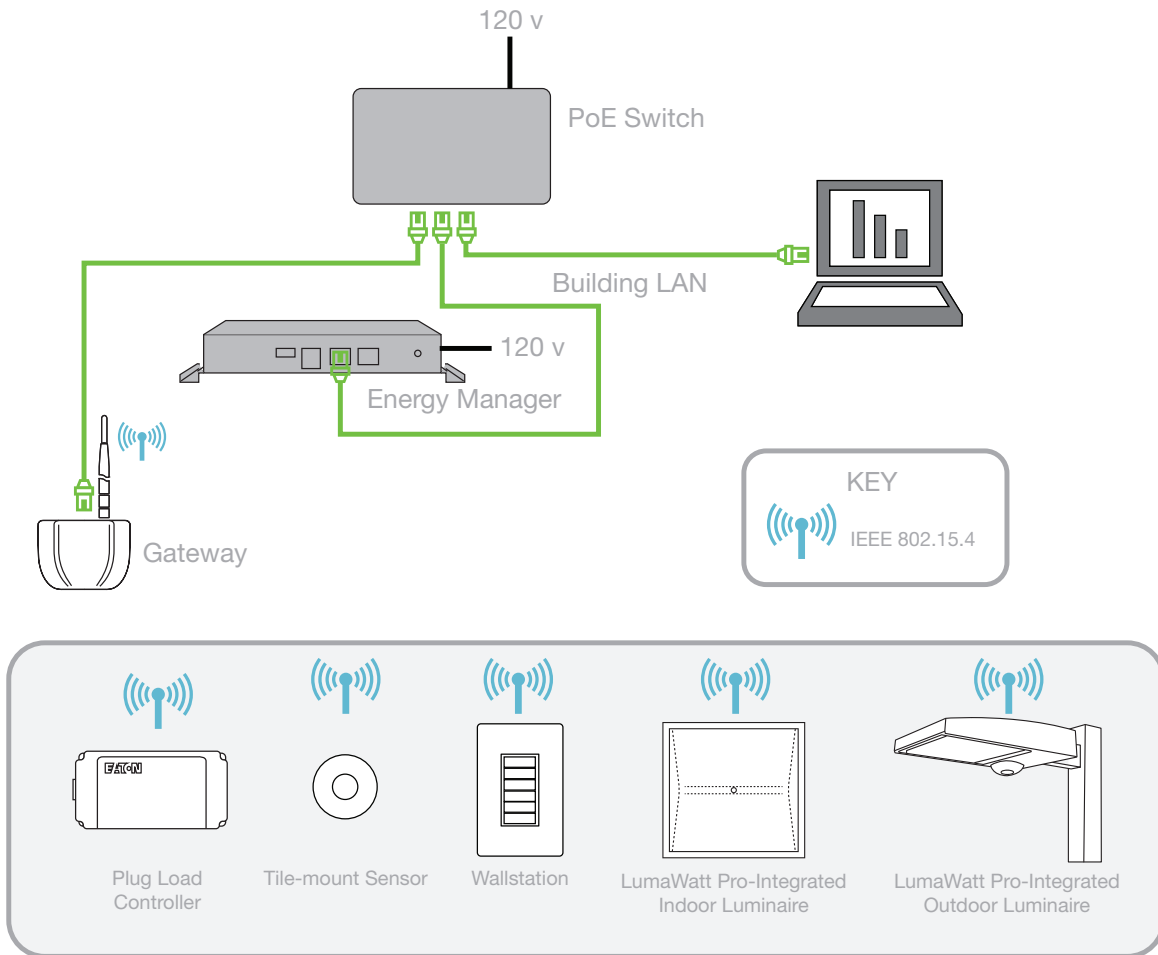




System architecture



# LumaWatt Pro installation



## Features

- Increase productivity and gain efficiencies through applications beyond lighting control
- Make buildings smarter using LED lighting with integrated sensors, data and analytics
- Make better operational decisions with access to real-time building data
- Simply manage one system that can scale across the enterprise for both interior and exterior applications



# System components

## Wireless Connected Lighting

LumaWatt Pro is a complete lighting system comprised of LED luminaires, fixture-integrated or separate digital sensors, system coordinators called Energy Managers, wireless wallstations and plug load controllers.



### LUMAWATT PRO SYSTEM COMPONENTS

	<h4>Two-Wire Fixture-Mount Sensor</h4> <p>Fixture-mount sensors are suitable for fixture-mount applications. Two-wire sensors are compatible with a sensor-ready driver.</p> <ul style="list-style-type: none"> <li>• Multi-sensor technology</li> <li>• Occupancy/vacancy detection</li> <li>• Task tuning and high-end trimming</li> <li>• Daylight harvesting</li> <li>• Bluetooth LE technology</li> <li>• Fixture-mount</li> <li>• SR driver compatible</li> </ul>	<p>LWP-FS-D22</p>
	<h4>Smart Sensor</h4> <p>Smart sensors are suitable for indoor ceiling-mount applications.</p> <ul style="list-style-type: none"> <li>• Multi-sensor technology</li> <li>• Occupancy/vacancy detection</li> <li>• Task tuning and high-end trimming</li> <li>• Daylight harvesting</li> <li>• Bluetooth LE technology</li> <li>• Coverage 500 sq. ft.</li> <li>• Requires control unit</li> </ul>	<p>LWP-SU-4S-H</p>
	<h4>Compact Flush-Mount Sensor</h4> <p>Compact sensors are suitable for tile-mount applications and works with a control module.</p> <ul style="list-style-type: none"> <li>• Occupancy/vacancy detection</li> <li>• Task tuning and high-end trimming</li> <li>• Daylight harvesting</li> <li>• Bluetooth LE technology</li> <li>• Ceiling-mount</li> <li>• Fixture-mount</li> <li>• Requires control unit</li> </ul>	<p>LWP-SU-4E-01</p>
	<h4>Two-Wire Compact Sensor</h4> <p>Compact sensors are suitable for tile-mount applications. Two-wire sensors are compatible with a sensor-ready driver.</p> <ul style="list-style-type: none"> <li>• Multi-sensor technology</li> <li>• Occupancy/vacancy detection</li> <li>• Task tuning and high-end trimming</li> <li>• Daylight harvesting</li> <li>• Bluetooth LE technology</li> <li>• Ceiling-mount</li> <li>• Fixture-mount</li> <li>• SR driver compatible</li> </ul>	<p>LWP-CS-D2</p>



## Ruggedized Sensor

Ruggedized sensors are suitable for outdoor and industrial applications.

- Multi-sensor technology
- Occupancy/vacancy detection
- Task tuning and high-end trimming
- Daylight harvesting
- Bluetooth LE technology
- IP 65 rated
- Requires control unit

LWP-SU-4S-HRW



## Wireless Gateway

Gateway communicates data captured by the sensors to the Energy Manager for analysis.

- Simplified lighting control management
- Flexible deployment
- Data security
- Manage up to 150 devices
- IEEE 802.15.4 wireless protocol

LWP-GW-2-01



## Enterprise Energy Manager

Enterprise Energy Manager provides a secure web-based interface to monitor, manage, and analyze energy savings and other data collected by the LumaWatt Pro digital sensors. The Enterprise Energy Manager translates data from the sensor network into detailed energy, temperature, and occupancy insights around the clock. The Enterprise Energy Manager manages up to 10,000 sensors with BACnet and 18,000 sensors without BACnet.

LWP-EM-03-01



## Energy Manager

Energy Manager provides a secure web-based interface to monitor, manage, and analyze energy savings and other data collected by the LumaWatt Pro digital sensors. The Energy Manager translates data from the sensor network into detailed energy, temperature, and occupancy insights around the clock. The Energy Manager manages up to 1,500 individual sensors. It can also manage and control up to 3,500 BACnet points.

LWP-EM-2-02



## Midrange Energy Manager

Midrange Energy Manager provides a secure web-based interface to monitor, manage, and analyze energy savings and other data collected by the LumaWatt Pro Smart digital sensors. The Energy Manager translates data from the sensor network into detailed energy, temperature, and occupancy insights around the clock. The Midrange Energy Manager manages up to 5,000 individual sensors. It can also manage and control up to 7,000 BACnet points.

LWP-EM-2-03



## Wireless Wallstation

LumaWatt Pro wireless wallstation is a battery-powered wallstation that provides on/off, dimming, and preset functionalities, without any additional wiring.

LWP-WS-2-00



## Wireless Plug Load Controller

LumaWatt Pro wireless plug load controller converts receptacles in 20A circuits to controlled and metered smart receptacles for energy-efficient and code-compliant plug load control.

LWP-PC-01-20



## Control Unit

LumaWatt Pro control unit interfaces with the LumaWatt Pro sensor units and connects to a ballast or LED driver to control light behavior using 1-10V dimming and switching control.

LWP-CU-3E-1R



## Energy Manager Enclosure

The Energy Manager is usually mounted in an electrical or telecom room in an LumaWatt Pro enclosure with the PoE and a double duplex receptacle. RJ-45 connectors are included for the LumaWatt Pro system to connect to the Corporate and Gateway network.

ENC3R-XXX



## Gateway Enclosure

The gateway is usually mounted in the ceiling in a LumaWatt Pro enclosure.

ENC3R-1G





Compatible fixtures

## LUMAWATT PRO INTEGRATED LUMINAIRES

	<p><b>Metalux Encounter™ LED Series with WaveStream™ technology</b></p> <p><i>1x2, 1x4, 2x2 and 2x4 fixtures available</i></p> <ul style="list-style-type: none"> <li>Advanced optical design delivers optimal light uniformity, for enhanced visual comfort and superior efficiency for greater energy savings</li> <li>Ideal choice for commercial office spaces, schools, hospitals, and retail merchandising areas</li> </ul>	<p>12EN* 14EN* 22EN* 24EN*</p>
	<p><b>Metalux SkyRidge™ LED Series with WaveStream™ technology</b></p> <p><i>1x2, 1x4, 2x2 and 2x4 fixtures available</i></p> <ul style="list-style-type: none"> <li>Refined modern styling and exceptional performance for superior energy savings</li> <li>Blend of technology and affordability for commercial interiors applications such as office spaces, schools, hospitals and retail merchandising areas</li> </ul>	<p>12SR* 14SR* 22SR* 24SR*</p>
	<p><b>Metalux Cruze™ LED Series</b> <b>Metalux Cruze SE</b></p> <p><i>1x4, 2x2 and 2x4 fixtures available</i></p> <ul style="list-style-type: none"> <li>Contemporary styling and optimal illumination design for energy savings, comfort, and aesthetics</li> <li>Affordable choice for commercial office spaces, schools, hospitals, and retail merchandising areas</li> </ul>	<p>14CZ* 22CZ* 24CZ*</p>
	<p><b>ArcLine-R™ LED Series</b></p> <ul style="list-style-type: none"> <li>Fully luminous center panel to generate optimal light uniformity and enhanced visual comfort</li> <li>Ideal choice for commercial office spaces, schools, hospitals and retail merchandising areas</li> </ul>	<p>14ALNG* (R) 22ALNG* (R) 24ALNG* (R)</p>
	<p><b>Metalux Accord™ LED Series</b></p> <ul style="list-style-type: none"> <li>Advanced light distribution and attractive appearance delivers unprecedented energy savings</li> <li>Ideal choice for commercial office spaces, schools, hospitals, and retail merchandising areas</li> </ul>	<p>14AC* 22AC* 24AC*</p>
	<p><b>Metalux ArcLine™ LED Series</b></p> <p><i>1x4, 2x2 and 2x4 fixtures available</i></p> <ul style="list-style-type: none"> <li>Modern styling and innovative optical design with a fully luminous center panel</li> <li>Ideal choice for commercial office spaces, schools, hospitals and retail merchandising areas</li> </ul>	<p>14ALNG* 22ALNG* 24ALNG*</p>
	<p><b>Metalux Cruze™ LED Retrofit</b></p> <p><i>2x2 and 2x4 sizes available</i></p> <ul style="list-style-type: none"> <li>Advanced light distribution and attractive appearance delivers unprecedented energy savings</li> <li>Two CCT options: 3500K and 4000K at 85 CRI; 4 stocked lumen packages</li> <li>Uses the fluorescent luminaire's housing - lower disposal costs</li> </ul>	<p>22CZRK* 24CZRK*</p>

Multiple emergency options available (see fixture spec sheet).

