

Powerlink™

Lighting Control Solutions

Make the most of your energySM

Schneider
Electric

Exceed **energy reduction goals** with lighting controls, reduce costs while monitoring and verifying savings.

Unrivaled energy savings, measurement and verification, convenience and control all from a single compact solution.

Reduce Energy Cost and Consumption

Lighting is one of the largest culprits of energy waste in buildings. And it takes more than just energy-efficient lighting to significantly reduce your energy costs. Powerlink™ lighting control systems reduce energy costs as much as 30% by automatically turning off lighting during unoccupied periods. Retrofit is also easy with Powerlink lighting control systems, with payback periods often less than two years. Compared with other energy savings technologies, a Powerlink control system can provide both a lower initial capital outlay and greater energy savings.

Powerlink lighting control systems can also deliver savings by serving as a key component of a building's demand response system, which saves money by reducing lighting levels during peak demand periods.

No Additional Installation Cost

Powerlink lighting control systems are housed in a standard lighting panelboard. There are no extra boxes to mount, relays to wire or complex panel schedules to decipher. Each Powerlink panel comes from the factory fully-assembled and tested. Installing a Powerlink lighting panel takes no more time than mounting a standard lighting panelboard.

Design Simplicity

Powerlink lighting control systems simplify a designer's life by eliminating the need to create special lighting schedules or to negotiate with the architect over limited space constraints. Powerlink lighting control systems also reduce installation time over other technologies by eliminating extra cabinets and wiring. Facility and maintenance personnel will also enjoy the ability to quickly change schedules and operation from a central workstation.

