Today’s modern buildings demand integrated lighting control solutions to work efficiently. Greengate network solutions can be configured for a wide spectrum of applications from individual and open planned offices through to the largest commercial spaces such as shopping centres and airports.

Greengate mission is to provide a range of flexible, cost effective lighting control solutions from simple stand alone sensors to complex intelligent networks delivering up to 70% energy savings.

Based on CANbus technology, Greengate networks feature a fully addressable system with distributed intelligence, flexible wiring strategies and fully programmable software features to deliver a tailored solution for your needs, maximizing energy efficiency through the use of scheduling, occupancy and daylighting strategies.

Greengate Lighting Controls Commitment

- Improves BREEAM & LEED scoring for building sustainability.
- Contributes to energy reduction targets under Climate Change Levy (CCL) and Carbon Reduction Commitment (CRC).
- Qualifies for Enhanced Capital Allowance (ECA) applications.
- Delivers lighting control requirements under UK Building Regs - L2a & L2b and BRE: 498.
Eaton’s Cooper Controls Business

Eaton’s Cooper Controls Business is a specialist lighting controls manufacturer with more than 40 years of operational expertise in the design, supply and support of lighting control systems in the architectural, entertainment and energy saving markets. Our focus is to deliver innovation, reliability and flexibility through our portfolio of industry leading systems including Greengate, iLight, Cogent and Zero 88 Series of products.

Greengate now incorporates UK lighting controls brand ALC. ALC has built a high quality reputation from thousands of UK installations. The name is changing in the UK to bring it in step with our global energy management offering Greengate. The commitment, people and quality remain the same.

Eaton & Cooper United

Our combined strength enables us to look at the world through a larger lens, to see more possibilities and better opportunities. Enabling you to more efficiently manage energy consumption, increase uptime and lower costs - while keeping personnel, equipment and data safe.

Today’s Eaton is building on a legacy of innovation in product design and manufacturing processes to bring you holistic solutions to your most critical power management challenges. We’re drawing a history of over 100 years of electrical power management expertise to create technology platforms that help accelerate the pace of new construction; modernize aging infrastructure; manage energy consumption; protect people, equipment and data.

We want to work closely with you to understand and solve the challenges you face today and those that may come tomorrow.

Our Product Series

Greengate Series

Global offering of energy management lighting controls for commercial and industrial applications for both the 230V & 110V markets. Now incorporating UK brand ALC Lighting Controls

- Flexible, scaleable lighting control networks
- Occupancy sensors
- Daylight harvesting

www.greengatecontrols.co.uk

iLight Series

Global offering of architectural lighting control systems designed to create stunning visual impact and atmosphere in hospitality, restaurant, retail, residential, commercial & exterior applications.

- Intuitive user interfaces
- Scaleable network with distributed intelligence
- Dimming and switching of all load types

www.ilight.co.uk

Cogent Series

Comprehensive range of single and colour changing LED luminaires including high quality downlights, wall lights, ground lights, flexible & modular strip systems.

- Wide range of LED systems
- Drivers and controls included
- Custom solutions

www.cogentlighting.com

Zero 88 Series

Entertainment lighting control equipment and software for theatrical and performance applications around the world.

- Lighting consoles and dimming racks
- Colour changing LED controls
- Control of moving and effect lighting

www.zero88.com
Strategies for Energy Savings

1. Good Design
To place the right lighting where it is needed, adding local controls and dividing circuits logically to maximize energy efficiency whilst retaining user comfort.

2. Sense Occupation
Use sensors to dim or switch lights with presence or absence detectors when spaces are not always in use.

3. Schedule Intelligently
Build time clock programs by area, floor or building to tune lighting use to a daily or weekly schedule.

4. Integrate Daylight
Mix artificial light with available natural daylight to achieve target light levels through controlled luminance.

Everyone can control costs, go green, stay flexible, increase efficiency, achieve rapid payback & enhance their working environment.

Lighting can account for over 40% of the total energy consumed daily by commercial, industrial and institutional buildings.

