

PART 1 - GENERAL

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| <u>1.1 RELATED REQUIREMENTS</u> | .1 | Section 26 05 00 - Common Work Results for Electrical. |
| <u>1.2 LIGHTING CONTROL SYSTEM</u> | .1 | Interconnected set of hardware and software components that collectively serve to regulate the illumination levels of an interior and/or exterior space. |
| | .2 | Integrated with fire alarm system and security system to energize all lighting relays during an alarm condition. |
| <u>1.3 SHOP DRAWINGS</u> | .1 | Submit shop drawings in accordance with Section 01 33 00. |
| | .2 | Indicate: <ul style="list-style-type: none"> .1 Complete assembly. .2 Contact surfaces. .3 Construction features. .4 Wiring diagrams. .5 Catalogue information. |
| <u>1.4 SAMPLES</u> | .1 | Submit samples in accordance with Section 01 33 00. |
| <u>1.5 WASTE MANAGEMENT AND DISPOSAL</u> | .1 | Separate and recycle waste materials in accordance with Section 01 74 20. |
| | .2 | Remove from site and dispose of all packaging materials at appropriate recycling facilities. |
| | .3 | Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan. |
| | .4 | Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Departmental Representative. |
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| 1.5 WASTE
MANAGEMENT AND
DISPOSAL
(Cont'd) | .5 | Fold up metal banding, flatten and place in designated area for recycling. |
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PART 2 - PRODUCTS

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| 2.1 COMPONENTS | .1 | Designed for lighting control up to and including 347 V, 20 A. |
| | .2 | Relay panels consisting of pre-assembled relays, line voltage compartment, 24 VDC power supply, low voltage compartment, interior panel for communication wiring separate from line voltage compartment, time controller and fully enclosed relays. |
| | .3 | Micro-processor controller with 365-day, 7-day repeating clock capable of full 24-hour scheduling functions, daylight saving time (DST) supported. |
| | .4 | Low voltage momentary switch. |
| 2.2 ENCLOSURES | .1 | Enclosures of relay panel designed for wall mounting with stand-off uni-directional brackets. |
| | .1 | Hinged metal door. |
| | .2 | Baked enamel ANSI/ASA 61 gray. |
| | .3 | Sized to accommodate 4, 8, 16, 24, or 32 relays. |
| | .4 | Wiring knock-outs on both sides of enclosure. |
| | .5 | CSA Type 1 enclosure, flush mounting. |
| 2.3 FRAMES | .1 | Frames are pre-installed into enclosure and complete with 120 VAC-24 VDC power supply, supply terminal blocks and supply card. |
| | .1 | Covered wiring duct. |
| | .2 | Movable protection plate between high and low voltage sections. |
| 2.4 RELAYS | .1 | Single pole, 2-wire. Contacts rated 20 A, up to 347 V, capable of handling 2,000 A inrush current, 1,500 A short circuit current. |
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| 2.4 RELAYS
(Cont'd) | .2 | Coil rated for 30 V half-wave rectified AC. |
| | .3 | Certified to make or break under full rated load. |
| | .4 | Mounting base to secure relay to frame of relay panel. |
| | .5 | Fully enclosed aluminum extrusion housing forming part of relay panel. |
| 2.5 RELAY PANELS | .1 | Separate enclosures for high voltage and communication wiring. |
| | .2 | Manual override switch to set all relays to the ON position. |
| 2.6 LOW VOLTAGE
MOMENTARY SWITCH | .1 | Complete with low voltage push button switch, four position backplate, and single cover plate. |
| | .2 | Momentary Switches shall not be wired to switch the AC power line nor be wired directly to any lighting ballasts or any other lighting end device. Momentary Switches shall only be wired to the controller in the relay panel through a two (2) conductor low voltage cable that meets the following specifications: 16AWG/2, plenum rated, FT6. |
| | .3 | Momentary Switch Groupings: The set of relays that are controlled by a given Momentary Switch shall be configurable through software and shall not require any manual wiring. The system shall allow for relays to be added or removed from given Momentary Switch group through web software. |
| | .4 | Dynamic Duration: All commands sent from the Momentary Switch shall expire after a specified time period. The duration of this time period shall be programmable, based on the time of day that the Momentary Switch is activated. This will allow for the time duration to differ at various times of day. Each momentary switch can have a different dynamic duration. |
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2.6 LOW VOLTAGE MOMENTARY SWITCH (Cont'd)	.5	Momentary Switch Functionality: Momentary Switches shall provide one touch on/off functionality.
2.7 CENTRAL CONTROL	.1	All operating parameters of the lighting control system shall be configured from the controller keypad inside the panel enclosure.
2.8 SYSTEM REQUIREMENTS	.1	<p>Emergency Default: The lighting control system and lighting end devices must revert to a safe and acceptable default state in the event of a loss of power situation. In order for the default state to be considered safe and acceptable it must meet the following specifications:</p> <p>.1 Loss of Power to Lighting Relays: All relays being used for lighting control must default to the closed (on) position the instant that power is lost to their corresponding lighting circuit. Relays must remain in the closed (on) state until the supply of power is resumed, at which point all relays are to continue to remain in the closed (on) position until commanded otherwise.</p> <p>.2 Loss of Power to the Lighting Control Panels: All lighting control panels are to be supplied with power from non-emergency circuits. In the event that power is lost to the lighting control panel, all of the lighting relays and ballasts that are connected to it shall revert to the full power (on) state and remain in this state until power is restored and they are commanded to otherwise.</p> <p>.3 The default settings of all lighting control equipment and lighting relays shall not be capable of being modified through either a manual or software provision by the user of the lighting control system.</p>
	.2	System Clock: The time clock of the lighting control system shall be synchronized to internet standard time.
	.3	Time Scheduling: The daily power consumption cycle of each fixture shall be regulated by a programmable scheduling routine.

2.8 SYSTEM
REQUIREMENTS
(Cont'd)

- .4 Zoning: The system shall be capable of configuring zones via software and avert the need to re-wire certain power distribution circuitry and lighting equipment as tenancy patterns change. The following zones shall be programmed into the system:
 - .1 Zone 1: Ground floor common/admin/services areas and main corridor.
 - .2 Zone 2: Second floor Admin/Offices area and main corridor.
- .5 System Programming: The building lighting control system shall be programmed to switch "off" all controlled lights within a zone at an adjustable preset time. After this time, the activation of the low voltage momentary master switch within a zone shall cause all the lighting within the same zone to be switched "on" for an adjustable pre-set length of time. The program shall energize all of the lighting circuits (relays) at an adjustable pre-set time.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Install system and components in accordance with manufacturer's instructions.
- .2 Install low voltage switches as shown on drawings and connect to relay panel controller.

3.2 FIELD QUALITY
CONTROL

- .1 On completion of installation, manufacturer representative shall be notified to carry out site inspection and report any inconsistencies to the Departmental Representative. Corrections are to be implemented to comply with manufacturer's report.