

SECTION 260942
LOW VOLTAGE LIGHTING CONTROL PANELS

PART 1 GENERAL

1.01 INTRODUCTION

- A. The provisions of the General Requirements, Supplementary Requirements, and Division 1 apply to the electrical work specified in this Section.
- B. Contractor shall coordinate all work in this section with other sections and divisions of these specifications to provide a complete and operable system.

1.02 DESCRIPTION

- A. Extent of lighting control system work is indicated by drawings and by the requirements of this section.
- B. Type of lighting control equipment and wiring specified in this section include, but are not limited to, the following: Microprocessor based Low Voltage Lighting Control panels.
- C. Requirements are indicated elsewhere in these specifications for work including, but not limited to, raceways and electrical boxes and fittings required for installation of control equipment and wiring.

1.03 QUALITY ASSURANCE

- A. The control panels shall be tested and listed under the UL 924 Energy Management Equipment standards and CSA standards.
- B. The control system shall comply with all applicable National Electrical Codes regarding electrical wiring standards.
- C. All control equipment shall undergo strict inspection standards. The equipment shall be previously tested and burned-in at the factory prior to installation.
- D. A factory-trained technician or factory-authorized personnel shall functionally test the control system and verify performance after installation.
- E. Approved manufacturers: LC&D 'GR1400' Series, PCI LiteKeeper Series, Lithonia SPAK Series, Leviton, Lutron, Crestron, Douglas or approved.

1.04 SUBMITTALS

- A. Submit manufacturer's data on lighting control system and components.
- B. Submit drawings of lighting control system and accessories including, but not limited to, low voltage relay panels, switches, photocells and other associated devices and equipment.

1.05 SYSTEM DESCRIPTION

- A. Self contained lighting controller providing flexible time schedule control and override for 4 to 8 lighting circuits. The standard relays are rated to directly switch 20A lighting loads. Low voltage override switches, motion sensors, and a photocell may be assigned to control the relays via programming.

PART 2 PRODUCTS

2.01 MATERIALS AND COMPONENTS

A. Lighting Control Panels (LCP):

1. Microprocessor based with integral astronomic clock and calendar function. Provides individual schedules for each day of the week.
2. The LCP shall be capable of minimum 32 schedules. Each schedule shall consist of one set of On and Off times per day for each day of the week and for each of two holiday lists. The schedules shall apply to any individual relay or group of relays.
3. NEMA 1 rated enclosure with a hinged locking door.
4. A steel barrier shall separate the high voltage and low voltage compartments of the panel and separate 120v and 277v.
5. LCP input power shall be capable of accepting 120v or 277v.
6. Program entry shall be via an integral keypad and illuminated 4-line, 80 character LCD display. The leypad shall provide individual quick-access keys that are associated with each input, each relay, and each day of the week. Programming steps shall be prompted on the display in clear alphanumeric format. A 'help mode' function shall be incorporated into the programming system.
7. The program shall be run from non-volatile memory so that all system programming and real time clock functions are maintained for a minimum of 10 years with loss of power.
8. Manual overrides shall be provided for individual relays, zones or entire panel.
9. Provide with eight low voltage input terminals for connection of switches, occupancy sensors or other override devices.

B. Relays

1. UL Listed 30 Amp, latching or electrically held, 277VAC Ballast and HID and 20 Amp Tungsten at 120 VAC.
2. Relays shall be replaceable. Relay terminal blocks shall be capable of accepting two (2) #10AWG wires on both the line and the load side.
3. Relays to be rated for 250,000 operations minimum at a full 30a lighting load, default to closed at normal power loss, Normally Closed (NC).
4. Optional relay types available shall include: Normally Open (NO) relay rated for 250,000 operations, a 600v 2-pole NO and NC and a Single Pole, Double Throw (SPDT) relay.

- C. Photocell: Photocell shall be analog or digital and shall provide multiple trip points from one roof mounted unit. All trip points shall be adjustable through the program and not require that adjustments be made at the remote photocell location. Photocell to be certified to comply with the current energy code covering this project at time of submittal of plans for building permit.

PART 3 EXECUTION

3.01 EQUIPMENT INSTALLATION AND DOCUMENTATION

- A. Installation: The control panels shall be installed, connected and fully wired as shown on the plans.
- B. Documentation: The Contractor shall provide record drawings to the Owner for correct programming and proper maintenance of the control panel. The record drawings shall indicate the load controlled by each relay and the relay panel number.
- C. Operation and Service Manuals: Upon completion of Contract submit Operating and Maintenance Manuals for inclusion in Owner's Maintenance Brochure as specified in Division 1.

3.02 PRODUCT SUPPORT AND SERVICE

- A. Factory Support: Factory telephone support shall be available at no cost to the Owner. Factory assistance shall consist of solving programming or application questions concerning the control equipment.

3.03 SYSTEM ACCEPTANCE

- A. The Contractor is responsible for complete installation of the system according to factory standards and requirements. The following items shall constitute factory standards and requirements:
 - 1. All system equipment shall operate in accordance with specifications.
 - 2. An operational user program shall exist in the control system. The program shall execute and perform all functions required to effectively operate the site according to the requirements.
 - 3. Demonstration of program integrity during normal operation and pursuant to a power outage.
 - 4. Contractor shall provide minimum two hours of training on the operation and use of the control system. Additional support services shall be negotiated between the Contractor and the building Owner or manager.

3.04 WARRANTY

- A. Manufacturer shall supply a 3-year warranty on all hardware and software. A limited 10-year warranty shall be provided on the individual relays.

END OF SECTION