

GE TLC Softwired Contactor™ Guideform Specification

If you have any questions at all regarding this specification, please contact your local GE Lighting Control representative, or call the GE Lighting Control Applications group at **(877) 584-2685**.

Thank you for allowing us to help with your project.

SECTION 16xxx - LIGHTING CONTROL SYSTEM

PART 1 - General

1.01 INTRODUCTION

The work covered in this section is subject to all of the requirements in the General Conditions of the Specifications.

Contractor shall coordinate all of the work in this section with all of the trades covered in other sections of the specification to provide a complete and operable system.

1.02 DESCRIPTION OF WORK

Extent of lighting control system work is indicated by drawings and by the requirements of this section. It is defined to include, but not by way of limitation:

1. Low voltage switching system with Softwired Contactor panels and associated low voltage switches.
2. **(Option)** Occupancy sensors
3. **(Option)** Daylighting Controls

Types of lighting control equipment and wiring specified in this section include the following:

Low Voltage Softwired Contactor Relay Panels
(Option) Low Voltage Switches and Plates
(Option) Low Voltage Occupancy Sensors
(Option) Daylighting Controls

Requirements are indicated elsewhere in these specifications for work including, but not limited to, raceways and electrical boxes and fitting required for installation on control equipment and wiring.

1.03 QUALITY ASSURANCE

Manufacturers: Firms regularly engaged in manufacture of lighting control equipment and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.

Component Pretesting: All components and assemblies are to be factory pretested and burned-in prior to installation.

System Support: Factory applications engineers shall be available for telephone support.

NEC Compliance: Comply to NEC as applicable to electrical wiring work.

NEMA Compliance: Comply with applicable portions of NEMA standards pertaining to types of electrical equipment and enclosures.

UL Approvals: Remote panels are to be UL listed under UL 916 Energy Management Equipment.

FCC Emissions: All assemblies are to be in compliance with FCC emissions Standards specified in Part 15 Subpart J for Class A application.

1.04 SUBMITTALS

Product Data: Submit manufacturer's data on lighting control system and components.

Shop Drawings: Submit dimension drawings of all lighting control system components and accessories.

One Line Diagram: Submit a one line diagram of the system configuration proposed if it differs from that illustrated in the riser diagram included in these specifications.

Typical Wiring Diagrams: Submit typical wiring diagrams for all components including, but not limited to, relay panels, relays, low voltage switches, occupancy sensors and daylighting controls.

PART 2 - MATERIALS AND COMPONENTS

2.01 - Softwired Contactor Relay Panels

A. System Description

1. The Softwired Contactor Relay Panels shall be modular, each with an interior Softwiring Control Module (SCM) capable of the following functions:
 - a. Softwiring Groups

- i. The SCM shall allow any group of relays within the panel to be associated (“softwired”) to a Channel using the following procedure:
 - Step 1: **Press and hold the Channel Push Button for several seconds.** The Channel LED and the LEDs for relays currently controlled by that input will begin to flash.
 - Step 2: **Select the relays to be controlled.** The LED for each relay “softwired” to the Channel selected will be flashing ON/OFF. Press the associated Relay Control button to add/delete that relay to/from the group.
 - Step 3: **Press the Channel Push Button again.** The LEDs will stop flashing and the Channel Push Button and associated switch inputs will now control the relays selected.
 - ii. Turning a Channel ON/OFF will sequence all of the relays within that group ON/OFF individually.
 - b. Controlling a Softwired Group
 - i. Each Channel shall have an associated push-button within the panel to toggle the Channel ON/OFF.
 - ii. Each Channel shall also have two separate switch or dry contact inputs that will allow the channel to be controlled remotely.
 - iii. The Channel shall respond to the last input.
 - iv. The unit shall allow a “Master Channel” to be configured to control several of the above Channels by simply including all of the relays of these “Sub Channels” within the Master.
 - c. Group Status
 - i. Each Channel push-button shall include a LED status indication. The LED will be ON whenever all of the relays within the Channel group are ON; and shall go OFF when all of the relays within the group go OFF.
 - ii. Each Channel shall also have an associated dry contact closure of pilot contact which tracks the LED operation described above.
 - d. Controlling an Individual Relay
 - i. Each relay shall have an associated control button with LED status indication mounted within the low voltage section of the panel.
2. The relay panels shall be mounted in electrical closets as indicated on the drawings.
3. **(Optional)** The panels shall provide a mounting bracket for the addition of photosensor control modules or other low voltage control devices. These devices shall be totally compatible with the manual operation of the low voltage switches and occupancy sensors; and, in the event of a failure, the switches and occupancy sensors shall continue to operate to provide channel control.