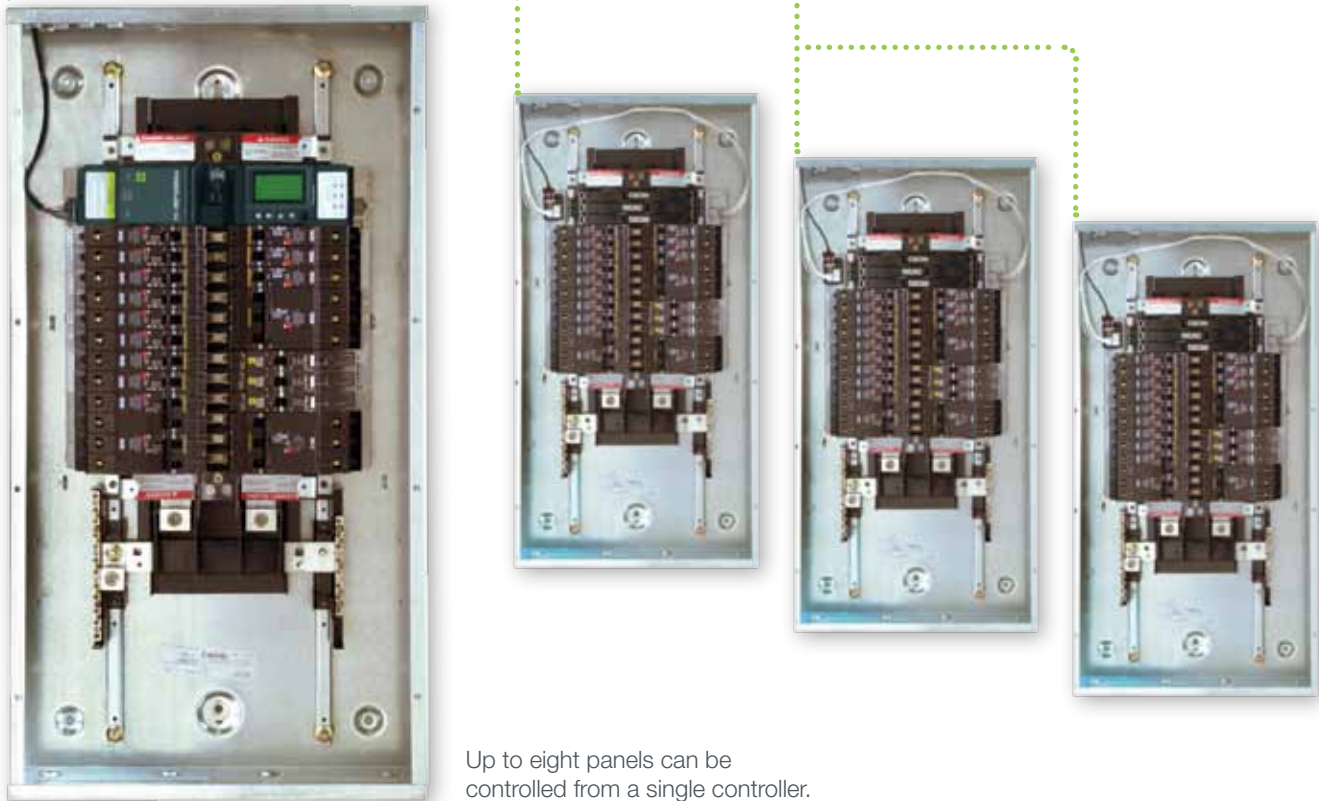


Design Compliance

Powerlink lighting systems are fully compliant to meet today's building and energy code standards.

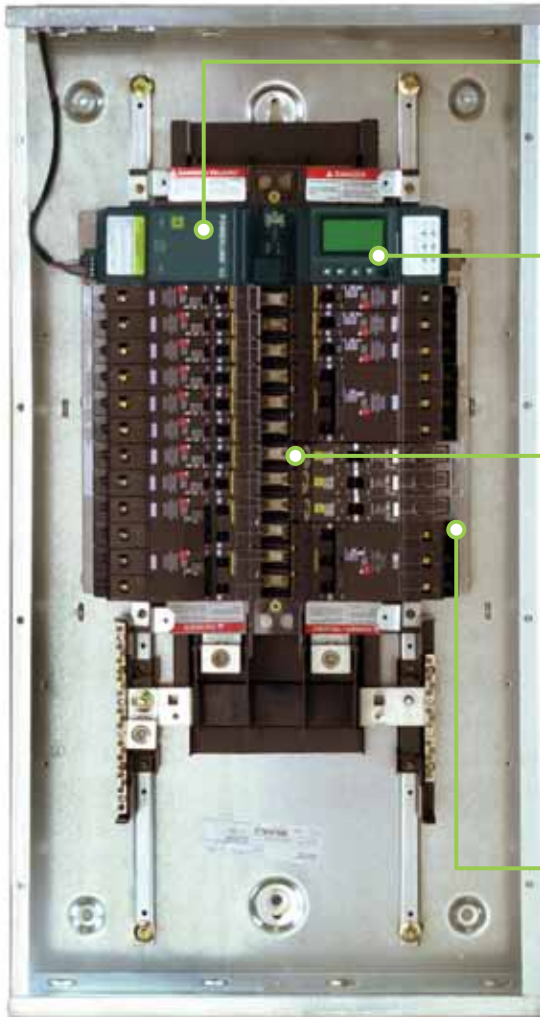
- NEMA Compliance: Applicable portions of NEMA standards pertaining to types of electrical equipment and enclosures.
- NEC Compliance: Applicable portions of the NEC; including Articles 110-10.
- UL Compliance: Applicable UL standards for panelboards, circuit breakers and energy management equipment.
- FCC Emissions: Compliance with FCC emissions standards specified in Part 15, Subpart J for Class A applications.
- ESD Immunity: IEC 1000, Level 4.
- RF Susceptibility: IEC 1000, Level 3.
- Electrical Fast Transient Susceptibility: IEC 1000, Level 3.
- Electrical Surge Susceptibility: Power line, IEC 1000, Level 4.
- Electrical Surge Susceptibility: Interconnection lines, IEC 1000, Level 3.
- California Title 24: Certified by the California Energy Commission.
- Seismic compliance: NFPA 5000, ASCE7, ICC ES AC156.