## LUMAWATT PRO INTEGRATED LUMINAIRES

	<p><b>Corelite Bridge™ Recessed LED with WaveStream™ technology</b></p> <p><i>1x4, 2x2 and 2x4 fixtures available</i></p> <ul style="list-style-type: none"> <li>• True solid-state design with minimalistic aesthetic and thoughtfully designed features</li> <li>• Ideal choice for commercial office spaces, schools, and healthcare applications</li> </ul>	<p>BRG-*-14* BRG-*-22* BRG-*-24*</p>
	<p><b>Corelite Divide™ Recessed LED with WaveStream™ technology</b></p> <p><i>1x4, 2x2 and 2x4 fixtures available</i></p> <ul style="list-style-type: none"> <li>• Ultra-shallow fully luminous design with superior performance and excellent light quality</li> <li>• Broad family offering with companion surface, recessed, and wall-mount luminaires</li> </ul>	<p>DRI-*-14* DRI-*-22* DRI-*-24*</p>
	<p><b>Steeler SSLED LED High bay™</b></p> <ul style="list-style-type: none"> <li>• Quality, style, performance, with precision designed optics, multiple distributions and lumen outputs</li> <li>• Durable round design fits into various applications including industrial, commercial, manufacturing and multi-purpose</li> </ul>	<p>SSLED*</p>
	<p><b>HBLED LED High bay™</b></p> <ul style="list-style-type: none"> <li>• The HBLED delivers industry-leading performance and reliability for a variety of high-bay applications.</li> <li>• Offers eight lumen packages up to 54,000 lumens and high performance efficacy up to 171 LPW</li> </ul>	<p>HBLED*</p>
	<p><b>SRL™</b></p> <ul style="list-style-type: none"> <li>• Linear LED surface, wall or suspension mount luminaire and is offered with three different lenses and distributions, this series provides uniformity of light and sensor coverage making it a versatile choice for general and special purpose lighting</li> <li>• Narrow 4 ft. and 8 ft. lengths are suspended or surface/wall mountable</li> <li>• Lens options enable lumen and distribution control</li> </ul>	<p>SRL*</p>
	<p><b>ILED™</b></p> <ul style="list-style-type: none"> <li>• The energy efficient solution for both low-bay and high-bay applications</li> <li>• Available in 4 ft. and 8 ft. lengths with continuous row mounts</li> </ul>	<p>ILED*</p>
	<p><b>VHB™</b></p> <ul style="list-style-type: none"> <li>• The VHB's compact and durable design provides a balance of performance and affordability</li> <li>• Multiple lumen packages, distributions and mounting options are ideal for a variety of applications</li> </ul>	<p>VHB*</p>

Multiple emergency options available (see fixture spec sheet).



## LUMAWATT PRO INTEGRATED LUMINAIRES

	<b>Corelite Divide™ Suspended LED with WaveStream™ technology</b> <ul style="list-style-type: none"> <li>• Modern, architecturally inspired design with superior performance and excellent light quality</li> <li>• Broad family offering with companion surface, recessed, and wall-mount luminaires</li> </ul>	DSI-*
	<b>Corelite Jaylum™ LED</b> <ul style="list-style-type: none"> <li>• Timeless direct/indirect pendant with crisp modern lines</li> <li>• Ideal choice for commercial open office and classroom applications</li> </ul> <p style="text-align: right;"><i>*Coming 2017</i></p>	J2- J3-*
	<b>Corelite Iridium™ Suspended with WaveStream™ technology</b> <ul style="list-style-type: none"> <li>• Multiple classic designs available with cutting-edge technology for superior optical control using a removable WaveStream™ light engine</li> <li>• Wide batwing distribution ideal for lower ceiling application and wide fixture spacing</li> </ul>	I2-*
	<b>Corelite Element™ Suspended with WaveStream™ technology</b> <ul style="list-style-type: none"> <li>• Multiple classic designs available with cutting-edge technology for superior optical control using a removable WaveStream™ light engine</li> <li>• Wide batwing distribution makes it an excellent choice for lower ceiling applications</li> </ul>	E2-*
	<b>Corelite Loft™ Suspended with WaveStream™ technology</b> <ul style="list-style-type: none"> <li>• Multiple classic designs available with cutting-edge technology for superior optical control using a removable WaveStream™ light engine</li> <li>• Wide batwing distribution makes it an excellent choice for lower ceiling applications</li> </ul>	L2-*
	<b>Corelite Minigator™ Suspended with WaveStream™ technology</b> <ul style="list-style-type: none"> <li>• Multiple classic designs available with cutting-edge technology for superior optical control using a removable WaveStream™ light engine</li> <li>• Wide batwing distribution makes it an excellent choice for lower ceiling applications</li> </ul>	MB-*
	<b>Corelite Vertechs™ Suspended with WaveStream™ technology</b> <ul style="list-style-type: none"> <li>• Multiple classic designs available with cutting-edge technology for superior optical control using a removable WaveStream™ light engine</li> <li>• Wide batwing distribution makes it an excellent choice for lower ceiling applications</li> </ul>	VB-*
	<b>Corelite RZL™</b> <ul style="list-style-type: none"> <li>• Designed for larger open ceiling environments, the RZL delivers high quality, soft illumination while minimizing installation cost</li> <li>• The variety of styles and lumen outputs makes it an easy choice for use in open offices, retail, educational facilities, aiseways, and low bay applications</li> </ul>	RZL-*

Multiple emergency options available (see fixture spec sheet).

## LUMAWATT PRO INTEGRATED LUMINAIRES

	<p><b>Neo-Ray Covera™</b>  <b>WaveStream LED</b></p> <ul style="list-style-type: none"> <li>The curved WaveStream™ optic bends light for an elegant look with premium light distribution</li> <li>Uses Eaton's LuxWire™ for nearly invisible power through the suspension cables</li> </ul>	<p>S930DIP-*</p>
	<p><b>Neo-Ray Define™</b>  <b>LED linear recessed and suspended luminaire</b></p> <ul style="list-style-type: none"> <li>Clean, uniform lines for virtually any architectural environment</li> <li>Available with various apertures, lens options, and in-wall corners to add design interest to commercial office spaces, hospitals, entertainment venues and retail spaces</li> </ul> <p><i>*Coming 2017</i></p>	<p>S122*  S123*  S124*  S125*</p>
	<p><b>Neo-Ray Converge™ with WaveStream™ technology</b></p> <ul style="list-style-type: none"> <li>Curved WaveStream™ optics bend light for an elegant look with premium light distribution</li> <li>Uses Eaton's LuxWire™ for nearly invisible power through the suspension cables</li> </ul>	<p>S920DIP-  S921DIP-*</p>
	<p><b>McGraw-Edison Galleon™</b>  <b>Area, site and roadway LED luminaire</b></p> <ul style="list-style-type: none"> <li>The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design</li> <li>Provides uniform and energy-conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications</li> </ul>	<p>GLEON-*</p>
	<p><b>McGraw Galleon Pedestrian™</b>  <b>Pedestrian or site LED luminaire</b></p> <ul style="list-style-type: none"> <li>As a member of the Galleon family, this luminaire is the perfect pedestrian complement to the Galleon area/site and wall-mount luminaires</li> <li>Delivers exceptional performance with patented, high-efficiency AccuLED Optics™</li> </ul>	<p>GPC-*</p>
	<p><b>Invue Arbor™</b>  <b>Area, site and wall-mount LED luminaire</b></p> <ul style="list-style-type: none"> <li>Dayform appearance brings a desired organic look into the urban environment for area, site and pedestrian-scale applications</li> <li>WaveStream LED Optics provide a uniform pixelation-free image, managing glare while providing high levels of visibility</li> </ul>	<p>ARB-*</p>
	<p><b>Invue Mesa™</b>  <b>Decorative area LED luminaire</b></p> <ul style="list-style-type: none"> <li>The simple geometric form of Mesa allows it to adapt to either contemporary or traditional architectural settings</li> <li>Mesa mounting options allow for harmonized site design whether at the entryway or in the parking lot</li> </ul>	<p>MSA-*</p>

Multiple emergency options available (see fixture spec sheet).

## LUMAWATT PRO INTEGRATED LUMINAIRES

	<p><b>Invue Vision™</b>  <b>Architectural area LED luminaire</b></p> <ul style="list-style-type: none"> <li>The classic lines and sophisticated construction of Vision Site LED makes it an ideal complement to site design</li> <li>Vision provides true family scaling in both physical form and lumen capability for architectural site lighting applications</li> </ul>	<p>VXS- VXM-*</p>
	<p><b>Lumark Prevail™</b>  <b>Area and site LED luminaire</b></p> <ul style="list-style-type: none"> <li>The Prevail™ LED area/site luminaire delivers a new level of performance, versatility and value in a low profile, patent-pending design</li> <li>Replaces 150-400W metal halide fixtures in general area lighting applications such as parking lots, walkways, roadways and building areas</li> </ul>	<p>PRV-*</p>
	<p><b>Lumark Navion™</b>  <b>Roadway luminaire</b></p> <ul style="list-style-type: none"> <li>The Navion luminaire provides uniform, glare-free, energy-efficient light for commercial, industrial and municipal parking lots as well as roadway applications.</li> <li>Offers an expanded selection of optical distributions to provide the configurability and superior performance required for outdoor applications</li> </ul>	<p>NAV-*</p>
	<p><b>Lumark Verdeon™</b>  <b>Roadway luminaire</b></p> <ul style="list-style-type: none"> <li>Area, site and roadway luminaire combines optical performance, energy efficiency and versatility in a low cost solution</li> <li>Heavy-duty construction and ease of installation features</li> </ul>	<p>VRDN-*</p>
	<p><b>Lumark Ridgeview</b>  <b>Area and site luminaire</b></p> <ul style="list-style-type: none"> <li>Ridgeview™ provides functional, low-profile design with excellent operating performance</li> <li>Modular technology delivers uniform and energy-conscious illumination to parking lots and perimeter security lighting applications</li> </ul>	<p>RV-*</p>
	<p><b>McGraw-Edison Galleon Wall™</b>  <b>Area, site and wall-mount LED luminaire</b></p> <ul style="list-style-type: none"> <li>As a member of the Galleon family, this luminaire is the perfect wall-mount complement to the Galleon area/site luminaire offering</li> <li>The Galleon family of LED products deliver exceptional performance with patented, high-efficiency AccuLED Optics™</li> </ul>	<p>GWC-*</p>
	<p><b>McGraw Impact Elite™</b>  <b>Wall mount LED luminaire</b></p> <ul style="list-style-type: none"> <li>The Impact Elite wall luminaire family makes an ideal complement to site design in classic geometric form factors</li> <li>Rugged construction and full range of optical packages provide facade and security lighting</li> </ul>	<p>IST- ISC- ISW- ISS-*</p>