Get more from your lighting system and stay ahead of ever more demanding code requirements with four simple steps:
Applications

Offices
Public Spaces
Airports
Stations
Hospitals
Shopping Centres
Libraries
Schools & Universities
Warehouses
Factories
and more...

Spectrum Lighting Control System Architecture

Each floor can be individually commissioned to suit specific project layouts and requirements.

Features of the Greengate Network System

- Each Area Controller has up to 3 Field Bus connections.
- Hours Run information collected per output.
- Any unit of the correct type may be installed in any given location therefore it is not necessary to search for a specific unit required for a given location.
- Emergency test switches connect to any input.
- Emergency test run from keyswitch/time program/front end.

A range of override devices may be connected to any input on any LCM

- Combined Light Sensor, Presence Detector and Intra-red Detector with an ultra-compact form factor
- Computer Override
- Wall Switch Conventional 2 Way & Off
- Emergency Current Sensor
- Emergency Light Sensor

Greengate Series - Product Catalogue 5
Flexible Solutions

Distributed Wiring

Using distributed pluggable or hardwired LCMs can save time, installation and cable costs.

Ideal for suspended ceilings, ceiling rafts and chilled beam applications where the LCMs are placed close to the light fittings to eliminate the need for lengthy home run wiring.

Use 2-part fix LCMs for second fix installation to protect equipment from site loss or damage.

Centralised Wiring

For a traditional centralised wiring strategy use DINrail devices to build into equipment cabinets placing control equipment close to power supplies.

Ideal for retrofit, external lighting, highbay installations, plastered ceilings, historic buildings and where suspended or wall mounted fittings are predominately used.

Build networks between Area Controllers using CANbus or TCP I/P to deliver a comprehensive building wide lighting control solution with optional connectivity to external systems including BMS and AV systems

- Group luminaires and sensors as required for logical working areas.
- Install control switches for local user control.
- Define circulation areas, corridors and stairwells to be held on when the space is occupied.
- Activate controlled luminance to reduce artificial light where there is enough daylight.
- Supports ballast control by 1-10V, DSI and broadcast or full addressable DALI
- Choose dimming or switching strategies for each luminaire.
- Add a PC to monitor and revise configurations entirely in software when changes are needed.
- Activate emergency tests using key switches for security.

Spectrum PC Manager Software
Your choice... distributed, centralised or mixed wiring layouts
DALI Lighting Control System

Benefits of using DALI

- Two way communication with performance information on level, lamp hours and faults.
- Very flexible – every ballast can be individually addressed and can be re-addressed within the loop if new working groups are needed.
- Simplified wiring using mains rated cable.
- Emergency DALI ballasts can be tested without walkthrough tests – this saves operational time and labour especially on large projects.

Addressable DALI LCMs - For ultimate flexibility

Fully addressable LCMs support almost any wiring configuration of the DALI loop. When commissioned, each ballast must be identified and individually addressed and placed in a maximum of 16 groups.

Pre-Addressed DALI LCMs - A simpler installation saving time and money

Building on the principal of a distributed pluggable LCM control system, experience shows that most office layouts can be simplified to support just one conventional fitting (max two ballasts) and/or one emergency lighting fitting per socket. Pre-addressed DALI LCMs are configured with this in mind to deliver substantial savings in time and site installation costs whilst retaining all the advantages of DALI feedback.

Where necessary pre-addressed and fully addressable DALI LCMs may be mixed on the same network to maximise both benefits and savings.

Key to diagram (Opposite)
Showing layout examples for DALI LCMs

AXDN12DH
DINrail Addressable DALI Output, 1 Emergency, 2 Input LCM

AXPL8DH1P
Pluggable Pre-Addressed DALI Output, 1 Emergency, 8 Input LCM

Scene Plate

DALI BUS
Power / DALI
Input Wiring
CAN Field Bus

Recessed Office Luminaire
Set in suspended ceiling
Suspended Office Luminaire
On solid ceiling
Recessed Dimmable Luminaires
Recessed Emergency Luminaires
Suspended Dimmable Luminaires
Suspended Emergency Luminaires
Combined PIR, Daylight and I/R Sensor
## Spectrum Network Components

### Management

**Spectrum Manager Software Package.**
Spectrum Manager software may be added to any Greengate Spectrum control system. When used by facilities managers or maintenance staff the intuitive graphical layout of the lighting system by floor and area enables efficient management and monitoring of the complete installation including emergency testing.