Powerlink Intelligent Lighting Control Systems



Refer to diagram on pages 12-13 to view Total System Connectivity

-  Eliminate unnecessary energy consumption by switching lights off during non-occupied periods
-  Reduce demand by shedding lights during peak demand periods
-  Improve productivity by controlling and monitoring panels from remote locations
-  Reduce potential lost time and liability by receiving instant alerts to important occurrences with remote email alarming
-  Gain important insights into lighting system performance with integral metering
-  Offer reliable over-current protection
-  Have so many benefits, all in the footprint of a standard lighting panelboard enclosure



A self-contained power supply furnishes power for remote circuit breaker switching and the system's electronics.

The intelligence of the Powerlink lighting control system comes from its micro-processor-based controller. It processes signals that originate externally from control devices, such as switches or sensors, or from its powerful internal time scheduler that switches breakers according to predefined daily schedules.

Innovative Square D™ by Schneider Electric remotely-operated circuit breakers combine the protective features of conventional circuit breakers with the switching functions of a contactor. This eliminates the need for separate relays or contactors and the associated enclosures and wiring. With series connected ratings up to 200,000 RMS A, Powerlink circuit breakers are designed to handle today's and tomorrow's high short circuit current requirements. They're proven to perform for 200,000 On/Off/On load operations, which far surpasses industry requirements. The circuit breakers are rated for HACR, HID and SWD loads. Single-, two- and three-pole versions are available in ratings up to 30 A.

Plug-in control bus strips serve as the bridge between the circuit breakers and the electronic control components of a Powerlink lighting control system. There's no complicated, bulky control wiring or connectors to worry about. The bus strips easily attach to the panelboard interior without any special fasteners or modifications.



A Control System to Meet Every Need



500 Level System

Basic control for low-voltage switching applications

Ideal for use in facilities where time-of-day control is being managed from a time clock or centralized building management system.

- Soft mapping for grouping branch circuits into zones that can be operated as a common group
- Up to 64 independent zones can be configured for a single controller
- Eight input terminations for connecting local control devices like space controls, occupancy sensors, security systems and other devices
- Timed overrides for automatic shutoff
- Blink notification to alert occupants of an impending "lights out" command
- Configurable with LCS basic and advanced software
- Serial communications using industry recognized Modbus™ protocol



1000 Level System

Time-of-day control for meeting today's energy code requirements

Stand-alone solution for small commercial buildings.

- Seven-day repeating electronic clock, temperature compensated to minimize clock drift. Includes automatic daylight savings setbacks, leap year correction, 32 special holiday periods and automatic computation of sunrise/sunset times
- 16 independently configurable time schedules, each having 24 separate On/Off periods
- 16 input terminations for connecting local control devices to operate individual lighting zones
- On-board event log (viewable through PCS software)
- Breaker run-time counters for tracking burn-time on lighting fixtures
- Configurable with LCS basic and advanced software
- Supports serial communications using Modbus ASCII/RTU, DMX512 and JCI-N2 protocols



2000 Level System

Fast Ethernet-based control for managing a large lighting system

Recommended for larger commercial and industrial buildings with multiple spaces that share schedules and operational needs.

- 10BaseT port for peer-to-peer Ethernet communications using Modbus TCP™ protocol
- Global inputs for sharing external control status, schedule status and zone status with other controllers
- Full boolean logic capability for creating virtually any control need
- Network time synchronization service to eliminate clock drift
- Custom alarms generator notifies operators of non-operational condition
- Supports native BACnet (IP), BACnet (MS/TP)
- Configurable with LCS basic and advanced software
- Supports serial communications using Modbus ASCII/RTU and DMX512