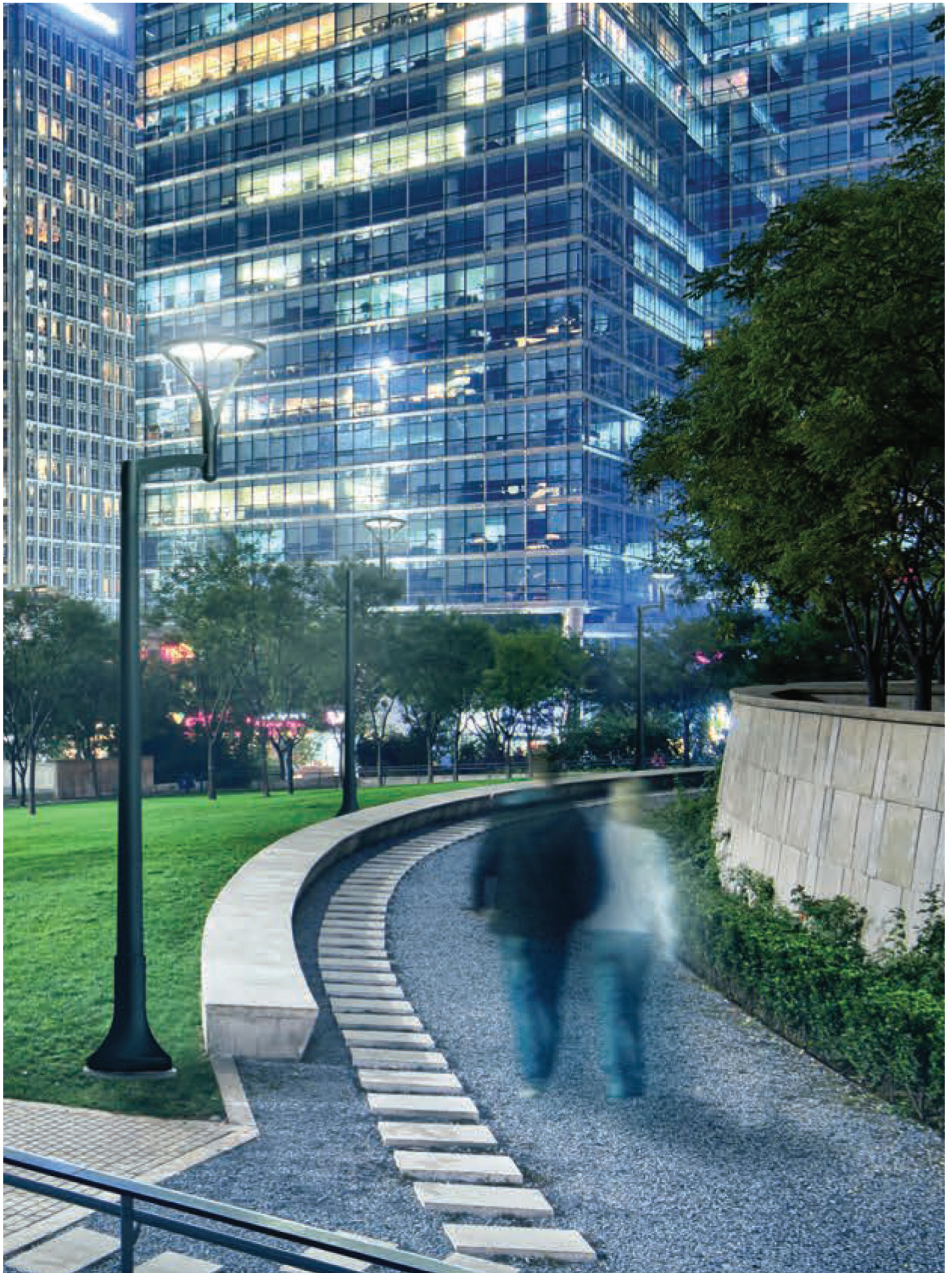
Multiple emergency options available (see fixture spec sheet).



	<p><b>McGraw-Edison Top Tier™</b></p> <p><i>Parking garage and canopy WaveStream LED luminaire</i></p> <ul style="list-style-type: none"> <li>• This area and site luminaire is an innovative solution that delivers an unparalleled combination of performance and visual comfort</li> <li>• Patented WaveStream™ optical technology effectively shields a direct view of the LED light sources, while maximizing lumen output</li> </ul>	<p>TT*-PM-*</p>
	<p><b>REM-RF™</b></p> <p><i>Remote sensor</i></p> <ul style="list-style-type: none"> <li>• The remote sensor expands system capability, allowing control of a complete circuit or fixtures that cannot incorporate a LumaWatt Sensor</li> <li>• Can also act as a signal repeater to extend system coverage</li> </ul>	<p>REM-RF</p>
<p><b>LUMAWATT PRO LUMINAIRES</b></p>		
	<p><b>McGraw-Edison Valet™</b></p> <p><i>Parking garage LED luminaire</i></p> <ul style="list-style-type: none"> <li>• The Valet features a rugged and low profile housing construction incorporating patent-pending, modular LED LightBAR™ technology</li> <li>• Delivers uniform and energy-conscious illumination optimized to improve vehicular movement and pedestrian safety in parking structure applications</li> </ul>	<p>VPL*</p>
<p><b>LUMAWATT PRO ENABLED LUMINAIRES</b></p>		
	<p><b>Portfolio LDSQA4A and LDSQA6A</b></p> <p><i>LED square adjustable accent/slope</i></p> <ul style="list-style-type: none"> <li>• Requires Portfolio accessory kit</li> </ul>	<p>LDSQA4A* LDSQA6A*</p>
	<p><b>Portfolio LD4B, LDSQ4B, LD6B, and LDSQ6B</b></p> <p><i>Round and square recessed downlight</i></p> <ul style="list-style-type: none"> <li>• Requires Portfolio accessory kit</li> </ul>	<p>LD4B* LDSQ4B* LD6B* LDSQ6B*</p>
	<p><b>RSA MRZ</b></p> <p><i>Multi-head Recessed Integral LED</i></p> <ul style="list-style-type: none"> <li>• Compact and multi-functional system that allows for numerous uses from one pristine platform</li> <li>• Ultimate choice for national account spaces where price makes a difference</li> </ul>	<p>MRZ-*</p>

Multiple emergency options available (see fixture spec sheet).







# Suggested code requirements by space type

Eaton suggests applying the following energy saving sequences for each of the defined spaces below. Please consult your local building code for specific space requirements.

Minimum Control Type	SPACE TYPE							
	Classroom, Lecture hall, Training room	Conference, Meeting, Multi-purpose room	Private office <=250sq. ft.	Private office >=250sq. ft.	Corridor	Restroom	Stairwell	Storage room
Local switch	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Scheduling	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Occupancy-Based Automatic ON				<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	
Automatic Partial OFF	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>					<input checked="" type="radio"/>
Automatic OFF					<input checked="" type="radio"/>		<input checked="" type="radio"/>	
Multilevel Lighting	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Multilevel Daylighting	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>				
Receptacle Control	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Power Measurement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Demand Response	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Functional Testing	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>

☒ Suggested requirement for this space.

☒ Choose one of these requirements for this space.

☐ These requirements are optional for this space based on local code.





Design layout steps



# Choose the right products

## 1. SELECT AND LAYOUT FIXTURES

- Use integrated luminaires to make the most of your lighting aesthetics and controls requirements.



## 2. PLACE WALLSTATIONS

- Wallstations are the user's primary method of control.
- Wallstations are fully programmable to control any zone or scene in the area.



## 3. PLACE PLUG LOAD CONTROLLER

- Receptacle control is required to meet California Title 24 and ASHRAE 90.1 2016.
- These wireless plug load controllers make it easy to meet code for any new construction or retrofit.



## 4. PLACE TILEMOUNT SENSORS

- The LumaWatt Pro CM with 0-10V makes it easy to control large zones of lighting or any 3rd party luminaire.
- The ceiling sensor adds extra occupancy coverage to the areas that either do not have integrated sensor or need extra coverage.



## 5. PLACE THE GATEWAY

- Every application needs at least one gateway.
- Every gateway can support 150 devices.
- Ensure devices are within 150 ft. radius of gateway.



## 6. PLACE ENERGY MANAGER

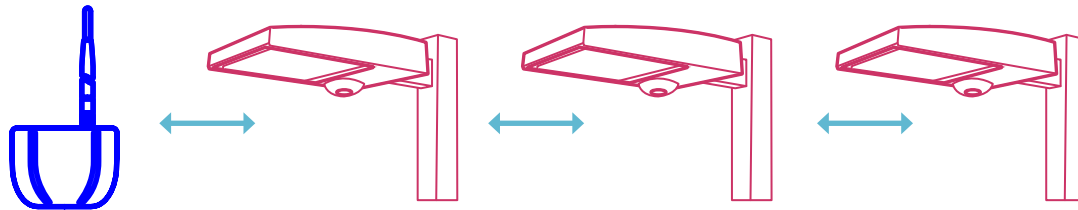
- The LumaWatt Pro Energy Manager provides a secure web-based interface to monitor, and analyze energy savings and other data collected by the LumaWatt Pro Smart Sensor network.
- The Energy Manager translates data from the sensor network into detailed energy, temperature, and occupancy insights around the clock.