Layout views are built on imported building floor plans and may be layered to show features such as devices, sensors, connections and their relationships.

**AX-PCSM**

### Area Controller

**A1AC31SH**

All Spectrum LCM systems require at least one area control unit for the configuration and management of LCM devices. Each Area Controller distributes a field bus to allow connection of LCMs.

- **Dimensions:** 300 x 280 x 55mm (L x W x H)
- **Weight:** 2.25Kg

### Hardwired Lighting Control Module

**AXHW48ATDH**

**4 Outputs, 4 Emergency Outputs, 8 Inputs Hardwired Lighting Control Module**
Spectrum hardwired LCMs offer 4 individual controlled power connections for use in core areas, corridors and fixed wiring applications using 1-10V, DSI or Broadcast DALI. These units are ideal for use in commercial applications where LCMs are distributed for local connection of light fittings and associated sensors to create a networked building lighting control solution.

- **Dimensions:** 380 x 335 x 61mm (L x W x H)
- **Weight:** 2.8Kg

### Pluggable Lighting Control Modules

**AXPL98ATDH**

**9 Outputs, 8 Inputs Pluggable Lighting Control Module – 2 Part Fixing**
Surface mounted pluggable LCMs have 9 individually configurable and dimmable outputs for 1-10V, DSI or Broadcast DALI. In addition each output has a feed for emergency lighting. These units also have 8 device inputs as standard.

- **Dimensions:** 358 x 320 x 61mm (L x W x H)
- Requires base plate: MTG94PL (Ordered Separately)
- **Weight:** 2.5Kg

**AXPL98ATDM**

**9 Outputs, 8 Inputs Pluggable Lighting Control Module – 1 Part Fixing**
Surface mounted pluggable LCMs have 9 individually configurable and dimmable outputs for 1-10V, DSI or Broadcast DALI. In addition each output has a feed for emergency lighting. These units also have 8 device inputs as standard.

- **Dimensions:** Single Fix Module - 288 x 248 x 50mm (L x W x H)
- **Weight:** 2.5Kg
Pluggable DALI Lighting Control Modules

Pluggable Addressable DALI 9 Output, 8 Input Lighting Control Module - 2 Part Fixing
Pluggable DALI LCM offers all the benefits of the Spectrum Pluggable LCM and distributes a fully addressable DALI Bus across 9 outputs including feedback.

- Dimensions: 358 x 320 x 61mm (L x W x H)
- Requires base plate: MTG94PL (Ordered Separately)
- Weight: 2.5Kg

Pluggable Addressable DALI 9 Output, 8 Input Lighting Control Module - 1 Part
Pluggable DALI LCM offers all the benefits of the Spectrum Pluggable LCM and distributes a fully addressable DALI Bus across 9 outputs including feedback.

- Dimensions: 288 x 248 x 50mm (L x W x H)
- Weight: 2.5Kg

Pluggable Pre-Addressed 9 DALI Output, 8 Input Lighting Control Module - 2 Part Fixing
The Pluggable Pre-Addressed DALI LCM offers all the benefits of the conventional pluggable LCMs and additionally provides pre-addressed DALI over 9 outputs including feedback. With a pre-addressed approach, there is no need to sub-address DALI light fixtures on site, saving significant time and labour. Emergency test from EMPRO ballasts is available via the DALI lines.

- Dimensions: 358 x 320 x 61mm (L x W x H)
- Requires base plate: MTG94PL (Ordered Separately)
- Weight: 2.5Kg

Pluggable Pre-Addressed 9 DALI Output, 8 Input Lighting Control Module - 1 Part Fixing
The Pluggable Pre-Addressed DALI LCM offers all the benefits of the conventional pluggable LCMs and additionally provides pre-addressed DALI over 9 outputs including feedback. With a pre-addressed approach, there is no need to sub-address DALI light fixtures on site, saving significant time and labour. Emergency test from EMPRO ballasts is available via the DALI lines.