3000 Level System

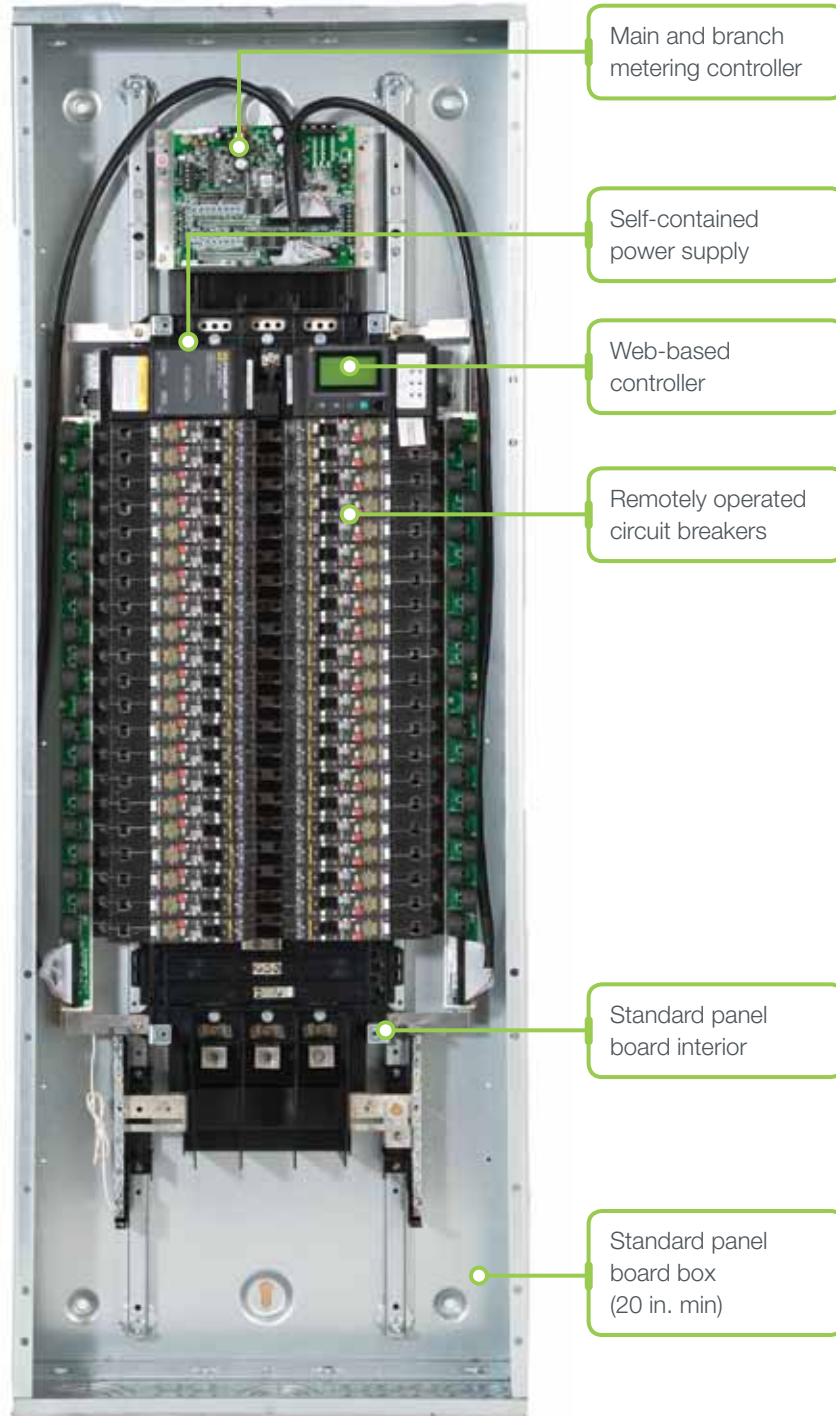
Web-enabled control for controlling and managing the cost of the lighting system

The 3000 level system forms the foundation for a completely web-enabled lighting control system. From the convenience of a standard web browser, users can easily access information about the lighting control system, initiate overrides or make a schedule change without having to modify the schedule in each panel.

- Integral web server provides ready access to panel status and configuration screens via a standard web browser
- Email alarm notification service to notify assigned users of an alarm condition via e-mail or smart phone
- Extends functionality of Powerlink lighting control systems to communicate with C-Bus™ devices
- Supports native BACnet (IP), BACnet (MS/TP)
- Configurable with LCS basic and advanced software
- Supports serial communications using Modbus ASCII/RTU and DMX512

Powerlink Energy Management (EM) Lighting Control System

Powerlink EM Panel





Monitor and Verify Your Energy Performance

You expect an energy management system to perform. With Powerlink EM, that performance goes to a total new level. These panels not only provide savings by controlling lights, but also provides a total infrastructure for measuring and verifying the performance of all your lighting and plug load energy conservation measures.

