

**SECTION 26 09 23  
LIGHTING CONTROL DEVICES PART 1 - GENERAL**

**SUMMARY**

**1.01 REFERENCE STANDARDS**

- A. IEEE C62.41.1 - IEEE Standard Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits; 2002 (Reaffirmed 2008).
- B. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits; 2002 (Corrigendum 2012).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- D. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 508 - Industrial Control Equipment; Current Edition, Including All Revisions.
- G. UL 773A - Nonindustrial Photoelectric Switches for Lighting Control; Current Edition, Including All Revisions.
- H. UL 917 - Clock-Operated Switches; Current Edition, Including All Revisions.

**1.02 THIS SECTION INCLUDES THE FOLLOWING LIGHTING CONTROL DEVICES:**

- A. Integrated, pre-wired lighting control panel including:
  - 1. Outdoor photoelectric switches.
  - 2. Lighting contactors/relays.
  - 3. Digital astronomic time switch.
  - 4. 0-4 hour adjustable timer.
  - 5. 0-10 volt dimmer.
  - 6. Override control switches and pilot lights.

1.2	A.  B.  C.	SUBMITTALS  Product Data: For each type of product indicated. Field quality-control test reports.  Operation and maintenance data.
1.3	A.	QUALITY ASSURANCE Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities

		having jurisdiction, and marked for intended use.
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**PART 2 - PRODUCTS**

**2.01 TIME SWITCHES**

**2.02 MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING OR EQUAL:**

- A. Intermatic
- B. TORK.

**2.03 ELECTRONIC TIME SWITCHES: ELECTRONIC, SOLID-STATE PROGRAMMABLE UNITS WITH ALPHANUMERIC DISPLAY; COMPLYING WITH UL 917.**

- A. Contact Configuration: SPST.
- B. Contact Rating: 30-A inductive or resistive, 240-V ac.
- C. Program: 8 on-off set points on a 24-hour schedule and an annual holiday schedule that overrides the weekly operation on holidays.
- D. Program: 2 on-off set points on a 24-hour schedule, allowing different set points for each day of the week and an annual holiday schedule that overrides the weekly operation on holidays.
- E. Programs: All channels; each channel shall be individually programmable with 8 on-off set points on a 24-hour schedule.
- F. Circuitry: Allow connection of a photoelectric relay as substitute for on-off function of a program.
- G. Astronomic Time: All channels.
- H. Battery Backup: For schedules and time clock.

**2.04 OUTDOOR PHOTOELECTRIC SWITCHES**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following or equal:
- B. Intermatic
- C. TORK
- D. Description: Solid state, with SPST dry contacts rated for 1800-VA tungsten or 1000-VA inductive, to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A.
- E. Light-Level Monitoring Range: 1.5 to 10 fc (16.14 to 108 lx), with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of photocell to prevent fixed light sources from causing turn-off.
- F. Time Delay: 15-second minimum, to prevent false operation.
- G. Surge Protection: Metal-oxide varistor, complying with IEEE C62.41.1, IEEE C62.41.2, and IEEE 62.45 for Category A1 locations.
- H. Mounting: Twist lock complying with IEEE C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure.

**2.05 LIGHTING CONTACTORS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal:

- B. ASCO Power Technologies, LP; a division of Emerson Electric Co.
- C. Eaton Electrical Inc.; Cutler-Hammer Products.
- D. Description: Electrically operated and mechanically held, combination type with nonfused disconnect, complying with NEMA ICS 2 and UL 508.
- E. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
- F. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
- G. 6 poles: Provide quantity of contactors required number of lighting circuits with minimum of 3 spare poles.

## **2.06 SPORT COURT OVERRIDE TIMER/DIMMER HOUR TIMER**

- A. Description: Solid state, with SPST dry contacts rated for 1000VA to operate connected relay, contactor coils or microprocessor input; complying with applicable UL requirements.
- B. Timer activated daily at dusk for an adjustable interval of 0-3 hours.
- C. Sport court flood lights to operate at full brightness for programmed interval, beginning at dusk.
- D. Activate 0-10V dimmer to reduce lighting level to approximately 10% of full brightness (adjustable).
- E. Controls for interval timer and 0-10V dimmer enclosed within lighting control panel.

## **2.07 ENCLOSURE**

- A. Description:
- B. All components mounted and prewired as factory tested within NEMA 1 cabinet, with hinged cover and key lock to match panelboards.
- C. All control wiring to be #14 minimum and properly fused.

## **2.08 CONDUCTORS AND CABLES**

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

## **PART 3 - EXECUTION**

### **3.01 SENSOR INSTALLATION**

- A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
- B. When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

### **3.02 CONTROL PANEL INSTALLATION**

- A. Mount adjacent to lighting power panel.

### **3.03 WIRING INSTALLATION**

- A. Wiring Method: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size shall be 1/2 inch.
- B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

### **3.04 IDENTIFICATION**

- A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."
- B. Identify controlled circuits in lighting contactors.
- C. Identify circuits or luminaries controlled by photoelectric and occupancy sensors at each sensor.
- D. Label time switches, timers, relays, dimmers and contactors with a unique designation.

### **3.05 FIELD QUALITY CONTROL**

- A. Perform the following field tests and inspections and prepare test reports:
- B. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
- C. Operational Test: Verify operation of each lighting control device, and adjust time delays.
- D. Lighting control devices that fail tests and inspections are defective work.

**END OF SECTION 26 09 23 26 09 23**