- Dimensions: 288 x 248 x 50mm (L x W x H)
- Weight: 2.5Kg
### DINrail Mounted Lighting Control Modules

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Dimensions: 160 x 90 x 58mm (L x W x H)</th>
<th>Weight: 665g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AXDN12DH</strong></td>
<td>DINrail Addressable DALI Output, 1 Emergency, 2 Input Lighting Control Module</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The unit has a single DALI output, providing: ballast detection for up to 64 ballasts, Lamp error signal, Sub-addressing capability, Broadcast addressing capability, Full digital control over the lighting range including off. Fade processing support, Ballast “Persistent Memory” programming. Emergency test from ENPROMO ballasts is available via the DALI lines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AXDN22ATDH</strong></td>
<td>DINrail 2 Output, 1 Emergency, 2 Input Lighting Control Module</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DINrail mounting LCMs have 2 volt free (feed through) individually configurable and dimmable outputs for 1-10V, DSI or Broadcast DALI. In addition 1 volt free (feed through) output is provided for emergency lighting. These units also have 2 sensor inputs as standard.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AXDN40ATDH</strong></td>
<td>DINrail 4 Output, 1 Emergency Lighting Control Module</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This DINrail mounting output module has 4 volt free (feed through) individually configurable and dimmable outputs for 1-10V, DSI or Broadcast DALI. In addition 1 volt free (feed through) output is provided for emergency lighting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AXDN08SH</strong></td>
<td>DINrail 8 Input Lighting Control Module</td>
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<tr>
<td></td>
<td>This input module is available as a standard DINrail mounting device for up to eight separate inputs. Supported inputs include presence, solar and combined sensors including infra-red sensors, wall switches and emergency test switches.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Gear Tray Lighting Control Module

**Gear Tray LCM**
Spectrum Gear Tray LCMs control 2 dimming power circuits using 1-10V, DSI or Broadcast DALI ideal for installation within the fitting. Gear Tray LCMs have 2 sensor inputs as standard.

- **Dimensions:** 261 x 45 x 35mm (L x W x H)
- **Weight:** 573g

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Solo System

**Stand Alone Pluggable Lighting Control Module**
Solo System surface mounted pluggable LCMs are ideal for simple 'stand alone' applications such as a classroom or single office spaces and where there is no requirement for a networked building wide system. Units are delivered pre-configured for rapid installation and connection to eliminate site commissioning.

- **Dimensions:** 368 x 320 x61mm (L x W x H)
- **Requires base plate:** MTG94PL (Ordered Separately)
- **Weight:** 2.5Kg

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Control Panels

**5 Button Control Panel - 4 Scenes & Off**
Spectrum control plates provide the interface between the user and the Lighting Control Module for the selection of pre recorded lighting scenes.

- **Dimensions:** 86 x 86 x 22mm (L x W x D)
- **Weight:** 75g

---

**7 Button Control Panel - 4 Scenes, Off, Raise & Lower**
Spectrum control plates provide the interface between the user and the Lighting Control Module for the selection of pre recorded lighting scenes.

- **Dimensions:** 86 x 86 x 22mm (L x W x D)
- **Weight:** 75g

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Infra-Red Remote Control

**IR Remote Control**
This simple and convenient hand held Infra Red Controller is suitable for use with Spectrum LCM systems where a Combined Sensor (AXCS01SRJ) is provided as a receiver.

- **Dimensions:** 127 x 50 x 22mm (L x W x D)
- **Weight:** 75g (Complete with Batteries)
# Spectrum Network Components