The Powerlink energy management (EM) lighting control system incorporates the same great features found in the Powerlink G3 3000 level system, in addition to integral branch circuit and main metering. Integral metering is accomplished using the PowerLogic™ branch circuit power meter (BCPM), which is a highly accurate, full-featured multi-branch circuit power meter that provides unrivalled low-current monitoring.

- Verify energy savings by circuit, zone, space or complete lighting system
- Monitor performance to assure system is working as intended
- Review data for planning and subsequent energy savings opportunities
- Allocate cost according to actual energy used

Remote Monitoring and Control at Your Fingertips

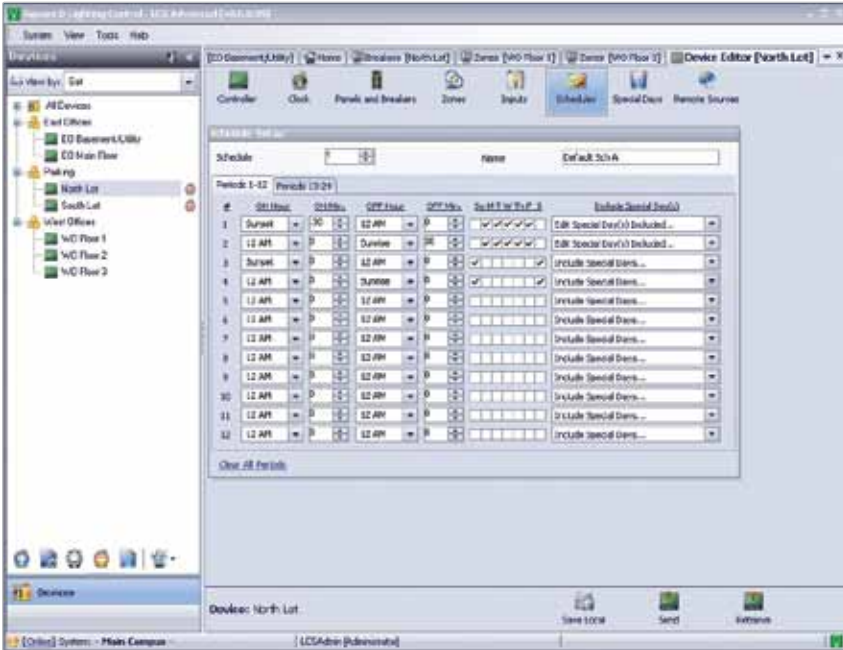
Connectivity is the key to managing a lighting system. With Powerlink, critical information about your lighting system is always available at your fingertips. With the click of a mouse, users can quickly observe breaker status, the operation of the system or make configuration changes.

Unlock the potential of the Powerlink lighting control system with LCS Basic and Advanced software from Schneider Electric. Schedule events, override lighting and check the status of a breaker with the click of a button. Easy-to-navigate software gives a whole new meaning to lighting control.

- Create schedules that easily apply to all controllers within a system rather than programming each controller individually
- Quickly view branch circuit status (on, off, tripped or non-responding)
- Examine system event logs, make configuration modifications, create or modify schedules, initiate overrides and upgrade firmware

The quick links of LCS software offers users a convenient and easy-to-use interface to the Powerlink lighting control system.





