



SMALL COMMERCIAL BUILDINGS

Lighting Control & Design • Application Guide



AUTOMATIC LIGHTING CONTROLS

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Many state energy codes allow an automatic shut-off of lighting through a "time switch". This time switch approach is usually considered to be an inexpensive method of complying to the shut-off requirements for lighting.

We recommend using the GR 2400 relay panel or the Blue Box (GR 1400) panel. Specify one relay per lighting circuit. Groups of relays may be "zoned" into areas up to 5000 ft² (depending on code requirements). What has proven successful is the use of physical boundaries such as walls and corridors to demark the "zones" of lighting.

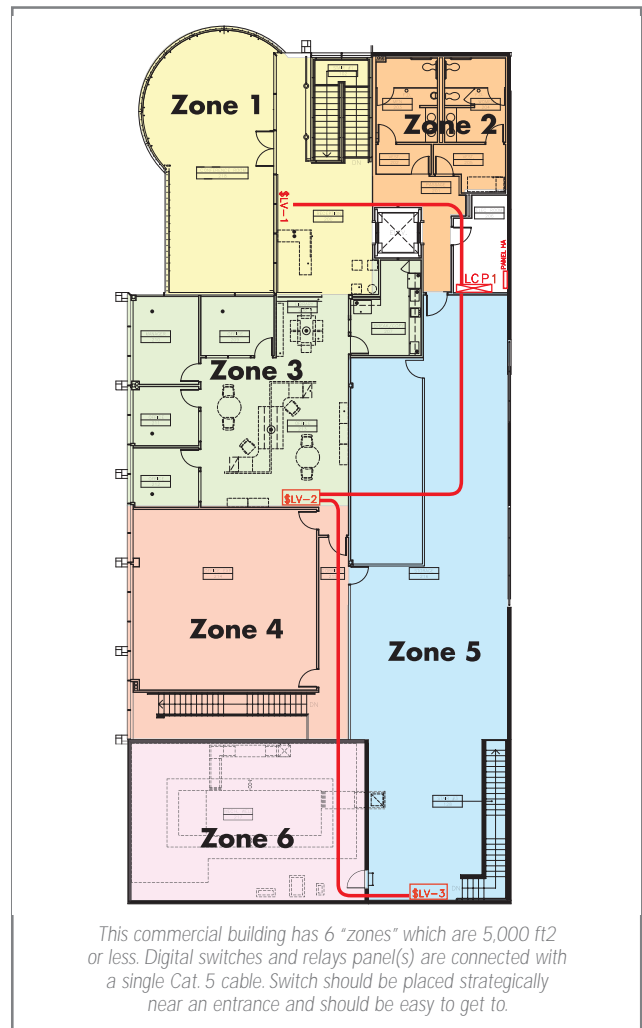
Each button of the Chelsea digital switch may be considered an "override switching device".

After normal business hours the Chelsea Digital Switch can extend lighting for programmable timed duration.

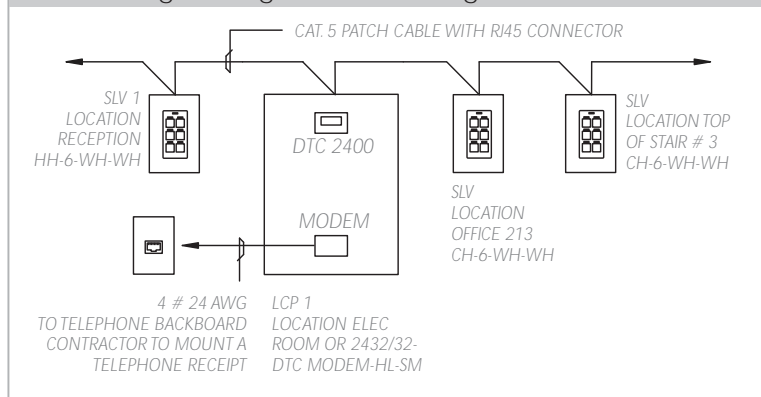
Typical Wording

If an automatic time switch control device is installed, it shall incorporate an override switching device that:

- Is readily accessible
- Is located so that a person using the device can see the lights or the area controlled by that switch, or so that the area being lit is annunciated
- Is manually operated;
- Allows the lighting to remain on for no more than two hours when an override is initiated
- Controls an area not exceeding 5,000 square feet.



