

SECTION 26 09 23
LIGHTING CONTROLS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Photoelectric relays, and contactors.
- B. Related Sections:
 - 1. Section 26 05 21 - Low Voltage Electrical Power Conductors and Cables (600V and below).
 - 2. Section 26 27 26 - Wiring Devices.
 - 3. Section 26 05 11 - Requirement for Electrical Installation.

1.2 SUBMITTALS

- A. General: Comply with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Include dimensions and data on features, components, and ratings for lighting control devices.
- C. Informational Submittals: Submit following:
 - 1. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.
- D. Closeout Submittals: Submit the following:
 - 1. Maintenance Data: For lighting control devices.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain lighting control devices from single source with total responsibility for compatibility of lighting control system components specified in this Section.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, for their indicated use and installation conditions by testing agency acceptable to authorities having jurisdiction.
- C. Comply with 47 CFR 15, Subparts A and B, for Class A digital devices.
- D. Comply with NFPA 70 - National Electrical Code.

1.4 COORDINATION

- A. Coordinate features of devices specified in this Section with systems and components specified in other Sections to form integrated system of compatible components. Match components and interconnections for optimum performance of specified functions. Include coordination with following:
 - 1. Section 26 24 16 - Panelboards.
 - 2. Section 26 27 26 - Wiring Devices.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers:
 - 1. Contactors and Relays:
 - a. Cutler-Hammer Products; Eaton Corporation.
 - b. GE Lighting Controls.
 - c. Hubbell Lighting, Inc.
 - d. Lutron Electronics Co., Inc.
 - e. Siemens Energy and Automation, Inc.

- f. Square D Co.; Power Management Organization.
- g. Zenith Controls, Inc.
- 2. Photoelectric Relays:
 - a. Allen-Bradley/Rockwell Automation
 - b. Area Lighting Research, Inc.
 - c. Grasslin Controls, Corp.
 - d. Lutron Electronics Co., Inc.

2.2 GENERAL LIGHTING CONTROL DEVICE REQUIREMENTS

- A. Line-Voltage Surge Protection: Include in all 120-V solid-state equipment. Comply with UL 1449 and with ANSI C62.41 for Category A locations.

2.3 PHOTOELECTRIC RELAYS

- A. Description: Solid state, with single-pole, double-throw dry contacts rated to operate connected relay or contactor coils or microprocessor input, and complying with UL 773A.
- B. Light-Level Monitoring Range: 0 to 3500 FC (0 to 37 673 lx), with adjustment for turn-on/turn-off levels.
- C. Time Delay: Prevents false operation.
- D. Outdoor Sealed Units: Weathertight housing, resistant to high temperatures and equipped with sun-glare shield and ice preventer.

2.4 MULTIPOLE CONTACTORS AND RELAYS

- A. Description: Electrically operated and mechanically held, and complying with UL 508 and NEMA ICS 2.
 - 1. Current Rating for Switching: UL listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballasts with 15 percent or less total harmonic distortion of normal load current).
 - 2. Control Coil Voltage: Match control power source.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Mounting heights indicated are to bottom of unit for suspended devices and to center of unit for wall-mounting devices.

3.2 CONTROL WIRING INSTALLATION

- A. Install wiring between sensing and control devices according to manufacturer's written instructions and as specified in Section 26 05 21 - Low Voltage Electrical Power Conductors and Cables (600V and below).
- B. Wiring Method: Install all wiring in raceway as specified in Section 16130 - Raceways and Boxes.
- C. Bundle, train, and support wiring in enclosures.
- D. Ground equipment.
- E. Connections: Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

3.3 IDENTIFICATION

- A. Identify components and power and control wiring.

3.4 FIELD QUALITY CONTROL

- A. Schedule visual and mechanical inspections and electrical tests with at least seven days' advance notice.
- B. Inspect control components for defects and physical damage, testing laboratory labeling, and nameplate compliance with Contract Documents.
- C. Check tightness of electrical connections with torque wrench calibrated within previous six months. Use manufacturer's recommended torque values.
- D. Verify settings of photoelectric devices with photometer calibrated within previous six months.
- E. Electrical Tests: Use particular caution when testing devices containing solid-state components. Perform following according to manufacturer's written instructions:
 - 1. Continuity tests of circuits.
 - 2. Operational Tests: Set and operate devices to demonstrate their functions and capabilities in methodical sequence that cues and reproduces actual operating functions.
 - a. Include testing of devices under conditions that simulate actual operational conditions. Record control settings, operations, cues, and functional observations.
- F. Correct deficiencies, make necessary adjustments, and retest. Verify that specified requirements are met.
- G. Test Labeling: After satisfactory completion of tests and inspections, apply label to tested components indicating test results, date, and responsible agency and representative.
- H. Reports: Written reports of tests and observations. Record defective materials and workmanship and unsatisfactory test results. Record repairs and adjustments.

3.5 CLEANING

- A. Cleaning: Comply with Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT. Clean equipment and devices internally and externally using methods and materials recommended by manufacturers, and repair damaged finishes.

3.6 ON-SITE ASSISTANCE

- A. Occupancy Adjustments: Within one year of date of Substantial Completion, provide up to three Project site visits, when requested, to adjust light levels, make program changes, and adjust sensors and controls to suit actual conditions.

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