



Elkay easyDALi

Lighting controls for the building sector

DALI (Digital Addressable Lighting Interface) is a data protocol and transport mechanism that was jointly developed and specified by several manufacturers of lighting equipment. DALI is a testing and control system that offers both flexibility and reliability.

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Introduction

Carbon footprint

Climate change is a serious problem that affects us all. There is now an overwhelming body of scientific evidence that emissions of greenhouse gases are changing the world's climate.

—
01 PIR Timer.
—
02 Ceilingmount
PIR Timer.

Reducing energy consumption therefore not only saves money, but also will reduce our carbon footprint. The new Elkay energy saving range from Elkay provides a cost effective practical step along this important journey.

Backing up the science, the UK government passed the Climate Change Act 2008 which introduces the world's first long-term legally binding framework to tackle climate change. The Act aims to encourage the transition to a low-carbon economy in the UK through legally binding emissions reduction targets.

This is enforced by Energy Performance Directives, which now stipulate key areas for improvement in the energy performance of buildings.

The new Elkay Energy Range gives architects, planners and electrical contractors a broad selection of simple but highly effective solutions to minimise the amount of energy used in all types of commercial and industrial environments.

In a domestic setting, the Elkay Range gives an excellent opportunity to increase style and functionality around the home, whilst making an important contribution to the reduction in our carbon footprint at the same time.

Our products save energy and money from the moment they are installed providing an instant energy saving solution.



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Energy survey

A free, no obligation, energy survey from Elkay has resulted in many business making instant savings on their energy and reduced energy costs.

Businesses of all sizes have never been more aware of the need to reduce energy consumption. Mention the spiralling costs of fuel – all of which contribute to make reducing energy consumption a necessity rather than a luxury.

But where do you begin? How can you be sure you're cutting costs not corners? After all you're in business to make a profit and cannot afford to cut energy consumption at the expense of running your business.

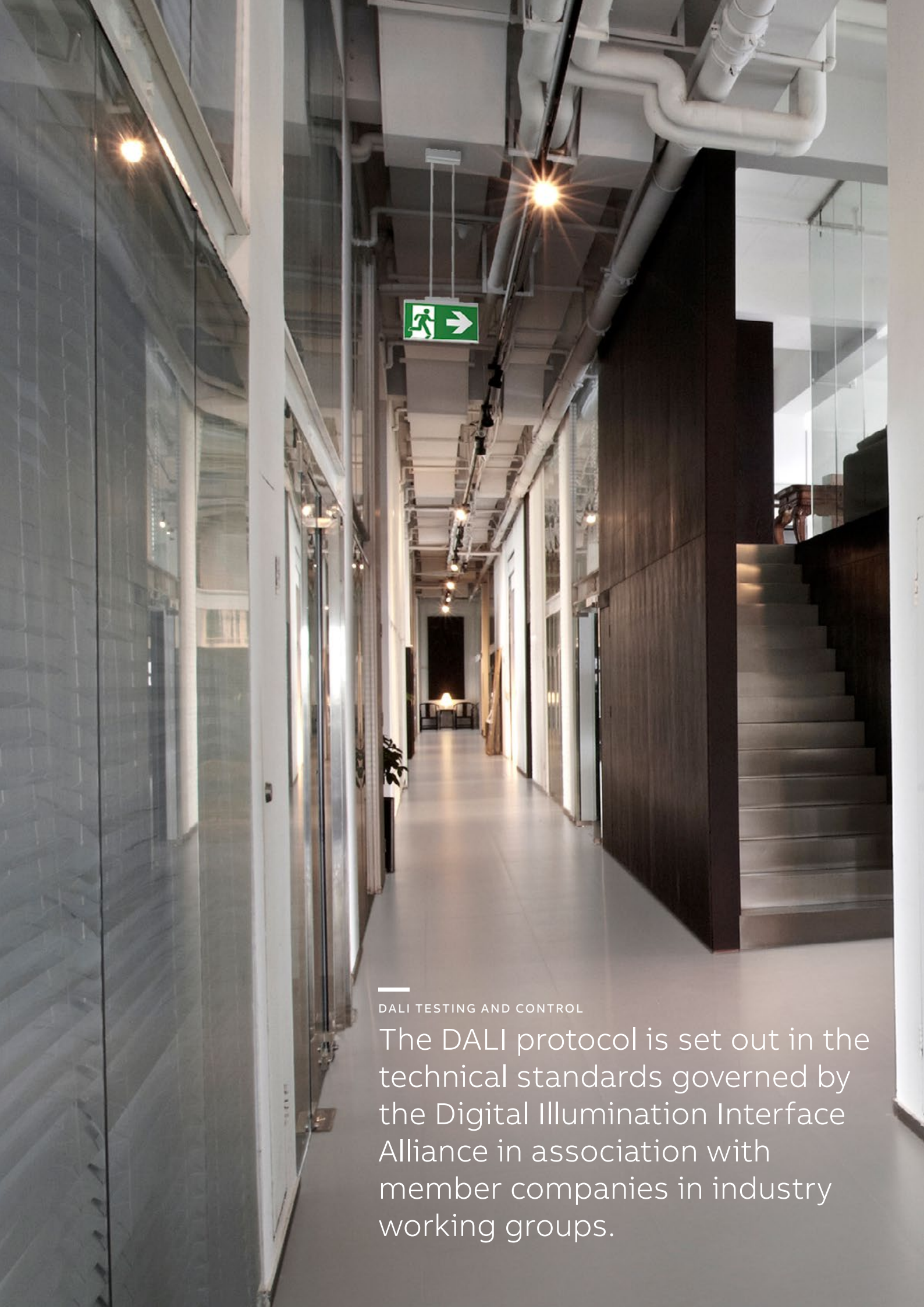
This is where Elkay can help. Decades of experience in energy management have given us the expertise to come into your organisation and carry out a complete audit of your energy expenditure.