## Sensors

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Features</th>
</tr>
</thead>
</table>
| AXCS01SRJ      | Combined Sensor               | - Occupancy Detector  
- Daylight Measurement  
- Infra-red Receiver  
- Detection: 5m diameter at the working surface at a ceiling height of 2.4m  
- Dimensions: Dia. (front) 49mm, (rear) 39mm. Depth 30mm  
- Weight: 35g                                                                  |
| AXDS01SPL      | External Sensor               | - IP66 rated plastic enclosure  
- Software configurable Threshold and Hysteresis  
- Time Programmable - Operational time software controlled  
- Simple three wire connection to any LCM Input  
- Dimensions - 94 x 65 x 57mm (L x W x H)  
- Weight - 120g                                                               |
| AX-ELS1        | Light Sensor (Tube Mounted)   | - Connects directly to Lamp Tube, T5 and T8 clips supplied  
- Measures lamp light output  
- Supplies information on the condition/health of the lamp | |
| AXLS58SH       | Light Sensor (Housing Mounted)| - Mounts in to a pre-drilled 8.5mm fixing hole  
- Normally Factory Fitted  
- Connects to any Input of any Lighting Control Module  
- Measures lamp light output  
- Supplies information on the condition/health of the lamp | |
| AXLS00SH       | Fluorescent Lamp Current Sensor| - Power feed to an emergency lamp passed through Coil  
- Normally Factory Fitted  
- Connects to any Input of any Lighting Control Module  
- Measures current flow to an emergency lamp.  
- Supplies information on the condition of the emergency power supply | |
| AX-ETCS1       | LED Current Sensor            | - Power feed from Inverter to LED fitting is fed via Sensor  
- Connects to any Input of any Lighting Control Module  
- Measures current flow to an emergency LED fitting  
- Supplies information on the condition of the emergency power supply | |
| AX-ETDS1       | Low Voltage Current Sensor    | - Power feed from Battery to Inversion is fed via the Sensor Coil  
- Connects to any Input of any Lighting Control Module  
- Measures the current used to drive the battery pack  
- Supplies information on the condition of the emergency power supply | |
## Interfaces

**DINrail Bi-directional RS232 Interface Module**

This bi-directional RS232 interface module enables communication with third party equipment compatible with RS232 protocol. 4 additional voltage switchable outputs are featured as well as 2 inputs.

- **Dimensions:** 109 x 90 x 58mm (L x W x H)
- **Weight:** 665g

![AXDN42RS232](image)

**External Sensor Interface Module**

This stand alone external daylight sensor interface module switches artificial lighting when ambient light passes a user-set threshold level. Used in conjunction with the external daylight sensor (AX-ELS1) it is ideal for use in simple non-network applications where the sensor is remotely positioned or difficult to access. Uses include: Carparks, facades, landscape lighting, exterior public lighting, station platforms, loading bays etc.

- **Dimensions:** 109 x 90 x 58mm (L x W x H)
- **Weight:** 270g

![AX-ESIU1](image)

## Accessories

**1 Output, DALI to Trailing Edge 315W Dimmer Module**

This compact 315W dimmer is ideal for use in Spectrum LCM systems where trailing edge dimming loads are included in an overall fluorescent lighting scheme. An LCM dimming channel may be directly connected to this dimmer allowing positioning close to the light fitting.

- **Dimensions:** 153 x 54 x 36mm (L x W x H)
- **Weight:** 137g

![AX-LVD1](image)

**RJ12 Accessories**

- **Coupler:** Easily Extends Standard 5 metre cable to upto 30 metres, one coupler and one cable required for each 5 metres.
- **Doubler:** Enables two Sensors to be plugged into one LCM Input or allows Sensors to be Daisy Chained together.
- **Junction Box:** Enables extension of Spine bus to other areas giving connection points for system setup where one Area Controller is used for multiple Fields or Enables Sensors on different floors to be coupled back to one LCM Input typically in a stair well.

![AX-FFRJ12](image)

![AX-2F1MRJ12](image)

![AX-SPE1](image)
Eaton’s electrical business is a global leader with expertise in power distribution and circuit protection; backup power protection; control and automation; lighting and security; structural solutions and wiring devices; solutions for harsh and hazardous environments; and engineering services. Eaton is positioned through its global solutions to answer today’s most critical electrical power management challenges.

Eaton is a power management company providing energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power. A global technology leader, Eaton acquired Cooper Industries plc in November 2012. The 2012 revenue of the combined companies was $21.8 billion on a pro forma basis. Eaton has approximately 102,000 employees and sells products to customers in more than 175 countries. For more information, visit www.eaton.com.