# LumaWatt Pro installation rules

## Exterior Solution

### String of Pearls

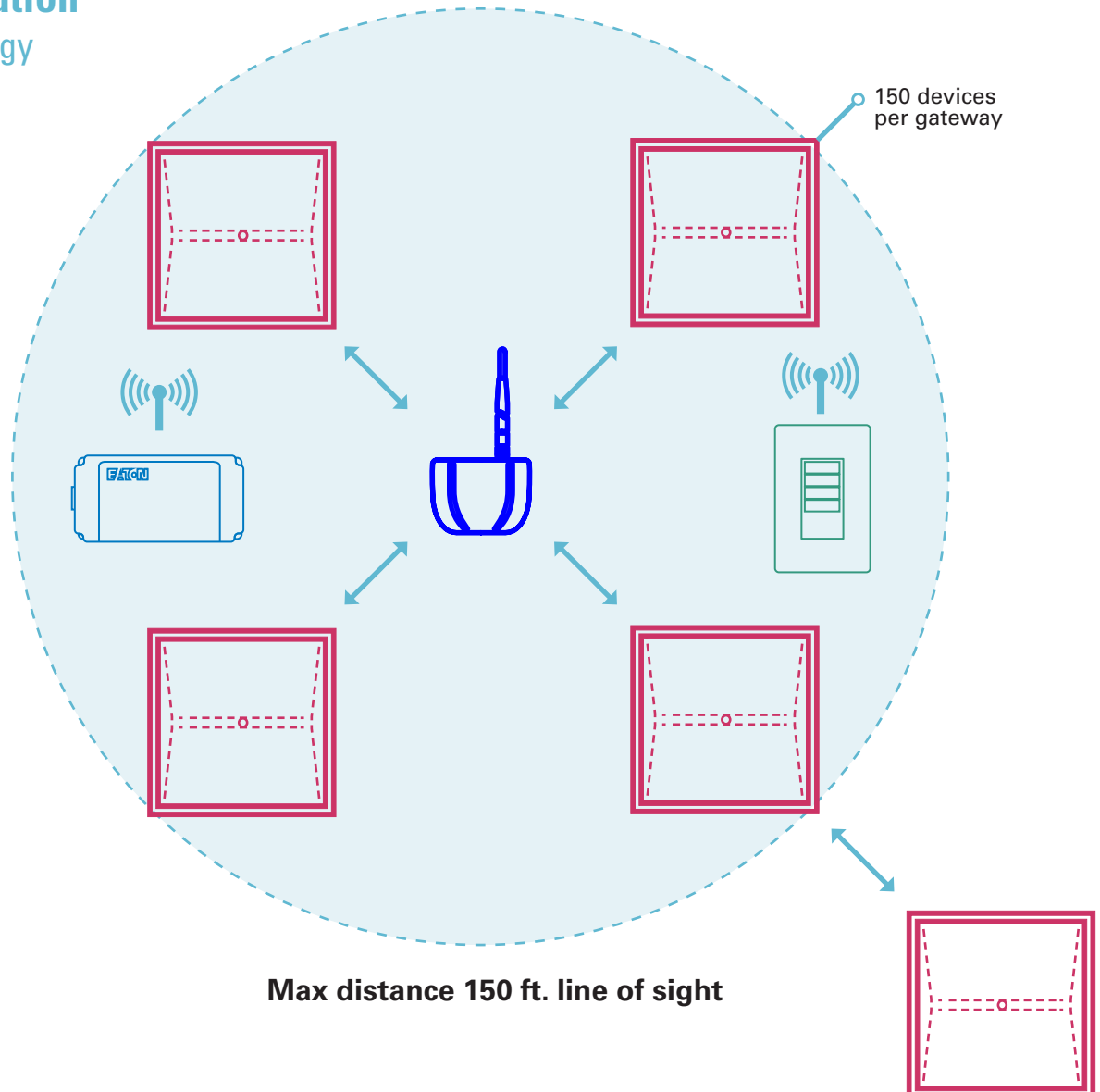


Mount inside

**Max distance 150 ft. line of sight**

## Interior Solution

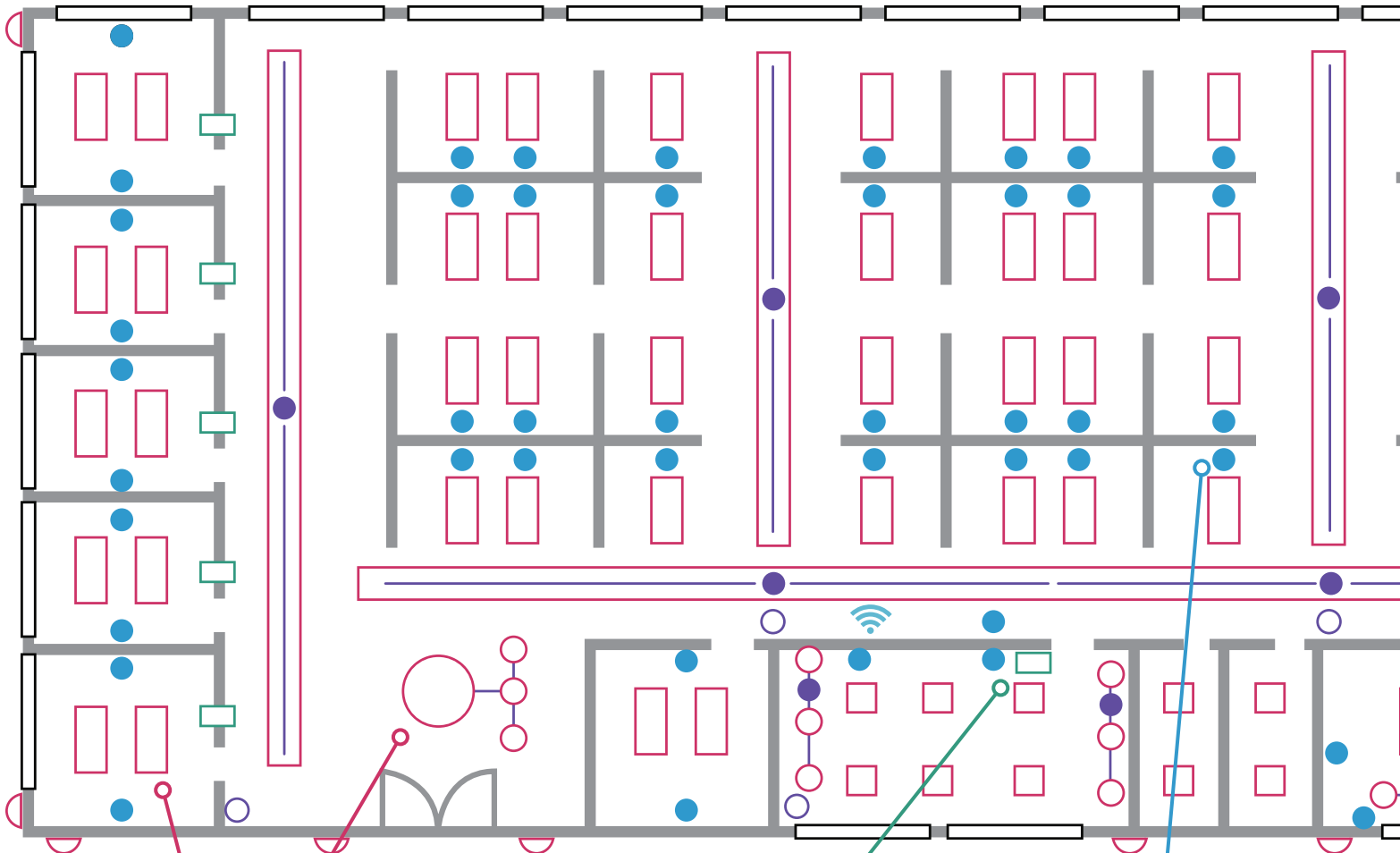
### Star Topology



**Max distance 150 ft. line of sight**

# Basic steps to design LumaWatt Pro

## Open office



### 1. SELECT AND LAYOUT FIXTURES



- Fixture layout is sensor layout
- Individually addressable/controllable
- Numerous recessed and suspended options

### 2. PLACE WALLSTATIONS



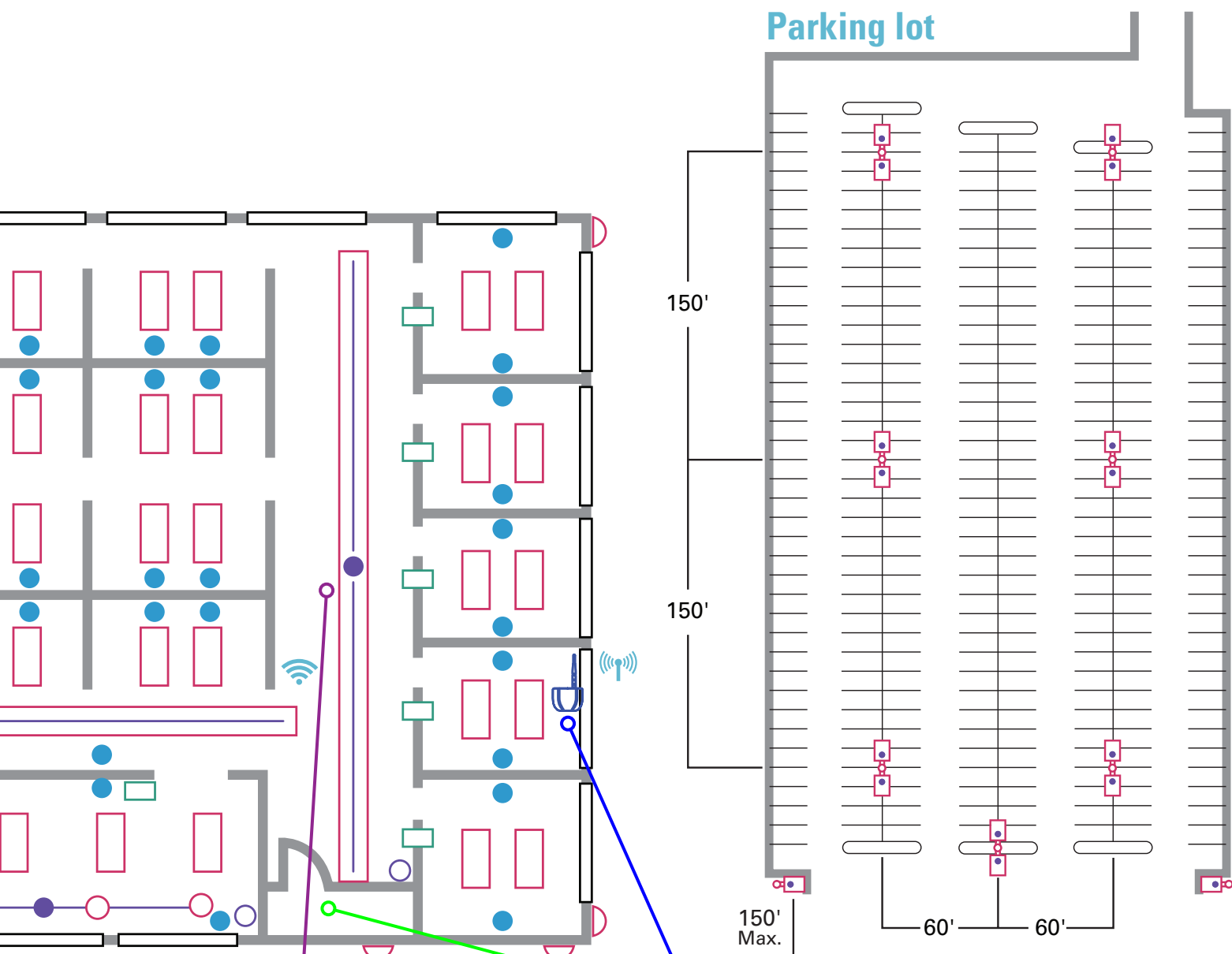
- Programmable configurations
- Battery powered wallstation

### 3. PLACE PLUG LOAD CONTROLLERS



- Required for T24 and ASHRAE
- Power measurement
- LED status indicator





#### 4. PLACE TILEMOUNT SENSORS



- Tilemount for downlights or 3rd party luminaires
- Ceiling sensor for additional occupancy coverage

#### 5. PLACE GATEWAYS



- All devices with 150 ft. radius
- PoE powered
- Dedicated or network installation

#### 6. PLACE ENERGY MANAGER



- Enterprise applications
- Manage multiple gateways

# Best practices / FAQs

## What is LumaWatt Pro?

Eaton's LumaWatt Pro powered by Enlighted is the connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects important data about building performance and use. System software turns granular data into information and shares it through energy dashboards and specialized apps that make it easy to make better use of building resources, beyond lighting.