When we undertake an Energy Survey, we'll tell you not only where you are wasting energy but recommend practical steps, by utilising the Elkay Energy Range, to reduce waste and tell you exactly how much you'll save - in terms of energy output and money.

It's a service which many blue-chip companies have already taken advantage of - and the savings can be staggering.

To reinforce these findings, one nationally known UK retailer has cut their energy bill for lighting in back room areas by a massive 87 percent at just one of their branches after implementing the recommendations made in their energy survey.

To find out more about Elkay Energy Surveys or to arrange one for your business call 01675 468222 or email lv.customerservice@gb.abb.com



DALI TESTING AND CONTROL

The DALI protocol is set out in the technical standards governed by the Digital Illumination Interface Alliance in association with member companies in industry working groups.

DALI

What is DALI?

DALI (Digital Addressable Lighting Interface) is a data protocol and transport mechanism that was jointly developed and specified by several manufacturers of lighting equipment.

It is essentially a network connected by a pair of cables and powered by a power supply. The common platform of DALI enables equipment from different manufacturers to be connected together. ABB's DALI is designed to work with all DALI-compliant equipment displaying the DALI logo.

Put simply, DALI (digital addressable lighting interface) is a two-way communication system that brings digital technology to lighting.

An international standard for communication, DALI allows individual ballasts to "talk" to the user and allows the user to "talk" back via DALI controllers.



DALI is a testing and control system that offers both flexibility and reliability.

Bus wiring

In terms of wiring a DALI system also includes the bus wires that are used to connect together the DALI terminals of the various devices in the system:

- Standard 2-core cable (1.5mm²)
- 5-core cable possible to enable power and data
- Polarity free & free wiring topology
- maximum 64 devices per subnet (Hub/Routers)
- maximum 300m cabling
- maximum 250mA device consumption

Control devices

Control devices can provide information to other control devices and can send commands to control gear. Input devices are a type or a part of a control device that provides some information. Application controllers are also a type or a part of a control device and are the decision makers in a DALI system – for example, they can send commands to control gear to modify the lighting or test an emergency lighting system.

Bus power supplies

At least one bus power supply must be present in a DALI system. This is necessary to allow both communications on the bus, as well as to power any bus-powered devices. The bus power supply does not need to be a separate unit – it could be part of another device such as a DALI control unit or a KNX DALI gateway.