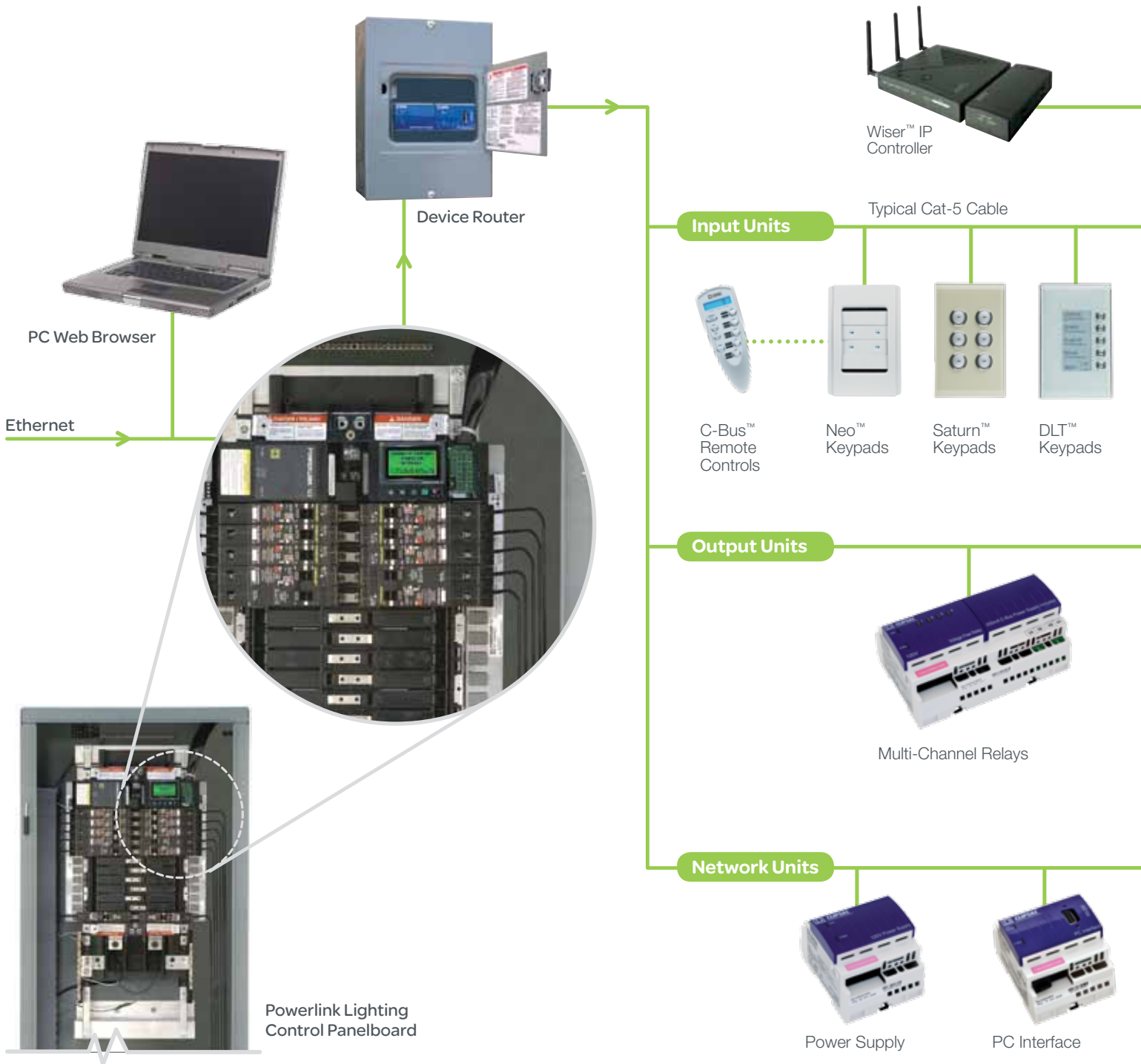
The LCS Schedule Configurator feature makes daily schedules and commands fast, simple and intuitive.



See multiple controllers' live status on the same screen.

Total System Connectivity

C-Bus™ network lighting control, Powerlink intelligent panelboards and occupancy sensors from Schneider Electric create one of the most comprehensive energy-saving offers in the industry. They combine automated and web-enabled control with advanced space controls, such as touchscreens, motion-based controls, daylighting, energy management dimming and smart grid connectivity.