## What components do I need to have a complete LumaWatt Pro system?

LumaWatt Pro Energy Manager  
LumaWatt Pro POE Switch  
LumaWatt Pro Gateway  
LumaWatt Pro Sensors (Fixture integrated occupancy sensor, ambient light sensor and control)  
LumaWatt Pro Plug Load Controller  
LumaWatt Pro Wireless Wall switch  
LumaWatt Pro Software Licenses

## What are the wireless design best practices?

DESIGN CONSIDERATION	BEST PRACTICE	MAXIMUM
Sensor to Gateway Communication	150-180 ft. (45m-55m)	300 ft. (90m)
Gateway 1st "Hopper" Communication	150 ft. (45m)	150 ft. (45m)
Sensor Hopper to Sensor Communication	250 ft.-300 ft. (75m-90m)	300 ft. (90m)
Hopper to Hopper Communication	250 ft. (75m)	250 ft. (75m)
Number of Hops for LWR Sensors	15	15
Number of Hops for LWI, LWT Sensors	3	3
Gateway to Energy Manager distance (wired)	328 ft. (100m)	328 ft. (100m)
Gateway to Energy Manager network switch (additive)	328 ft. (100m)	328 ft. (100m)
Gateway per network switch (Power over Ethernet)	4	4
Gateways per Energy Manager	10	10
Sensors per Energy Manager	1000	1000
Sensors per Enterprise Energy Manager Pro	18000	18000
Sensors per Wall Station	100	100
Sensors to Wall Station Communication	150 ft. (45m)	150 ft. (45m)

## Can LumaWatt Pro communicate through interior walls?

Yes, LumaWatt Pro will communicate through two to three interior walls of standard sheetrock construction with wood or aluminum framing.



## Does the Gateway need to be installed in the space?

The Gateway shall be installed in the space and will communicate to the devices in the space. It should not be installed on or next to a metal or concrete wall.

## Should I install the Gateway in an Electrical Closet or IT room?

No, these types of rooms are typically surrounded by concrete walls. Concrete walls severely impact the strength of the wireless signal and will reduce the overall coverage and performance of the LumaWatt Pro system. The Gateway should be installed in the center of the overall space that it will be controlling.

## How does LumaWatt Pro communicate through or around concrete spaces, like stairwells and electrical closets?

The Gateway emits a wireless signal using the 802.15.4 wireless protocol on the 2.4 GHz frequency range. This signal pulses out from the Gateway in a wireless bubble. Concrete or metal structures will break this bubble. Ensure to place the Gateway at least 15 feet away from these structures to allow the wireless signal to have the best angle around these structures.



## Can LumaWatt Pro be installed in the same area as the building Wi-Fi?

Yes, although 802.15.4 communications using a similar frequency as standard Wi-Fi it uses different channels, modulation and communications structure. This reduces the risk of conflicts of wireless systems.

## Can multiple 802.15.4 wireless networks exist in the same area of a building?

Yes, 802.15.4 is self-healing, auto channel selecting mesh network. This means that these networks can coexist if set up correctly. In addition LumaWatt Pro devices will only communicate with the assigned Gateway. Other 802.15.4 wireless networks may not include all the security and performance qualities of LumaWatt Pro and may not perform as well.



## Can you install a gateway outdoors?

The gateway must be installed indoors. It is recommended that the gateway be installed on the inside of an exterior wall within the recommended distance of the sensors.



# LumaWatt Pro integrated sensor

The **LumaWatt Pro system**, complete with LED luminaires, integrated wireless sensors, and controls, is the new standard in performance. Leveraging an **advanced IoT platform**, the system **collects real-time data** to enable **energy efficiency**, **smarter space planning**, **enhanced safety and productivity**, and more. And, the potential for future applications is endless.

## Efficient

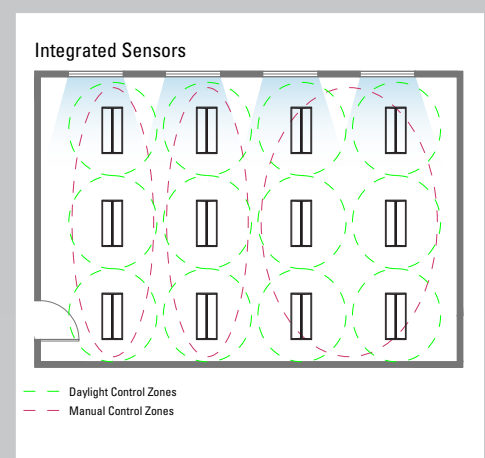
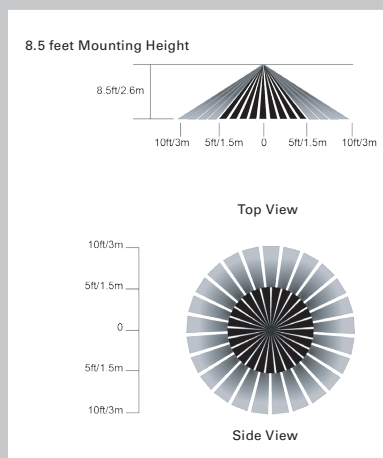
LumaWatt Pro can reduce lighting energy costs by 70%, providing high-efficiency lighting control strategies.

## Insightful

LumaWatt Pro provides dashboards of real-time lighting energy usage, projected energy savings, and lighting system health.

## Equipped

LumaWatt Pro transforms a lighting system into an IoT infrastructure with limitless potential to harness and leverage building data.



## Worry-free Controls Planning

Ensure seamless coverage and performance with a sensor system built into every luminaire. The multi-technology sensor's occupancy and light sensing coverage overlaps the area each fixture illuminates.

## Integrated Design

The sensor system adds to the contemporary aesthetic of the luminaires. The system is factory wired.

## Daylight Dimming Independence

Integrated sensors for daylighting, manual control zones are completely independent of daylighting control sets.

# LumaWatt Pro integrated sensor

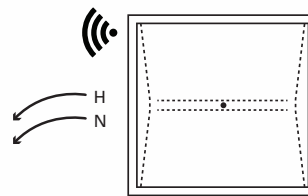
**Metalux Catalog Logic: LWIPD1**

**Corelite Catalog Logic: LWIPD1**

**Description: LumaWatt Pro Integrated Sensor**

## Features

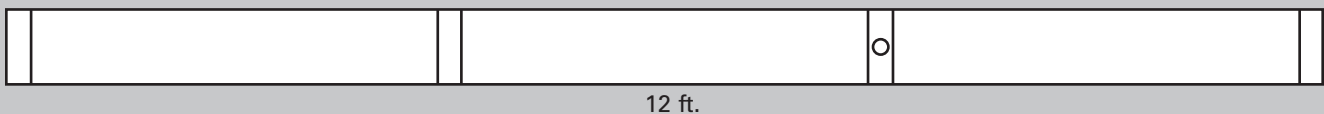
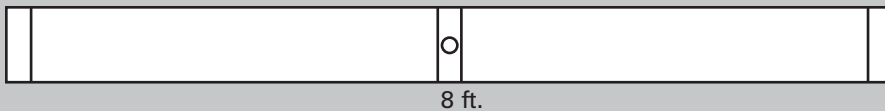
- Factory installed and integrated into luminaires
- Wireless bidirectional communications
- Occupancy/Vacancy
- Closed loop daylighting
- Multicolored LED for status and diagnostics
- Power measurement



**22EN-LD2-UNV-L835-SR1-LWIPD1-U**

Encounter 2x2 with LumaWatt Pro Integrated Sensor

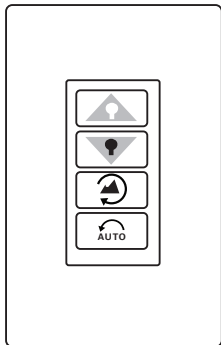
## LumaWatt Pro sensor locations in linear products



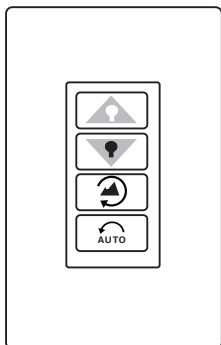
Sensors will be approximately located as shown on individual luminaires. When configured in linear runs, the same locations will apply based on the size of sections that comprise the run. Each 4 ft., 8 ft., or 12 ft. section will be individually controllable with the LumaWatt Pro system. For Corelite 12 ft. unit size availability, consult fixture specification sheet for details.

# Wallstation

The Wireless Wallstation provides all of the functions of a standard wall switch with preset dimming capabilities and without any additional wiring. The Wireless Wallstation enables you to select preset scenes so that groups of light fixtures can be dimmed together. The Wallstation gives you the flexibility to predefine up to six different scenes and many combinations of light levels that can then be accessed at the push of a button.



Push: Zone/Group On. Push and hold: Zone/Group Raise (to max. output).  
Push: Zone/Group Off. Push and hold: Zone/Group Lower (to limit of driver).  
Push: Zone/Group Preset Scene Cycle. Six configurable scenes.  
Push: Return Zone/Group to automatic mode of configured profile.  
Returns to automatic mode of profile when space is vacant.

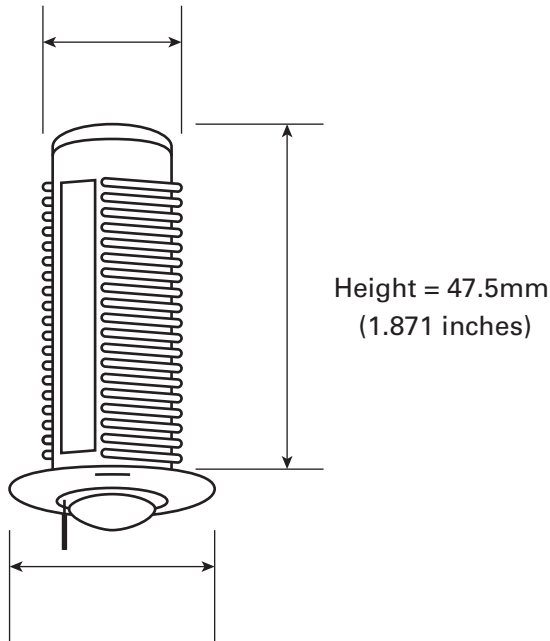


BRIGHT: Press-and-release to turn lights on. Press-and-hold to gradually brighten.  
DIM: Press-and-release to turn lights off. Press-and-hold to gradually dim.  
SCENES: Press for customized room scenes.  
AUTO: Press to reset lights to original levels.