ABB has 3 different power supply options. The central control DALI Touch screen panel, the Elkay power supply or the KNX DALI gateway. Only one power supply is needed in each network.

Control gear

Control gear usually contains the power control circuit to drive lamps, or some other type of output such as on/off switching.

Why use DALi?

Elkay can support Part L

Part L of the building regulations will force the issue of lighting control in commercial buildings up the agenda, for both consultants and electrical installers.



With lighting using around 20 per cent of the electricity generated in the UK, the issue of lighting control, particularly in commercial buildings, forms a key part of the drive to reduce energy and carbon emissions.

Part L of the building regulations requires local control of the lighting, which offers the opportunity to create lighting control zones with appropriate controls for each type of zone, based on the 'ownership' of the workspace and the availability of natural light.

For example, a corridor which would be regarded as being 'unowned' in that it is not an individual employee's workstation, with minimal daylight and low occupancy, would, under Part L potentially be fitted with presence detection and a manual on / timed-off capability.

Similarly, often employees prefer to retain an element of control over lighting in their individual work areas which, generally, have greater access

to natural light. In this situation, a 'request on' 'auto off' absence control could be implemented, along with daylight sensors and the ability to dim lighting to comfortable levels for the individual. There is a strong business case for the deployment of lighting controls with very attractive payback times for occupiers of commercial buildings, which can be implemented either as stand-alone systems or as part of a wider building refurbishment.

If the commercial solution focuses on lighting controls then a simple DALi solution, such as one from Elkay, can be the answer. Taking advantage of its ease of installation and commissioning, by removing the need for a certified systems integrator, project costs and overheads can be reduced.

Whilst KNX can provide a holistic solution for Building Control, Elkay's easyDALi focuses on the ease of installation and commissioning when only intelligent lighting control is required.



Elkay's easyDALi system can automatically detect DALi lighting ballasts. The installer then simply wires the Part L-compliant DALi luminaires, the power supply and PIR together, and programs them via a simple dual purpose remote control.

A DALi lighting control system can be used to cover a single luminaire or can be connected to other DALi devices to create a much larger system. Elkay's easyDALi system can be used to configure up to 64 ballasts, as part of a much wider overall lighting strategy, connecting many hundreds of separate DALi systems on different floors of a building thus forming them into a coherent building lighting control system.

Programming is simple for both the installer or facilities manager and the end-user. The easyDALi system has default settings for broadcast mode, timing and daylight harvesting and a handheld remote control. With only one remote required to operate and program the system, it makes it easy for end-users to configure lighting that covers

both personal preference and energy efficiency.

The remote can also be used by the installer or systems integrator to program the system, with specific installer modes for the discovery of ballasts, programming of luminaires and room timing options.