Schneider Electric™ Occupancy Sensors

Occupancy sensors from Schneider Electric are the perfect solution for applications needing simple occupancy-based controls. Low-voltage ceiling- and wall-mounted occupancy sensors can be tied into the C-Bus network using simple dry contact inputs.



Wall Switch



Ceiling Mount



Wall Mount



Fixture Mount

C-Bus Network



Touch Screens



Sensor
(PIR/IR/Light Levels)



Bus Coupler
(Dry Contact Connections)



Auxiliary Input Unit



General Input Unit



Phase Angle Dimmer



Professional
Series Dimmer



0-10 V
Dimming Unit



Changeover Relay Unit



Network Bridge



Ethernet Gateway



DALI Gateway



DMX Gateway



Pascal Automation
Controller



Telephone
Interface Unit



Quality Products Backed by
Over 100 Years of Experience

Schneider Electric Delivers Results



Case Studies

Cabela's® : Streamline the Design and Build Process and Assure Sustainable Energy Savings



Cabela's®, the Sidney, Nebraska-based purveyor of outdoor clothing and gear for hunting, camping and fishing, had been using a variety of lighting control technologies from multiple suppliers prior to 2006. But, there was an opportunity to accrue greater energy and cost savings through uniform equipment and building product standards, including lighting control for all new locations. True, Cabela's did have extensive building automation systems and equipment in place, including lighting control. But whenever the company built a new store, there was little system and brand consistency. In 2006, the standard for all new Cabela's stores became the Powerlink™ 2000 Level intelligent lighting control system, commercial grade occupancy sensors and PowerLogic™ power meters, all from Schneider Electric.

Application

To streamline the design and construction processes and improve both energy management and energy efficiency, a plan was put in place to develop uniform standards for temperature and lighting control, and electrical and mechanical equipment.

Objectives

- Streamline design and construction processes across all stores
- Accrue greater energy efficiency and cost savings
- Balance need for adequate lighting with energy efficiency
- Reasonable return on investment
- Easy functionality for employees
- Specialized lighting scenes for designated areas within the building
- Monitor energy usage to begin load-shed programming

Solution

- Powerlink 2000 level intelligent lighting control panelboards
- Commercial-grade occupancy sensors
- PowerLogic power meters

Benefits

- New stores found to be 21% more energy efficient than existing counterparts
- Major contributor to \$1 million savings in energy costs
- Immediate 12% energy improvement
- Uniform lighting control standards implemented
- Metering installed to provide constant flow of information to prompt more astute energy-related decision making
- Convenience of interconnecting with building automation system eliminates need for multiple systems
- One- to two-year return on technology investment

Case Studies (cont.)

Energy Savings: Albany International

With manufacturing plants in 14 countries, Albany International manufactures paper machine clothing, a key component used in the production of paper products. Its Menasha, Wisconsin facility, for example, makes forming fabrics for the paper industry. Menasha facility management implemented an entire lighting retrofit project and called on Schneider Electric to provide a solution to manage lighting requirements in its unique production environment. That solution was Schneider Electric Powerlink lighting control systems, which provided the appropriate type of lighting control based on the different work areas in the facility, including specific areas on the manufacturing floor, along with the office area.



Application

By implementing the Powerlink 3000 level lighting system as part of a lighting retrofit, the company is able to manage the lighting schedules required in each work zone on the manufacturing floor. Extensive lighting controls were retrofitted throughout the facility including manufacturing areas, office and parking lots.

Objectives

- Implement a lighting control system that maximizes cost savings
- Make the new lighting strategy easily transferable to other company facilities

Solution

Implemented a lighting controls retrofit programing using 3000 level controllers with C-Bus operator interfaces. Lighting circuits were isolated from other electrical loads to provide utmost flexibility in scheduling and control.

