LightSweep - Lighting Control System

Components and Applications
What is Lighting Controls

Lighting control is an ideal solution to ensure the comfort of residents, tenants, consumers, or employees.

Lighting control represents any device, group of devices or systems that turn lights ON/OFF, change light level, or create scenes.
### LightSweep™ modular control solution

<table>
<thead>
<tr>
<th>Modularity</th>
<th>Easier to meet specification, potentially improving price competitiveness (avoids “over spec”); CAT5 connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Design</td>
<td>Snap-in modules enable easy factory or field installation, quick field replacement, and simple upgrades. Easy to program in standalone configuration</td>
</tr>
<tr>
<td>Customization</td>
<td>Switch, dim, schedules and sensors allow for complete control solutions. Create custom zones, scenes, and constraints at any time, resulting in enhance flexibility (and value) to end user</td>
</tr>
<tr>
<td>BACnet</td>
<td>Easier to integrate with 3rd party products (e.g., field devices, wireless networks, BMS). Provides software and webserver connectivity.</td>
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</tbody>
</table>
LightSweep - ON/OFF and Dimming Control

The dimming module allows for easy dimming control of 0 – 10V dimming fixtures. Each module has 4 channels and each channel can control up to 50 drivers. Multiple modules can be added for unlimited expandability. Fixtures with 0-10V leads wired together form dimming zones. Dimming zones can be the same or different from how the fixtures are connected to the power circuit.
System Components

Relay Modules – CLCRM6/CLCRMS6
Each controls 6 relays.
Pushbuttons for local override
LED status indicator.
available with individual switch inputs or
without.

Group Switch Module – CLCGSM8
Eight programmable inputs – configurable as
Switch or Sensor (photocell or occupancy sensor).
Also provides power to all components in the panel
and attached to the network.

Power Injector - CLCPIM
Provides power to all components in the panel and
on the network when no programmable inputs are
needed.

Dimming Module – CLCDIM4
Four dimming channels – using 0-10V controls. Each
channel can sync up to 25 mA (50 ballasts).
Four analog inputs for photocells – each linked to its
own output.
Can be programmed to dim based on a single sensor
with different offsets for each channel or to create
scenes operated by programmable switch, sensors or
time schedules.
Can be installed in the panel or remote connected with
CAT5.

Scheduler - CLCDLS
Eight schedules and 16 lighting groups.
Allows to program the entire system –
sensors, switches, timers, Astronomic
clock, network troubleshooting,
remote control.
Can be installed in the panel or remote
on CAT5.

Programmable Switches - CLCSWTx
Soft touch switches can be field
configured as 1, 2, 4 or 8 buttons. Each
button can control any
configuration of ON/OFF relays and
dimming channels, allowing to create
very complex control scenes.
As the face plate is transparent, the
switch color can be changed easily by
typing a new label.

Sensors – Photocells and Occupancy
sensors
Are used to create a fully functional
and automated system.
Sensors connected to the system can
create different scenarios for different
times of day.
System Components

BACnet Controller – CLCBnet
The CLCBnet controller allows to expand the system, to add front-end control using custom graphics or interface to BMS via the BACnet protocol. It is a fully programmable controller.

Touchscreen – CLCTSI-x. Requires the CLCBnet controller.
The CLCTSI screen is used as an interface with custom graphics. The display can host multiple screens with link buttons for navigation.
- CLCTSI-1 – acts as a switch interface –scene controls: ON, OFF, dimming, pre-sets.
- CLCTSI-2 – adds the Scheduling capabilities – user can change system schedules
- CLCTSI-3 – runs a web server module, all graphic screens are accessible through a web browser.
Software

- The Basic Software – Navigator – is used for system setup and administration:
  - associated inputs and outputs
  - create trigger points – photocell, schedules, switches, occupancy sensors etc.
  - Program or change time schedules
  - Override relays, groups, dimming outputs.
- It allows to create custom programs setup alarms, events and trends, hardware troubleshooting.

The web server allows to monitor and control the system using the Internet Explorer or any other browsers.