B. Hardware Features

1. Modular Relay Panels shall be UL listed and consist of the following:
 - a. Tub: Empty NEMA 1 enclosure.
 - b. Interior: Bracket and intelligence board backplane with pre-mounted GE RR7P3 relays.
 - c. Power Supply: Transformer assembly with two 40VA transformers.
 - d. Cover: **(Specify)** Surface or Flush with captive screws in a hinged, lockable configuration.
 - e. Accessory bracket: **(Option)** Optional bracket for mounting accessory low voltage controls.
2. The 12-relay interior shall have four Channels, the 24 shall have eight Channels; and the 36 and 48 relay panels, sixteen.
3. Each Channel shall have an individual push-button with LED status indication. When all relays in the group are ON, the LED will go ON; when all are turned OFF, the LED will go OFF.
4. Overlapping Channels shall be allowed, and the Channel status will be annunciated appropriately.
5. Each Channel shall also have two separate switch or dry control contact inputs. These shall accept either 2 or 3-wire, maintained or momentary inputs. They shall also accept a 2-wire toggling input.
6. The Channel inputs shall support remote, Class 2(P) #20AWG switchlegs of up to 1000 ft.
7. Each Channel shall also have an associated 1 amp, 30VDC isolated contact which may be used for status feedback or pilot light control.
8. Screw terminations will be provided for all contractor wiring connections.
9. Each relay shall have an individual control button with LED status indication.
10. The control module shall use EEPROM to record the Channel Softwiring assignments and the current status of all relays thus insuring a 40 year backup of information in the event of a power failure. Systems that require a chargeable battery with less than 10 year's life shall not be allowed.
11. The unit shall provide LED status indication of the power supply.
12. Access to 24VAC and 24 V rectified power for accessory devices shall be provided within the panel.

C. Approved Manufacturers

1. GE or approved equal.

Note: The contractor shall be completely responsible for providing a system which meets this specification in its entirety. All deviations from this specification must be listed and individually signed off by the consultant.

2. GE TLC Catalog Numbers

- a. Low Voltage Softwired Contactor Relay Panel:
Tubs: RTUB12, RTUB24, RTUB48
Covers: RCOV12xxx, RCOV24xxx, RCOV48xxx
Interiors: RINTER1212SC, RINTER2424SC, RINTER3648SC,
RINTER4848SC
Relays: RR7P3, RR7P
Power Supplies: RPWR115, RPWR277

2.02 – Low Voltage Switching Components

A. Description

- 1. The Low Voltage Switching Components shall consist of low voltage switches, occupancy sensors and/or photocells, as well as their associated wiring.
- 2. Low voltage switches, occupancy sensors, and/or photocells shall be mounted in the spaces as indicated on the Reflected Ceiling Plans. Low voltage wiring from the switches and sensors to the relay panel shall be CLASS 2 or CLASS 2P (plenum rated) as required by the National Electrical Code and local standards. Each low voltage wire shall be labeled with the channel letter (A-P) at each switch or sensor. Use only properly color coded, stranded #20 AWG (or larger) wire as indicated on the drawings. All relays and switches shall be tested after installation to confirm proper operation and the loads recorded on the directory card in each panel.

B. Hardware Features

1. Switches/Plates

- a. Provide Specification Grade standard, pilot, or locator configuration momentary push-button type switches as shown on the plans for overriding the relays.
- b. Provide matched Specification Grade plates of materials and colors as shown on the drawings.

2. Occupancy Sensors

- a. General

All sensors shall be directly compatible with the modular relay panels described above and shall wire (Class 2 or 2P wiring) directly to the Channel inputs without requiring auxiliary components or devices above the ceiling.

3. Photocells

General

Each photocontrol point shall consist of an architecturally compatible sensor mounted in the appropriate location for measuring the available daylighting. Each sensor will have a separate control/calibration module mounted in the relay panel enclosure. The sensor shall connect to the control/calibration unit via a single 20/4 shielded conductor with a maximum distance of 500 ft. The control unit shall be powered by 24 VAC.

C. Approved Manufacturers

1. GE or approved equal.

Note: *The contractor shall be completely responsible for providing a system which meets this specification in its entirety. All deviations from this specification must be listed and individually signed off by the consultant.*

2. GE TLC Catalog Numbers

- a. Switches and Plates
Pushbutton type: RS2-xxx, RP2-xxx, RMP2-35
Toggle type: GE5935-xG, xx07x
- b. Occupancy Sensors
RSENSOR-1, RSENSOR-2, RSENSOR-H
- c. Photocells
Control/Calibration Unit: RPCON or RPCON3-OUT
Sensors: RPSEN-IN, RPSEN-OUT, RPSEN-ATR, RPSEN-SKY or RPSEN3-OUT
- d. Wire
Switches: RSWIRE-x, RSWIRE-xP (plenum rated)
Remote Mount Relays: RRWIRE-x, RRWIRE-xP (plenum)
Occupancy Sensors: ROSWIRE-x, ROSWIRE-xP (plenum)