Benefits

- Enhanced cost savings through less frequent lamp reducing lamp burn time by up to 33 percent
- Improved operating margins resulting from reduction in energy use and lamp maintenance
- Greater worker productivity resulting from accessible and easy-to-use operator interfaces
- Energy cost reductions of \$65,000 in the first year

Remote Monitoring: Thomas and Mack Center – UNLV

The Thomas & Mack Center is a state-of-the-art sports and entertainment facility located on the campus of the University of Nevada Las Vegas (UNLV). Home to the UNLV Runnin' Rebels, the Thomas & Mack Center also hosts numerous other events, such as championship boxing matches, professional wrestling, music concerts, and a busy schedule of conferences and exhibitions. With the help of a Schneider Electric Powerlink G3 3000 Level whole-building, schedule-based lighting control system, this venue has significantly reduced energy costs and gained complete control over all its lighting, while maintaining its impressive status as a world-class venue.



Application

Lighting control wasn't initially a concern of electrical supervisors at the Thomas & Mack Center until the facility went dark after a power failure during a nationally televised basketball game.

The incident was enough to spur the installation of a more reliable, whole-building lighting control system. Space constraints and operational needs necessitated a fresh approach to how the facility's lighting system would be controlled. After extensive review, a Schneider Electric Powerlink 3000-Level lighting control system was chosen.

Objectives

- Minimize likelihood of future control problems
- Quickly and remotely locate power outages and issues
- Control and reduce energy-related costs
- Increase power control and monitoring capabilities

Solution

Schneider Electric Powerlink 3000-Level lighting control system

Benefits

- Power conservation through scheduled off-peak events
- Web-enabled monitoring and control to facilitate remote access
- Quick and safe identification of power outages and issues
- First-year cost savings of \$200,000
- Monitor current energy bills for accuracy of energy usage and rates

Case Studies (cont.)

Flexible and Simple: Civic Center of Greater Des Moines

The Civic Center of Greater Des Moines, Iowa, is recognized as the cornerstone of a 1979 downtown revitalization effort that transformed the city's business district, an area which continues to evolve today. In 2007, the theater portion underwent the first phase of its own revitalization – an upgrade that included the addition of automated lighting control throughout its lobbies, ticket offices and other common areas. Prior to the upgrade, lights throughout the Civic Center were activated prior to performances by manually operating a sequence of circuit breakers. This was not only time consuming for staff and fraught with opportunities for mistakes, but, as Civic Center management also learned, potentially dangerous. Additionally, due to the age of the original panelboards, finding replacement parts in the event of an equipment failure created major reliability concerns.



Application

The legacy lighting panelboards were replaced with a Schneider Electric Powerlink™ lighting control system and C-Bus™ keypad controllers.

While the interior lights are controlled through programmed keypads, the exterior lights operate based on an automated schedule. The astronomical clock built into the Schneider Electric Powerlink system ensures that the on and off times are adjusted to accommodate changing sunrise and sunset times, along with daylight-saving time, maximizing safety and energy efficiency throughout the year.

Objectives

- Reduce energy costs associated with lighting loads
- Facilitate easy-to-use and virtually transparent lighting control for employees
- Develop specialized lighting scenes for designated areas within the building

Solution

- Schneider Electric Powerlink lighting control system
- Schneider Electric C-Bus keypad controllers equipped with Dynamic Labeling Technology™

Benefits

- Ease of use for entire staff
- Lighting scenes contoured to time of day and type of event or work task

Total Life-cycle Support



Reliable Powerlink lighting control systems deserve reliable support to match. With Schneider Electric lighting controls, you can always count on our Schneider Electric field sales engineers and factory-trained experts for help when you need it — before, during or after installation. Whether that means local support, troubleshooting or on-site commissioning.

- Energy audits and design assistance
- Start-up and commissioning
- Technical support
- Training

Choose Schneider Electric Expertise

Whether in buildings, factories or mission-critical infrastructures, Schneider Electric commits to reducing energy costs and CO₂ emissions for its customers. Schneider Electric offers products, solutions and services that integrate with all levels of the energy value chain.

Solutions Adapted to All Needs


Through flexible solutions for commercial and industrial buildings, Schneider Electric commits to help customers gradually move towards an active approach to their energy efficiency. It helps get more return from investments and future design solutions.



 To learn more, visit <http://www.schneider-electric.com> or type in “Schneider Electric lighting control” into your search engine or call **1-888-778-2733**.

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