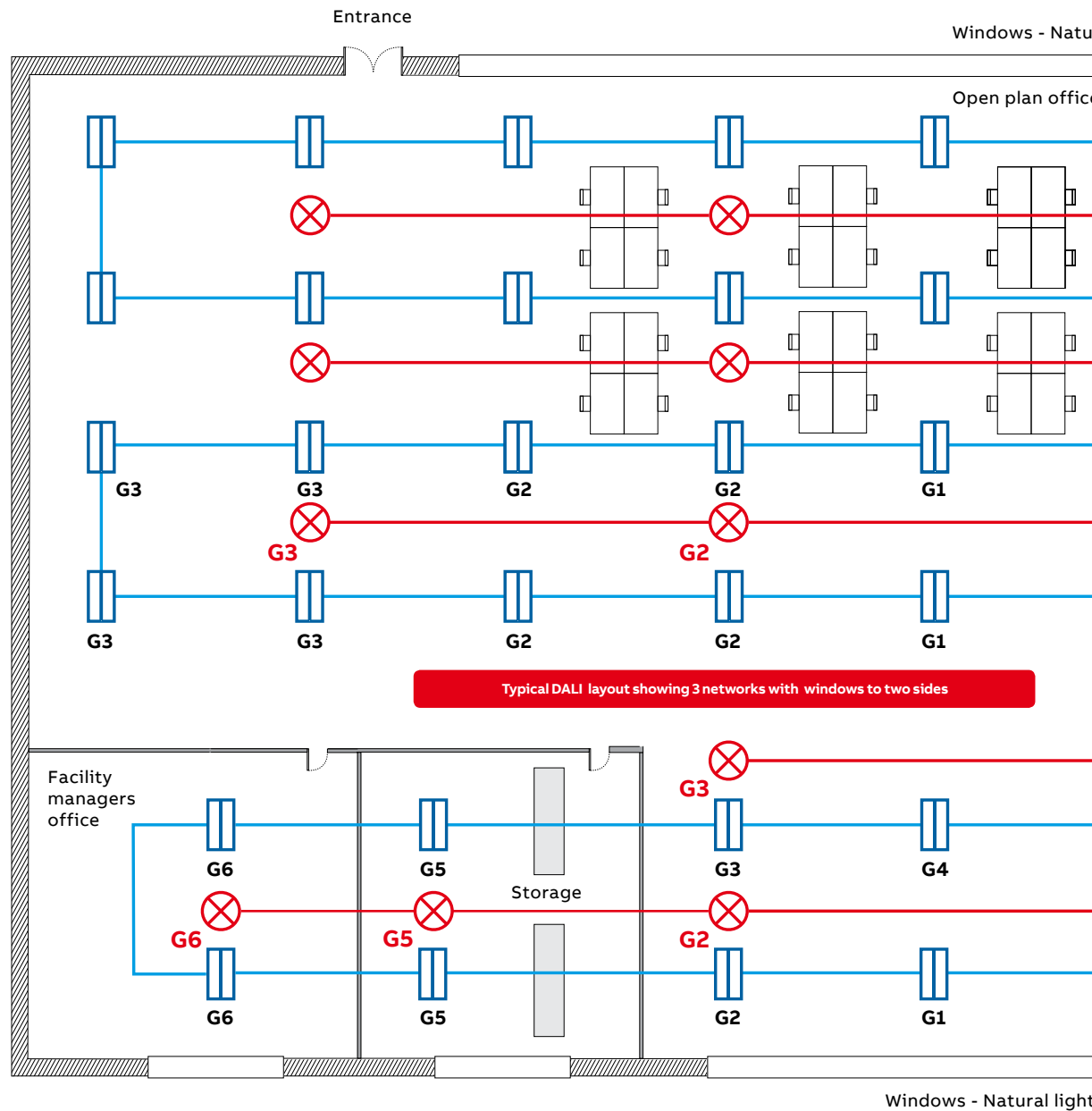
DALi systems have the potential to make significant energy savings for end-users. The combination of daylight harvesting, presence detection, corridor modes and room timing options can deliver savings of up to 80 per cent on energy consumption from lighting. For installers and systems integrators that have struggled to apply Part L in an efficient and cost-effective manner, easyDALi offers a compelling opportunity to achieve this requirement.

Overall, with easyDALi, the implementation of Part L-compliant lighting controls becomes a much easier proposition.






