

Section 260943: Wireless Networked Lighting Control

Part 1 - General

1.1 Summary

1. The contractor shall install a wireless lighting control system that provides time-based, sensor-based, and user-initiated control and integration with third-party systems such as building management systems or other management platforms.
2. The system shall support remote system control and monitoring via Cloud connection to the site controller.
3. The system shall be accessible through a web browser on computers, tablets, or smartphones.
4. All lighting controllers, sensors, and accessories shall be individually addressable and networked using a self-healing wireless mesh network.
5. If connection to the site controller is lost, each lighting controller shall default to a full-on state, ensuring safety.

1.2 Submittals

1. Product cut sheets with device descriptions, dimensions, wiring details, and nomenclature.
2. Diagrams for special operations or interactions with other systems, as needed.
3. Contractor commissioning documentation, including controller locations.
4. Product installation guides.
5. Quickstart guide for initial startup.
6. Additional operational descriptions as needed.

1.3 Quality Assurance

1. Products must be manufactured in a ROHS-compliant facility.
2. All wireless devices must be FCC compliant.
3. Products must be UL/CUL listed or certified by a recognized testing organization.

1.4 Coordination

1. The installing contractor shall ensure the system is fully functional and compliant with local and national codes.
2. The selling agent shall coordinate system startup using professional services.
3. The selling agent or professional services shall perform or coordinate end-user training.

1.5 Warranty and Support

1. All lighting control devices shall carry a minimum five (5) year warranty.
2. Basic hardware and software support shall be provided for the duration of the warranty.

Part 2 - Equipment

2.1 Manufacturers

1. This specification is based on control systems designed around the SimplySnap application.

2.2 System Requirements

1. System shall include a SimplySnap architecture with:
 - a. 802.15.4 SNAP-based wireless self-forming mesh network
 - b. Wireless lighting control devices
 - c. Stand-alone site controller for managing devices and accessories
 - d. Integrated or third-party occupancy and daylight sensors
 - e. Optional wireless switches
 - f. Daylight harvesting capability
 - g. Demand response capability
 - h. Individual or group zone-based lighting control
 - i. Optional fast-switching wireless dimming for sports lighting
2. One or more site controllers must communicate with system devices.
3. Site controllers must support remote control via Ethernet LAN, Wi-Fi, or Verizon LTE.
4. Wireless devices must use SNAP protocol for mesh communication.
5. Mesh network must self-heal by rerouting messages if a device fails.
6. Individual controllers shall maintain default lighting in case of communication failure.
7. Wireless communication must support encryption.
8. Browser-based software shall enable control, monitoring, and zone management.
9. Controllers shall support 0-10V and D4i drivers with fast-switching capability.
10. System shall meet DLC requirements for indoor and outdoor lighting controls.

2.3 Equipment

Wireless Light Controller

- Suitable for indoor and outdoor commercial and industrial luminaires.
- Supports inputs from 3rd party occupancy, photocell, or switches.
- Supports 0-10V or D4i dimming based on input sources.
- AC models shall support universal power input and local power monitoring (up to 2% accuracy).
- DC models shall be powered by the driver and support dim-to-off or D4i.
- Analog models to include internal relay and 0-10V dimming.
- Digital models to support DALI-2 and/or 0-10V dimming.
- Digital models to support an optional built-in occupancy and daylight sensor.
- Must support remote monitoring and control via the site controller.
- Shall default to a user-configured level after power loss.
- Sports lighting controllers must support rapid dimming effects.

Site Controller

- The site controller shall expose an API for integration with third-party systems, such as indoor commercial lighting control systems, analytics platforms, or custom control applications.
- The site controller shall support integration with Lutron Athena, enabling coordinated control of interior and exterior lighting systems through a documented API interface.
- Includes Ethernet, Wi-Fi, and cellular connectivity.
- Communicates via SNAP mesh network.
- Supports up to 1000 devices.
- Stores configuration data including zones and device relationships.
- Allows configuration backup to SimplySnap Cloud.
- Supports fast dimming and RGBA for sports lighting and architectural applications.

Browser-Based Control Application

- Accessible via web browser on PC, tablet, or phone.
- Displays devices on a map.
- Allows system configuration backup and restore.
- Supports zone creation/editing; up to 20 zones per light.
- Provides alerts via dashboard or email.
- Secured with username/password and role-based access.
- Provides scheduling and event programming.
- Displays device characteristics and network status.
- Encrypts wireless communication.
- Offers cloud-based interface for multi-site unification.

BMS Gateway

- Compatible with SimplySnap.
- Interfaces SimplySnap with Building Management Systems.
- Supports BACnet, Modbus TCP/IP, Modbus RTU.
- Must share an IP network with the site controller.
- Polls site controller for device/scene data.
- Maps SimplySnap devices to BACnet instance IDs.
- Enables BMS control of SimplySnap scenes.
- Compatible with top-tier BMS platforms.

Power Monitoring

- Available through compatible light controllers.
- Short-term: 2-week data stored on-site controller.
- Long-term: 2+ years of data stored in the cloud.
- Monitoring via internal circuitry or DALI2 interface.

Daylight Harvesting

- Utilizes open-loop design with approved daylight sensors.
- Commissioned using a light meter to calibrate daylight levels.

Demand Response

- Reduces power during peak demand using:
 - Manual switch input
 - ADR gateway
 - BMS with BMS Gateway

Dynamic Lighting Effects

- Enables wireless control of sports lighting effects through rapid dimming.

Part 3 - Execution

3.1 Installation

1. Contractor may schedule a pre-installation meeting with manufacturer and owner reps.
2. Installation and start-up must follow project timeline.
3. Coordinate with owner for internet access if needed.
4. Follow manufacturer instructions for all installations.

3.2 Owner Requirements

1. Provide after-hours access as needed.
2. IT manager to facilitate network access and firewall configuration.
3. Provide reflected ceiling plans or floor plans showing fixture locations.
4. Provide light fixture manufacturer and model details.

3.3 System Start-Up and Programming

1. Manufacturer representative to perform start-up and programming.
2. Start-up includes:
 - Identifying controller locations
 - Linking each controller to its fixture
 - Function verification
 - Group creation and schedule programming
3. Initial programming on-site; remote updates possible with internet access.
4. Manufacturer to provide:
 - Network configuration and controller locations
 - Support contact info

- Remote access details
- Username and password for system access