# Compact sensor

Body Diameter = 20.8mm  
(.820 inches)

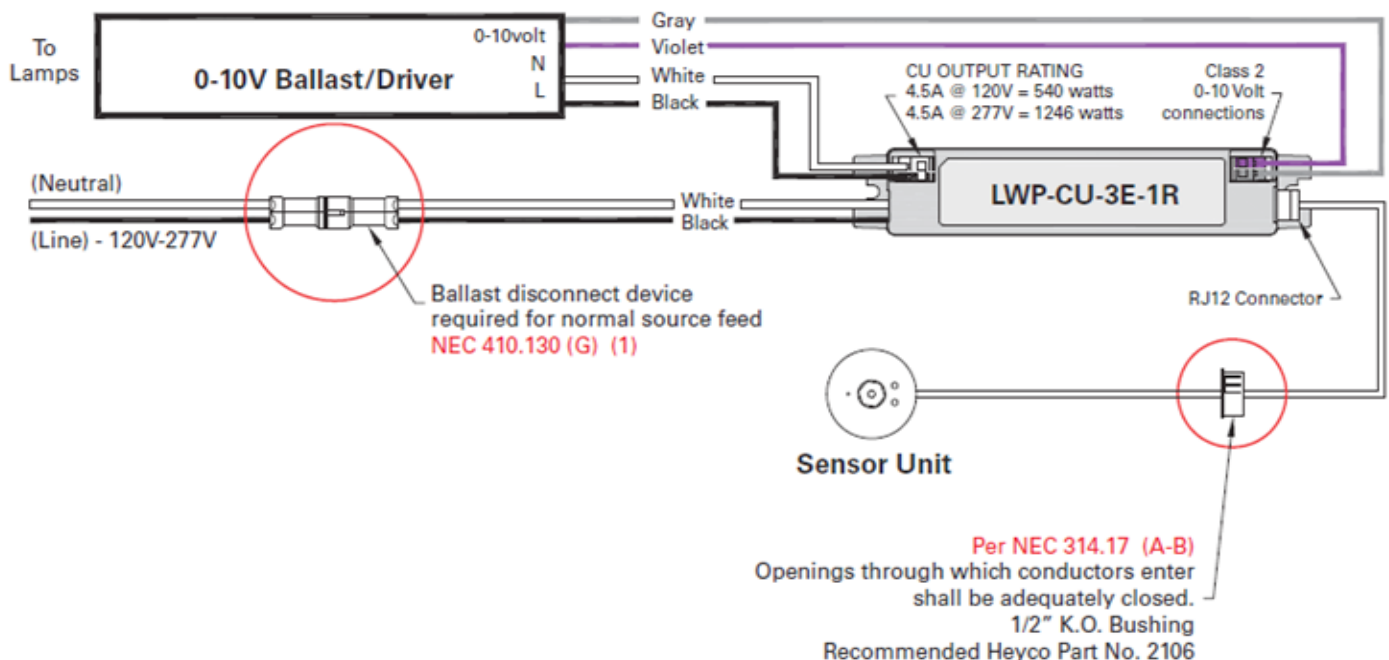


Faceplate Diameter = 32.0mm  
(1.260 inches)

## LumaWatt Pro Compact Sensor

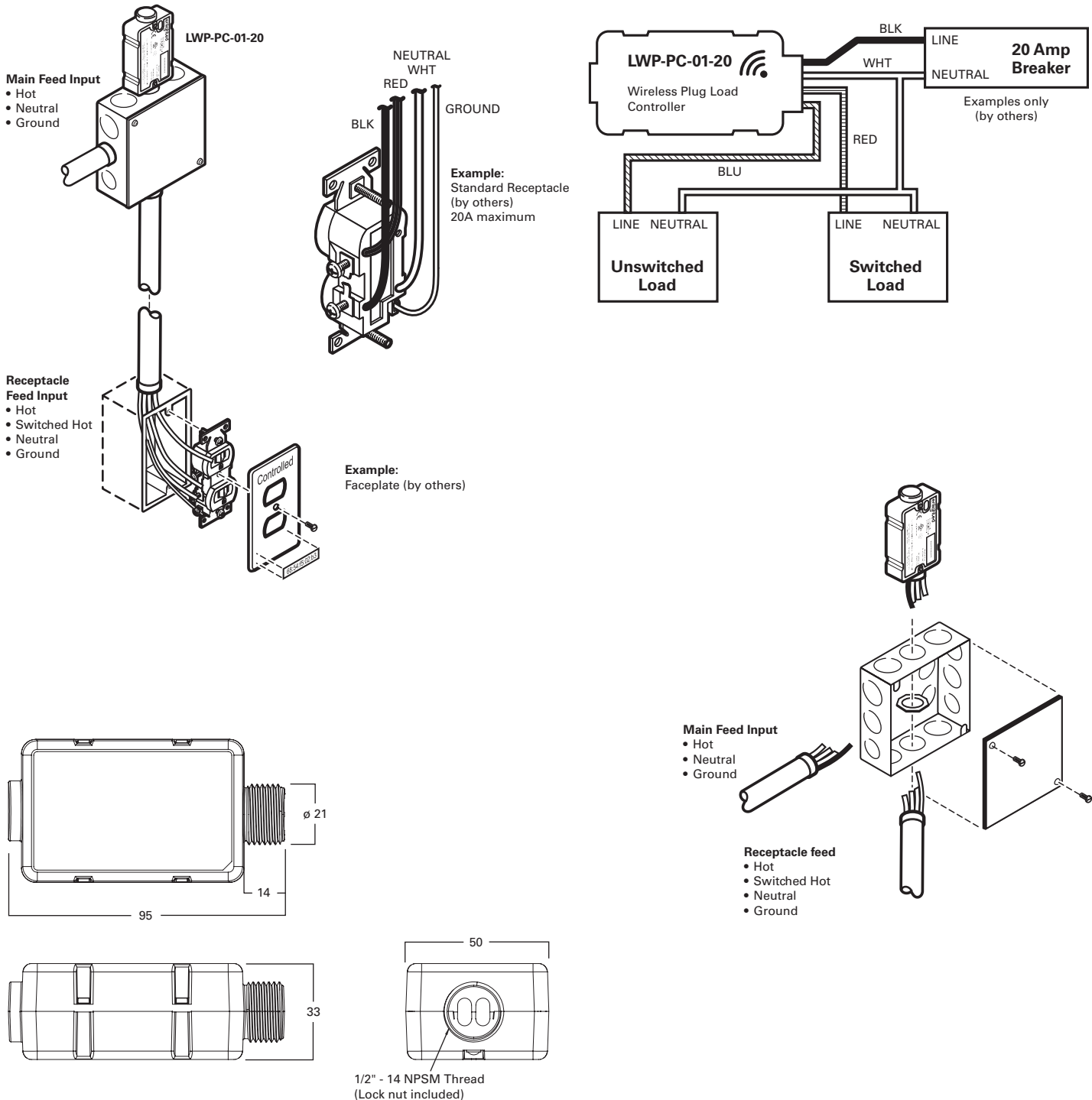
The LumaWatt Pro Compact Sensor's small form factor and flush mount design enable the sensor to blend into its surroundings while it senses occupancy, ambient light, and temperature. The sensor processes this information locally creating a rich set of data that is backhailed wirelessly through the intelligent LumaWatt Pro IoT Platform. The sensor also receives and transmits beacons and data using the Bluetooth Low Energy (BLE) protocol. With a durable wireless antenna, digital motion, photocell, and temperature sensing, the sensor enables fixture-level control, bringing advanced lighting controls to a whole new scale. Data is transmitted wirelessly to the LumaWatt Pro network system. Designed for indoor lighting applications, the LumaWatt Pro Compact Sensor features onboard intelligence. The device can be mounted inside a fixture or into the ceiling.

- Occupancy/motion sensing
- Daylight sensing
- Temperature sensing
- BLE for location



# Plug load controller

The Plug Load Controller enables energy savings by controlling plug loads through occupancy or schedule-based on/off control of receptacles on a circuit. The device is typically paired with a sensor or a group of sensors in the network to enable occupancy-based control. The controller features two sets of wires to separately power controlled and uncontrolled outlets, so that energy consumption on both uncontrolled and controlled circuits are separately measured.

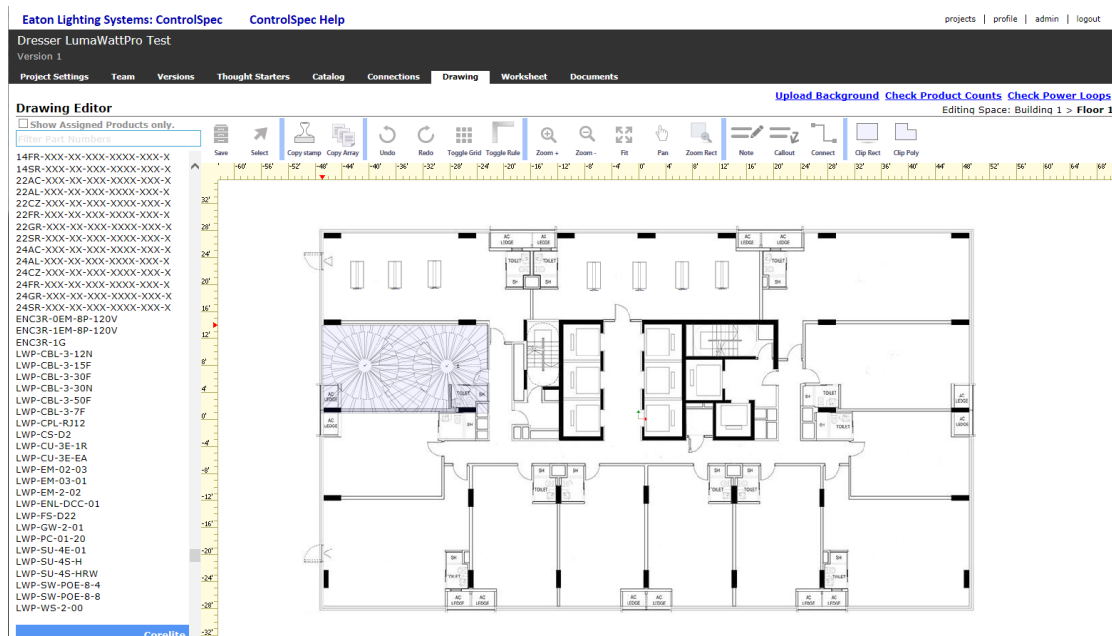


# ControlSpec design tool

ControlSpec is your design and quote tool of choice, enabling you to layout, quote and submit on a project from within one tool. For the LumaWatt Pro product line all control devices and a large selection of LumaWatt Pro integrated fixtures are at your fingertips. Create your project, perform a takeoff, create one-line drawings and price your project.

## ControlSpec value to you:

- Create a project
- Perform layout take-off
- Review and adjust pricing
- Create customized one line drawings
- Print quote and submittal documentation
- Product filtering for faster access and selection
- Quick product addition on every screen



Create a project with customer information and share with other members of the design team.