Elkay easyDALI range

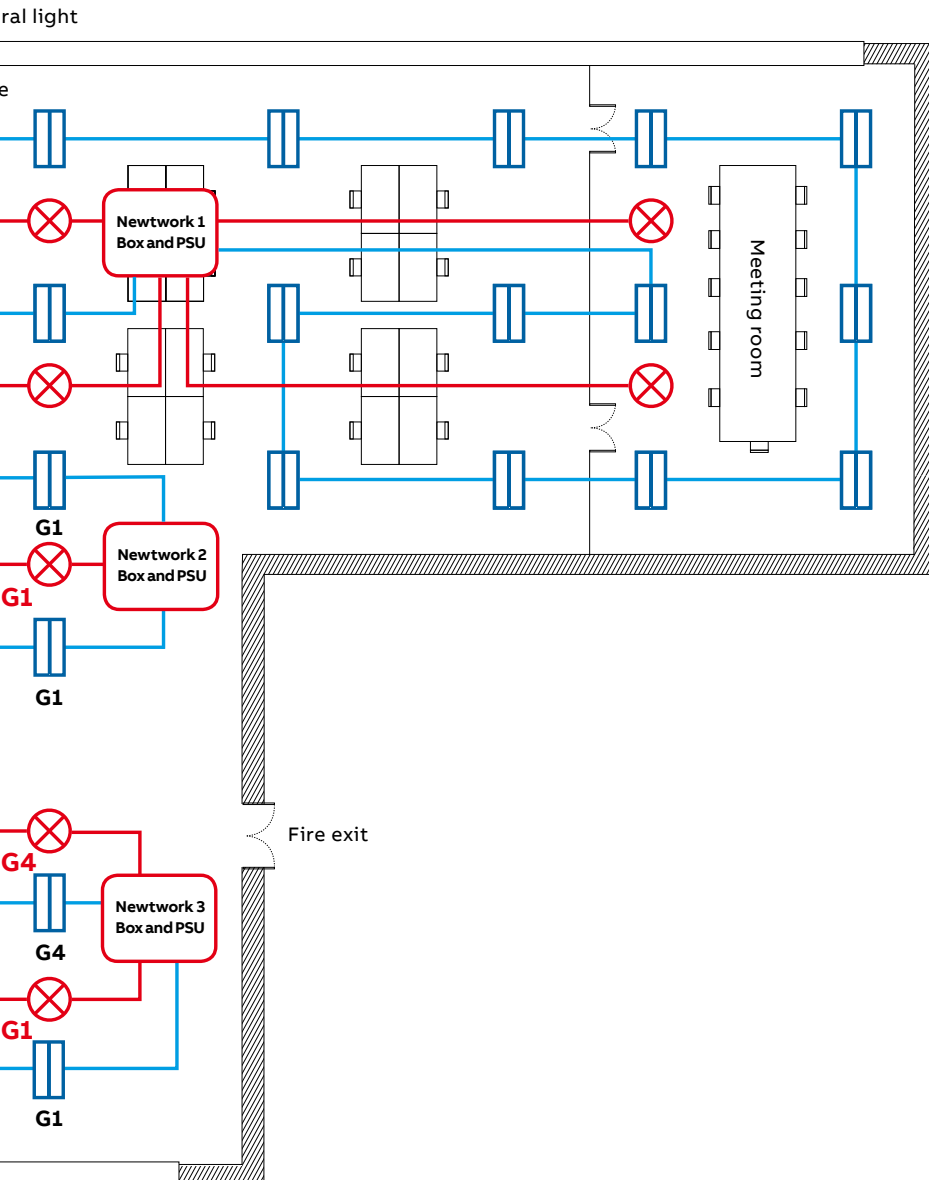
Product applications

- 01 Open plan office.
- 02 Meeting room.
- 03 Outdoor area.
- 04 Warehouse office.



Key

-  easyDALI PIR sensor
-  5 core cable to fittings
-  2 core cable to DALI sensors
-  DALI multi purpose box and power supply unit
-  Luminaire



The lighting plan shows the positions of the luminaires and the position of the easyDALi PIR sensors. Because of direct light on both sides of the building from the windows the design team took the decision to split the networks to keep the central section at a higher illumination level. Network 1 and 3 can be set to harvest the daylight entering the window and thus substantially reduce the lighting energy costs on this floor of the building.

Each easy DALI PIR is control specific adjacent lights and is easily addressed in minutes at the touch of a button from the remote. Simple installation and simple ongoing maintenance and control.

The sensors are connected back to the multipurpose connection box via 2 core cable and the luminaires are connected in 5 core cables. The advantage of the easyDALi system is there is no need for expensive gateways or connectors allowing installer choice of cable and cheaper purchase costs than a pre-wired and connected lead.