Low Voltage - Single Line Drawing



Templates/Schedules

ID 1
Part #: CH-6-WH-WH

Location Reception

| Button | Name | Function | Zones Controlled | Color | Line 1 | Line 2 |
|--------|----------|----------|------------------|-------|--------|----------|
| 1 | BUTTON 1 | Dn Mode | LCP I21 | White | ZONE 1 | OVERRIDE |
| 2 | BUTTON 2 | Dn Mode | LCP I22 | White | ZONE 2 | OVERRIDE |
| 3 | BUTTON 3 | Dn Mode | LCP I23 | White | ZONE 3 | OVERRIDE |
| 4 | BUTTON 4 | Dn Mode | LCP I24 | White | ZONE 4 | OVERRIDE |
| 5 | BUTTON 5 | Dn Mode | LCP I25 | White | ZONE 5 | OVERRIDE |
| 6 | BUTTON 6 | Dn Mode | LCP I26 | White | ZONE 6 | OVERRIDE |

ID LCP 1
Location Elec Room
Supply Circuits Voltage: 120V Normal

| Relay | Line Feed | Zone | Type | Voltage | Source | Description | Relay | Line Feed | Zone | Type | Voltage | Source | Description |
|-------|-----------|------|------|---------|--------|----------------|-------|-----------|------|------|---------|--------|--------------|
| 1 | HA-1 | Z1 | NC | 120V | Normal | Lobby Down Lts | 2 | HA-2 | Z2 | NC | 120V | Normal | Mens Room |
| 3 | HA-3 | Z1 | NC | 120V | Normal | Lobby Track | 4 | HA-4 | Z2 | NC | 120V | Normal | Womens Room |
| 5 | HA-5 | Z1 | NC | 120V | Normal | Reception | 6 | HA-6 | Z2 | NC | 120V | Normal | Kitchen |
| 7 | HA-7 | Z1 | NC | 120V | Normal | Hallway | 8 | HA-8 | Z2 | NC | 120V | Normal | Hallway |
| 9 | HA-9 | Z1 | NC | 120V | Normal | Entry / Stairs | 10 | HA-10 | Z4 | NC | 120V | Normal | Strip Lights |
| 11 | HA-11 | Z3 | NC | 120V | Normal | Meeting Rm | 12 | HA-12 | Z4 | NC | 120V | Normal | Strip Lights |
| 13 | HA-13 | Z3 | NC | 120V | Normal | Offices | 14 | HA-14 | Z4 | NC | 120V | Normal | Strip Lights |
| 15 | HA-15 | Z3 | NC | 120V | Normal | Offices | 16 | HA-16 | Z4 | NC | 120V | Normal | Strip Lights |
| 17 | HA-17 | Z3 | NC | 120V | Normal | Hallway | 18 | HA-18 | Z6 | NC | 120V | Normal | Track Lights |
| 19 | HA-19 | Z5 | NC | 120V | Normal | Strip Lights | 20 | HA-20 | Z6 | NC | 120V | Normal | Strip Lights |
| 21 | HA-21 | Z5 | NC | 120V | Normal | Strip Lights | 22 | HA-22 | Z6 | NC | 120V | Normal | Task Lights |
| 23 | HA-23 | Z5 | NC | 120V | Normal | Strip Lights | 24 | HA-24 | Z6 | NC | 120V | Normal | Task Lights |
| 25 | HA-25 | Z5 | NC | 120V | Normal | Strip Lights | 26 | -34 | N/A | NC | 120V | Normal | Spare |
| 27 | - | N/A | NC | 120V | Normal | Spare | 28 | - | N/A | NC | 120V | Normal | Spare |
| 29 | - | N/A | NC | 120V | Normal | Spare | 30 | - | N/A | NC | 120V | Normal | Spare |
| 31 | - | N/A | NC | 120V | Normal | Spare | 32 | - | N/A | NC | 120V | Normal | Spare |