Eaton Lighting Systems: ControlSpec ControlSpec Help projects | profile | admin | logout

Dresser LumaWattPro Test Version 1

Project Settings Team Versions Thought Starters Catalog Connections Drawing Worksheet Documents

Project Settings

Project Name: Dresser LumaWattPro Test

Project Owner ( Customer )

Project Address Line 1

Project Address Line 2

City: State: Zip:

Country: US

Project Info

Project Description

Project: ☒ Active

Status: Quote

Last Accessed: Aug 15, 2017 10:39 AM CDT

Created: May 25, 2017 8:47 AM CDT

Project Number: 05842017050699

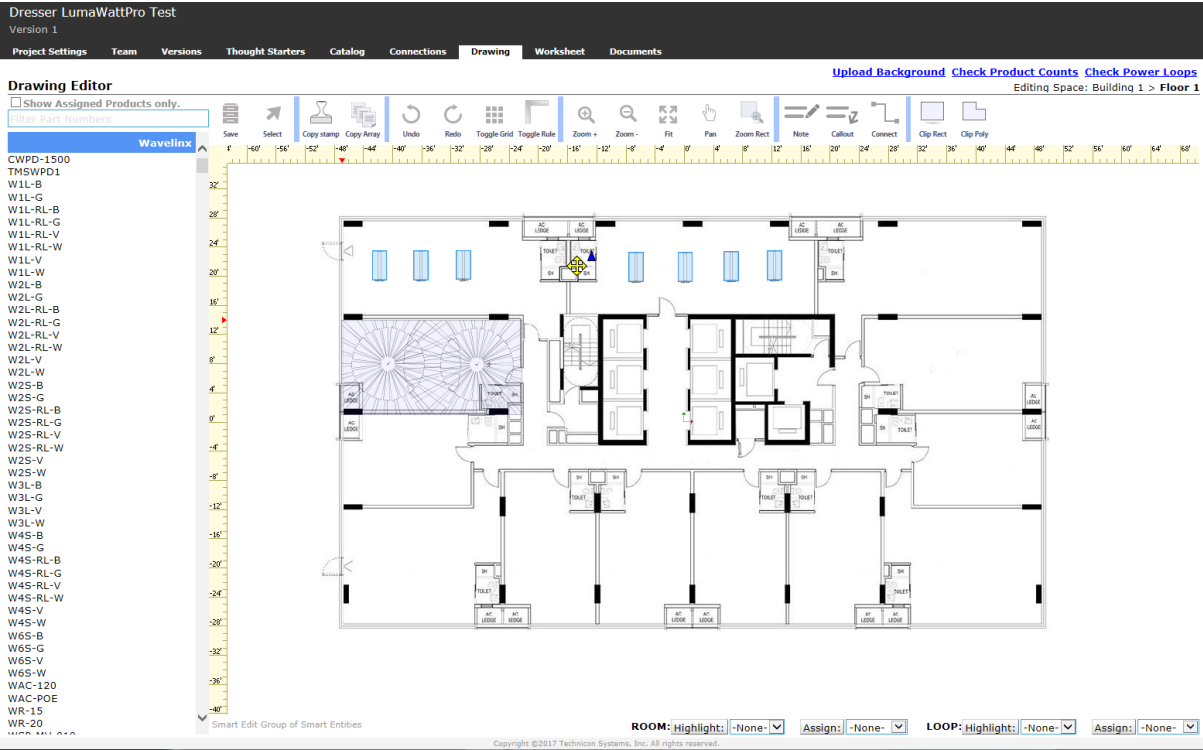
Project Agency: Eaton Lighting Systems

Currency Symbol for Worksheet/Quotes (This must match price list currency): USD - US Dollar

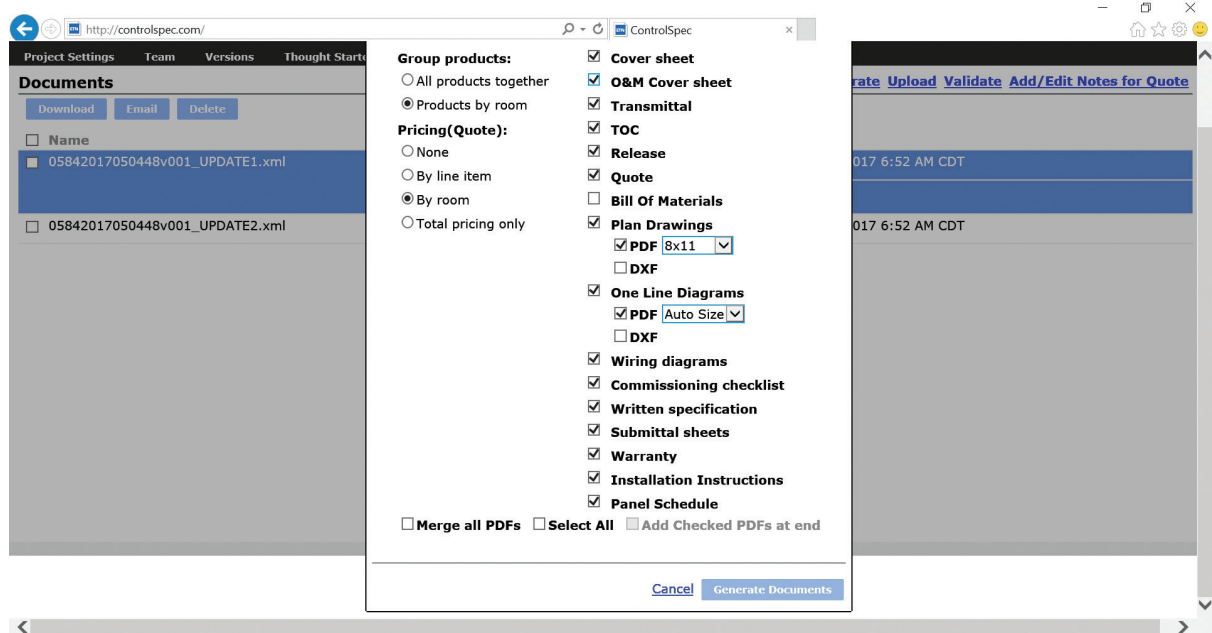
Trade Markup Percent (blank to omit, Select Total Pricing only when generating quote)



Use the floor plan tool to layout your project, add luminaires, wallstations, plug load controllers, tilemount sensors, ceiling sensors, gateways and energy manager.



Define areas, zones and assign LumaWatt Pro devices to each gateway. Highlight areas to confirm your design.



Generate a full submittal package, quotation, one lines and floor plan drawings.





# Applications



# Application: Healthcare



## Luminaire Controls

**UL924**

**UL924**  
(Energy Back-up Circuit)



**Luminaire  
Dimming**

## Functional Controls



**Manually Switched  
ON/OFF**



**Manual  
Dimmer**



**Daylighting  
Control**



**Tuning  
Control**



**Demand  
Response**



**Occupancy  
Sensor**



**Receptacle  
Control**



**Receptacle  
Control**

## Space Assumptions

### Space

Greater than 5,000 sq. ft.

### Electrical Load

Greater than 0.5W per sq. ft.

### Daylighting

Contains glazing larger than 24 sq. ft. total requiring daylighting for both primary and secondary side-lit zones

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Wallstation

LumaWatt Pro Plug Load Controller

### Available Fixtures

Metalux Encounter\*

Metalux Skyridge\*

Metalux Cruze\*

Metalux ArcLine-R\*

Metalux Accord\*

Metalux ArcLine\*

Metalux VHB\*

Corelite Divide Recessed\*

Corelite Iridium WaveStream\*

Neo-Ray Define\*

Portfolio

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Manual ON or Automatic ON – 50%

Receptacle ON

Automatic daylight dimming

Occupant uses wallstations to control lighting

Demand Response dims lighting based on settings

### Unoccupied

Lights turn Off after sensor time-out

Receptacle turns off after sensor time-out + 30 sec



# Application: Industrial



## Luminaire Controls

**UL924**

**UL924**  
(Energy Back-up Circuit)



**Luminaire  
Dimming**

## Functional Controls



**Daylighting  
Control**



**Tuning  
Control**



**Demand  
Response**



**Occupancy  
Sensor**



## Space Assumptions

### Space

Greater than 10,000 sq. ft.

### Electrical Load

Greater than 0.5W per sq. ft.

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

### Available Fixtures

Metalux VHB\*

Metalux ILED

Steeler SSLED High bay\*

HBLED High bay\*

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights automatic ON

Automatic daylight dimming

Demand Response dims lighting based on settings

### Unoccupied

Lights dim to lower level

# Application: Education (University)



## Luminaire Controls

**UL924**

**UL924**  
(Energy Back-up Circuit)



**Luminaire Dimming**

## Functional Controls



**Manually Switched ON/OFF**



**Manual Dimmer**



**Daylighting Control**



**Tuning Control**



**Demand Response**



**Occupancy Sensor**



**Occupancy Sensor**



**Receptacle Control**

## Space Assumptions

### Space

Greater than 10,000 sq. ft.

### Electrical Load

Greater than 0.5W per sq. ft.

### Daylighting

Contains glazing larger than 24 sq. ft. total requiring daylighting for both primary and secondary side-lit zones

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Wallstation

LumaWatt Pro Plug Load Controller

### Available Fixtures

Metalux Encounter\*

Metalux Skyridge\*

Metalux Cruze\*

Metalux ArcLine-R\*

Metalux Accord\*

Metalux ArcLine\*

Metalux HBLED\*

Metalux VHB\*

Metalux Steeler\*

Metalux ILED

Corelite Jaylum\*

Corelite Bridge\*

Corelite RZL\*

Neo-Ray Index\*

Neo-Ray Converge\*

Neo-Ray Define\*

Portfolio

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Manual ON or Automatic ON – 50%

Receptacle ON

Automatic daylight dimming

Occupant uses wallstations to control lighting

Demand Response dims lighting based on settings

### Unoccupied

Lights turn Off after sensor time-out

Receptacle turns off after sensor time-out + 30 sec

# Application: Retail



## Luminaire Controls

**UL924**

**UL924**  
(Energy Back-up Circuit)



**Luminaire  
Dimming**

## Functional Controls



**Daylighting  
Control**



**Tuning  
Control**



**Demand  
Response**



**Occupancy  
Sensor**



## Space Assumptions

### Space

Greater than 10,000 sq. ft.

### Electrical Load

Greater than 0.5W per sq. ft.

### Daylighting

Contains glazing larger than 24 sq. ft. total requiring daylighting for both primary and secondary side-lit zones

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

### Available Fixtures

Metalux Encounter\*

Metalux Skyridge\*

Metalux Cruze\*

Metalux ArcLine-R\*

Metalux Accord\*

Metalux ArcLine\*

Metalux VHB\*

Metalux Steeler\*

Metalux ILED

RSA MRZ\*

Corelite RZL\*

Neo-Ray Define\*

Neo-Ray Covera\*

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights automatic ON

Automatic daylight dimming

### Unoccupied

Lights turn off after sensor time-out



# Application: Commercial Office



## Luminaire Controls

**UL924**

**UL924**  
(Energy Back-up Circuit)



**Luminaire Dimming**

## Functional Controls



**Manually Switched ON/OFF**



**Manual Dimmer**



**Daylighting Control**



**Tuning Control**



**Demand Response**



**Occupancy Sensor**



**Receptacle Control**



**Receptacle Control**

## Space Assumptions

### Space

Greater than 5,000 sq. ft.