Using custom graphic screens, can provide an easy to use lighting control display that can be launched on a PC, iPad or iPhone device. This application allows to turn relays ON/OFF, call preset scenes or change time schedules.
Stand-alone office controls

Office Controls:
- Occupancy/Vacancy sensors – motion based controls
- Photocell for daylight harvesting using the 0-10V dimming controls
- Programmable switch for lighting scene selection
CLCP06 – Corridor/Office Controller

- CAT5 to other panels
- Occupancy sensors
- Photocell
- 0-10V Dimming Channels
- CAT5
- Local control switch
- CAT5 to other panels

Dimming based on motion or light level.
CLCP06 – Classroom Controller

From Power Circuit 120/277/347V

To Lamp Load

ON/OFF based on motion and local control

Local control switch

CAT5

CAT5 to other panels
Large office buildings are configured as an integrated system with computer interface using WEB browsers and/or integrated to BMS. A larger panel on each floor – installed in electrical rooms – controls the core building lighting as corridors, lobbies, large open office spaces. Smaller panels, dimming panels and programmable switch stations are connected with CAT5 to provide local control for smaller offices, conference rooms and multi-purpose rooms. Occupancy sensors and photocells are connected to the system to enhance the control strategy.

- Large Relay panel – in electrical room
- Small panels – CLCP06 – installed in office space
- BACnet network – CAT5/CAT6 – between relay panels on different floors
- CAN bus – CAT5/CAT6 – connecting switch stations dimming modules and small panels.
Retail Space Controls:
- Stand-alone or integrated with BMS:
  - Relay for ON/OFF (open/close hours)
- 0-10V dimming:
  - 50% cleaning and re-stocking
  - 100% customer
  - 80% - Demand Response
- Integration with BMS using BACnet protocol
Industrial and campus applications are using BACnet UDP IP communication, which allows remote access and communication between panels using the IT network infrastructure. Panels can be programmed to share information – for example, an exterior photocell information can be shared to all panels controlling site lighting - and can operate without the need of a computer front-end. System integration to BMS provides increased energy savings.
System Architecture – small to medium size, stand-alone

The lighting control system is programmed using the touchscreen scheduler/programmer.

- Occupancy Sensor
- Switch Stations
- Photocell
- To circuit breaker
- 0-10V dimming
- 120 V ON/OFF via relay control
The WEB software can be installed on a Server computer. Remote clients will have access to their pages – based on the permissions assigned.

Install a BACnet controller (CLCBnet) for each section – it will provide TCP/IP communication and extend the network. Total length of the CAN bus in each section cannot exceed 3,000 ft and shall be daisy-chain. Maximum number of relay modules per section –is 40 (this means up to 5 panels with 48 relays each).
Lighting Control IT Network Configuration

- Server with GELC Software
- WEB Server
- TCP/IP
- UDP/IP
- INTRANET
- UDP Port: 47808
- LightSweep Panels
- BACNet ID
- CLCBnet Controllers
- VPN
Services Provided by GE Team

Roles and Responsibilities

- Provide Application Support
- Prepare Quotes and Submittal Drawings
- Document Job Specific O & M Manuals
- Provide Field Services
- Provide Software Services
- Conduct Training

- Resources:
  - TLCSupport@ge.com
  - Phone: 877-584-2685
### Relay Panel

<table>
<thead>
<tr>
<th>Interior Capacity</th>
<th>Installed Options</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Switch Inputs</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N – (no inputs)</td>
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<tr>
<td></td>
<td>S – (inputs)</td>
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<td>INTR12</td>
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<td>INTR24</td>
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<td></td>
<td>INTR36</td>
</tr>
<tr>
<td></td>
<td>INTR48</td>
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**Part Number Example:**

INTR24-S18-G01S

### Dimming Panel

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<tr>
<td></td>
<td>Dim*</td>
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<td></td>
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<tr>
<td></td>
<td>INTD12</td>
</tr>
<tr>
<td></td>
<td>INTD24</td>
</tr>
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</table>

**Part Number Example:**

INTD24-000-005S
Panel Components

CLCXMLV
or
CLCXML347

1 + 1 + 1

INTR12-
INTR24-
INTR36-
INTR48-

CLCTUB12
CLCTUB24
CLCTUB36
CLCTUB48

CLCCOV12S
CLCCOV24S
CLCCOV36S
CLCCOV48S
## Interior Configuration – Relay Panel

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<td>Dim*&lt;br&gt;5 (No. mods)</td>
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<tr>
<td>INTD24</td>
<td>BACnet*&lt;br&gt;5</td>
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#### Part Number Example:
INTD24-000-005S

**Touchscreen Display**

**LightSweep Dimming Modules**
current
powered by GE