Part #: GR 2432/32-DTC MODEM-HL-SM
Enclosure Dimensions: 25.5" H x 20" W x 6" D
NEMA Rating: 1

| Zone | Zone Name | Zone | Zone Name |
|------|-----------|------|-----------|
| Z1 | Zone 1 | Z2 | Zone 2 |
| Z3 | Zone 3 | Z4 | Zone 4 |
| Z5 | Zone 5 | Z6 | Zone 6 |
| Z7 | Not Used | Z8 | Not Used |

Basic System

This single line drawing shows the building on the previous page. Three switches with six buttons each (one zone per button), and a relay panel.

Up to 128 relay panels or switches are may be linked together with Cat. 5 patch cable with RJ45 connectors.

Only one panel is required with a clock and modem. Additional panels would be "slave" panels (no clock or modem).

LC&D Unity™ Lighting Control Software allows system wide access locally (at the DTC clock), and remotely (serial or dial-up connection).

Templates/Schedules

The switch schedule and panel schedules to the right were generated using Unity™ Lighting Control Software available at our website at no cost.

Switch schedule shows each button and what relays or zones are controlled (in this case they may only turn lights on and not off).

The panel schedule shows information for each relay:

- Relay line feed
- Relay voltage
- What zone (if any) the relay is in
- relay load description

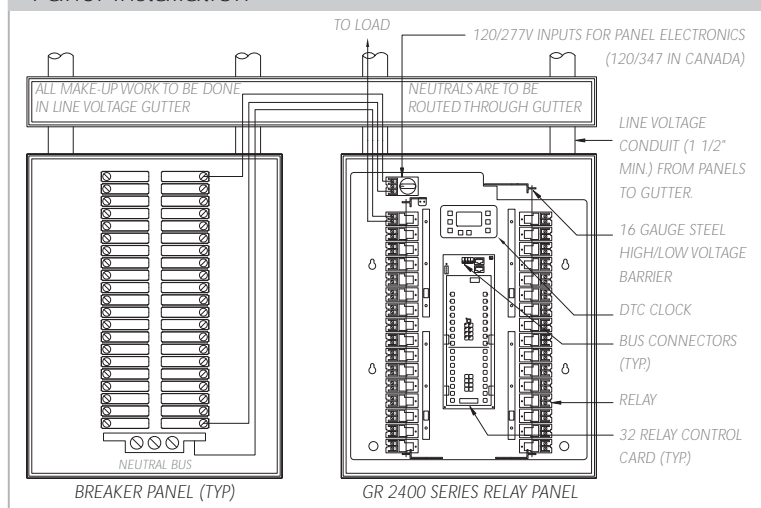
The bottom right shows the zone names (if any) for that relay panel. The bottom left shows enclosure information and the part number.

Technical Support

LC&D recommends the following products for a basic commercial system:

- GR 2400™ relay panel
- The Blue Box™ relay panel
- Chelsea digital switch
- Outdoor photocell

Panel Installation



CUSTOMER SATISFACTION

Customer satisfaction is our #1 concern. It is a privilege to be considered for your project, and we prove it by offering support for every one of our customers that no competitor will ever match.

Each LC&D lighting control system comes with free dial-up programming for the life of the system. This is especially valuable to store owners who are often too busy to dial into stores and do their own schedule changes.

Our Technical Support department is just a phone call away to change seasonal schedules, adjust temperature settings, run diagnostics and more – all free of cost. LC&D systems are remotely accessed by our expert technicians using UNITY software to dial into outlets, and require no in-store programming.

We are always on stand-by to assist with all your needs. Our Engineering Assistance Department is available to assist the design process with general advice, best practice methods for code compliance, and/or complete CAD drawings.

We'll even do a free energy analysis of your existing lighting control system to help you determine whether or not you are getting maximum benefits.

Lighting Control & Design offers 24/7/365 support. Call us at 800-345-4448 to get the answers to your questions today.

LIGHTING CONTROL & DESIGN

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