### Electrical Load

Greater than 0.5W per sq. ft.

### Daylighting

Contains glazing larger than 24 sq. ft. total requiring daylighting for both primary and secondary side-lit zones

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Wallstation

LumaWatt Pro Plug Load Controller

### Available Fixtures

Metalux Encounter\*

Metalux Skyridge\*

Metalux Cruze\*

Metalux ArcLine-R\*

Metalux Accord\*

Metalux ArcLine\*

Corelite Divide Linear Family

Corelite Jaylum\*

Corelite Bridge\*

Neo-Ray Define\*

Neo-Ray Converge\*

Neo-Ray Covera\*

Portfolio

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Manual ON or Automatic ON – 50%

Receptacle ON

Automatic daylight dimming

Occupant uses wallstations to control lighting

Demand Response dims lighting based on settings

### Unoccupied

Lights turn Off after sensor time-out

Receptacle turns off after sensor time-out + 30 sec





# Typical Applications



# Application: Private Office



## Luminaire Controls

**UL924**

**UL924**  
(Energy Back-up Circuit)



**Luminaire  
Dimming**

## Functional Controls



**Manually Switched  
ON/OFF**



**Manual  
Dimmer**



**Daylighting  
Control**



**Tuning  
Control**



**Demand  
Response**



**Occupancy  
Sensor**



**Receptacle  
Control**

## Space Assumptions

### Space

Less than 250 sq. ft.

### Electrical Load

Greater than 0.5 watts per sq. ft. planned

### Daylighting

Contains glazing larger than 24 sq. ft. total requiring daylighting for both primary and secondary side-lit zones

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Wallstation

LumaWatt Pro Plug Load Controller

### Available Fixtures

Metalux Encounter\*

Metalux Skyridge\*

Metalux Cruze\*

Metalux ArcLine-R\*

Metalux Accord\*

Metalux ArcLine\*

Neo-Ray Converge\*

Neo-Ray Covera\*

Corelite Divide Suspended\*

Corelite Bridge\*

Portfolio

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Manual ON or Automatic ON – 50%

Receptacle ON

Automatic daylight dimming

Occupant uses wallstations to control lighting

Demand Response dims lighting based on settings

### Unoccupied

Lights turn Off after sensor time-out

Receptacle turns off after sensor time-out + 30 sec




# Application: Open Office




## Luminaire Controls

**UL924**  
**UL924**  
(Energy Back-up Circuit)

  
**Luminaire Dimming**

## Functional Controls


  
**Manually Switched ON/OFF**

  
**Manual Dimmer**

  
**Daylighting Control**

  
**Tuning Control**

  
**Demand Response**

  
**Occupancy Sensor**

  
**20%**  
**40%**

  
**Receptacle Control**

## Space Assumptions

### Space

250 sq. ft. or larger

### Electrical Load

Greater than 0.5 watts per sq. ft. planned

### Daylighting

Contains glazing larger than 24 sq. ft. total requiring daylighting for both primary and secondary side-lit zones

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Wallstation

LumaWatt Pro Plug Load Controller

### Available Fixtures

Metalux Encounter\*

Metalux Skyridge\*

Metalux Cruze\*

Metalux ArcLine-R\*

Metalux Accord\*

Metalux ArcLine\*

Corelite Element WaveStream\*

Corelite Iridium WaveStream\*

Corelite Jaylum\*

Neo-Ray Converge\*

Neo-Ray Define\*

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Manual ON or Automatic ON – 50%

Receptacle ON

Automatic daylight dimming

Occupant uses wallstations to control lighting

Demand Response dims lighting based on settings

### Unoccupied

Lights turn Off after sensor time-out

Receptacle turns off after sensor time-out + 30 sec

# Application: Conference Room



## Luminaire Controls

**UL924**

**UL924**  
(Energy Back-up Circuit)



**Luminaire Dimming**

## Functional Controls



**Manually Switched ON/OFF**



**Manual Dimmer**



**Daylighting Control**



**Tuning Control**



**Demand Response**



**Occupancy Sensor**



**Receptacle Control**



**Receptacle Control**

## Space Assumptions

### Space

100 sq. ft. or larger

### Electrical Load

Greater than 0.5 watts per sq. ft. planned

### Daylighting

Contains glazing larger than 24 sq. ft. total requiring daylighting for both primary and secondary side-lit zones

### Others

The general lighting is not intended for continuous use (24/7) Egress lighting is not part of the general lighting use

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Wallstation

LumaWatt Pro Plug Load Controller

### Available Fixtures

Metalux Encounter\*

Metalux Skyridge\*

Metalux Cruze\*

Metalux ArcLine-R\*

Metalux Accord\*

Metalux ArcLine\*

Corelite Divide Suspended\*

Neo-Ray Define\*

Neo-Ray Converge\*

Neo-Ray Covera\*

Portfolio

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Manual ON or Automatic ON – 50%

Receptacle ON

Automatic daylight dimming

Occupant uses wallstations to control lighting

Demand Response dims lighting based on settings

Programmable Scene Wallstations

### Unoccupied

Lights turn Off after sensor time-out


Receptacle turns off after sensor time-out + 30 sec

# Application: Classroom




## Luminaire Controls

**UL924**  
**UL924**  
 (Energy Back-up Circuit)

  
**Luminaire Dimming**

## Functional Controls

  
**Manually Switched ON/OFF**

  
**Manual Dimmer**

  
**Daylighting Control**

  
**Tuning Control**

  
**Demand Response**

  
**Occupancy Sensor**

  
 20%  
 40%

  
**Receptacle Control**

## Space Assumptions

### Space

Less than 2,000 sq. ft.

### Electrical Load

Greater than 0.7 watts per sq. ft. planned

### Daylighting

Contains glazing larger than 24 sq. ft. total requiring daylighting for both primary and secondary side-lit zones

### Building

When larger than 10,000 sq. ft., Demand Response is required (capable of lowering lighting power by 15%)

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Wallstation

LumaWatt Pro Plug Load Controller

### Available Fixtures

Metalux Encounter\*

Metalux Skyridge\*

Metalux Cruze\*

Metalux ArcLine-R\*

Metalux Accord\*

Metalux ArcLine\*

Corelite Jaylum\*

Corelite Bridge\*

Corelite Element WaveStream\*

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Manual ON or Automatic ON

Receptacle ON

Three automatic daylight dimming zones

Occupant uses wallstations to control lighting

Demand Response dims lighting based on settings

Programmable Scene Wallstations

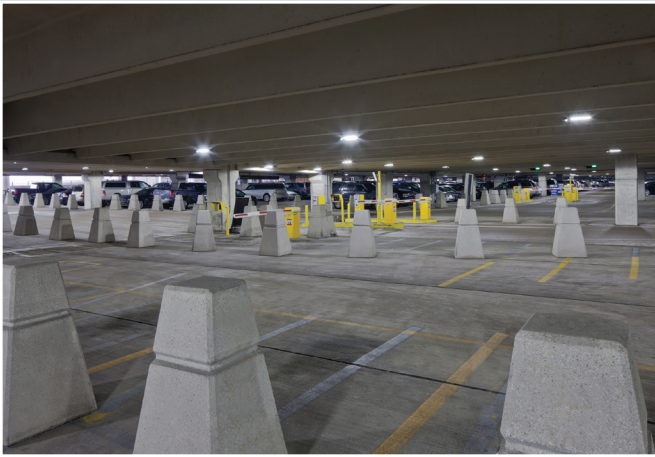
### Unoccupied

Lights turn Off after sensor time-out

Receptacle turns off after sensor time-out + 30 sec



# Application: Parking Garage



## Luminaire Controls

**UL924**

**UL924**  
(Energy Back-up Circuit)



**Luminaire  
Dimming**

## Functional Controls



**Demand  
Response**



**Occupancy  
Sensor**



**40%**



**Daylighting  
Control**

## Space Assumptions

### Space

Parking garage overall energy conservation and peak load reduction can be maximized by combining time scheduling, dimming on vacancy and daylight harvesting strategies. Following the example below, an energy saving of 38% is possible in an enclosed parking garage. Perimeter luminaires may be grouped together and programmed to dim, should natural lighting be available.

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Energy Manager Enclosure

### Available Fixtures

McGraw-Edison Top Tier\*

McGraw-Edison Vallet\*

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Automatic ON

Automatic daylight dimming

Demand Response dims based on settings

### Unoccupied

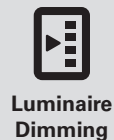
Lights turn Off after sensor time-out

# Application: Area and Site



## Luminaire Controls

**UL924**  
**UL924**  
(Energy Back-up Circuit)

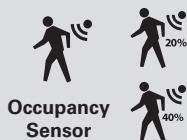


**Luminaire  
Dimming**

## Functional Controls



**Demand  
Response**



**Occupancy  
Sensor**



**Daylighting  
Control**

## Space Assumptions

### Space

For outdoor parking area applications, lighting should be dimmed or turned off within one hour of business closing. Scheduled dimming and occupancy detection can be combined to reduce maximum lighting levels outside business hours yet ensuring egress and security lighting is available on occupancy detection.

## Solutions

### LumaWatt Pro Components

LumaWatt Pro Energy Manager

LumaWatt Pro Gateway

LumaWatt Pro Energy Manager Enclosure

### Available Fixtures

McGraw-Edison Galleon\*

McGraw-Edison Galleon Wall\*

McGraw Galleon Pedestrian\*

McGraw Impact Elite\*

Invue Arbor\*

Lumark Mesa\*

Lumark Vision\*

Lumark Prevail\*

Lumark Navion\*

Lumark Verdeon\*

Lumark Ridgeview\*

*\*Available with integrated sensor*

## Sequence of Operations

### Occupied

Lights Automatic ON

Automatic daylight dimming

Demand Response dims based on settings

### Unoccupied

Lights turn Off after sensor time-out

# LumaWatt Pro





#### **Lighting Product Lines**

Halo  
Halo Commercial  
Portfolio  
Iris  
RSA  
Metalux  
Corelite  
Neo-Ray  
Fail-Safe  
MWS  
Ametrix  
Shaper  
io  
Lumark  
McGraw-Edison  
Invue  
Ephesus  
Lumière  
Streetworks  
AtLite  
Sure-Lites

#### **Controls Product Lines**

Greengate  
iLumin  
Zero 88  
Fifth Light Technology  
iLight (International Only)

#### **Connected Lighting Systems**

LumaWatt Pro  
WaveLinx  
Distributed Low-Voltage Power  
ConnectWorks

#### **Eaton**

1121 Highway 74 South  
Peachtree City, GA 30269  
P: 770-486-4800  
[www.eaton.com/lightingsystems](http://www.eaton.com/lightingsystems)  
For service or technical assistance:  
1-800-553-3879

#### **Canada Sales**

5925 McLaughlin Road  
Mississauga, Ontario L5R 1B8  
P: 905-501-3000  
F: 905-501-3172

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