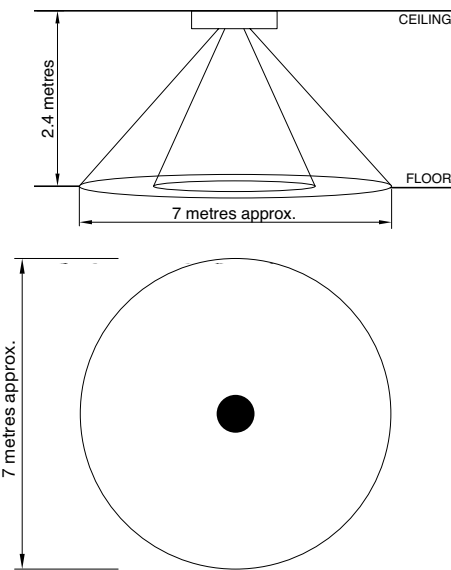
Elkay easyDALi range
easyDALi PIR



01 Ceiling mount PIR
sensor detection
diagram.

easyDALi PIR

Part No.	Type	Finish	GID No.
374-CMPIRDALI	easyDALi PIR	White	7TCA299030R0032



Description

The ceiling mounted Elkay easyDALi PIR has full DALI flexibility and is the intelligent sensor element of the Elkay easyDALi system, automatically addresses the lighting ballasts without the need for expensive controllers.

The ceiling mounted Elkay easyDALi PIR has full DALI flexibility and is the intelligent sensor element of the Elkay easyDALi system, automatically addressing the lighting ballasts without the need for expensive programming controllers.

The PIR is switched on by the detection of moving body heat within a specified range. When this moving body heat is no longer detected the unit will dim down the luminaires and eventually switch off. It will also automatically harvest available daylight to maximise energy savings.

With the dual purpose remote control it is possible to set dimming time delays and Room and Corridor options. There are also helpful coloured feedback LEDs to make programming easier.

Key features:

- Presence and absence detection
- Automatic daylight harvesting
- Settable time modes including 4 room options and 4 corridor options
- Basic Luminaire set up without commissioning tools
- Broadcast and group functions
- Manual Lux Level and sensitivity control
- Walk Test mode
- 360° Detection
- 6-7m detection range
- Coloured feedback LEDs
- Can control LED and fluorescent DALI luminaires
- Lifetime adjustment with dual purpose remote control

Typical applications:

- Suitable for commercial and institutional DALI lighting applications

Elkay easyDALi range

easyDALi remote control



Description

The Elkay easyDALi remote control is an ergonomic hand held device to program and adjust sensors in the Elkay easyDALi range.

Consisting of eight soft touch buttons to control the Elkay easyDALi PIR, It can program basic installation and commissioning functionality. It also has a hidden button that changes the remote control from user mode to Installer Mode

Key features:

- Dual purpose DALI Remote Control
- For use with Elkay easyDALi system
- User mode for day to day control
- Override on/off
- Illumination adjustment
- Scene selection
- Fixed illumination settings
- Reset to daylight harvesting
- 25% brightness level
- 50% brightness level
- 100% brightness level
- Installer configuration tools

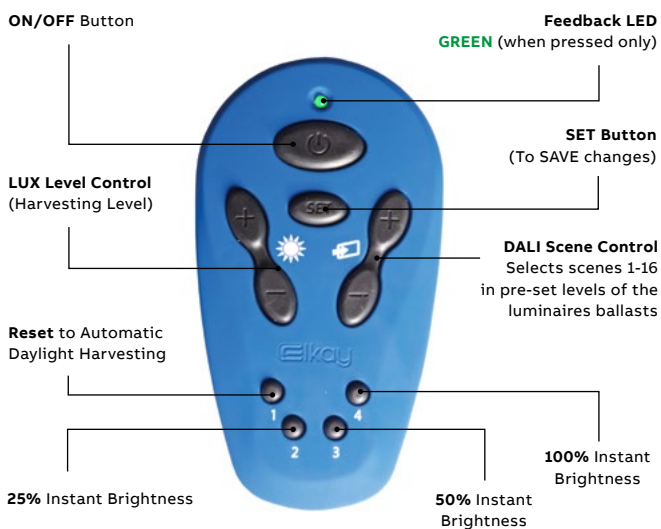
Typical applications:

- Suitable for commercial and institutional DALI lighting applications

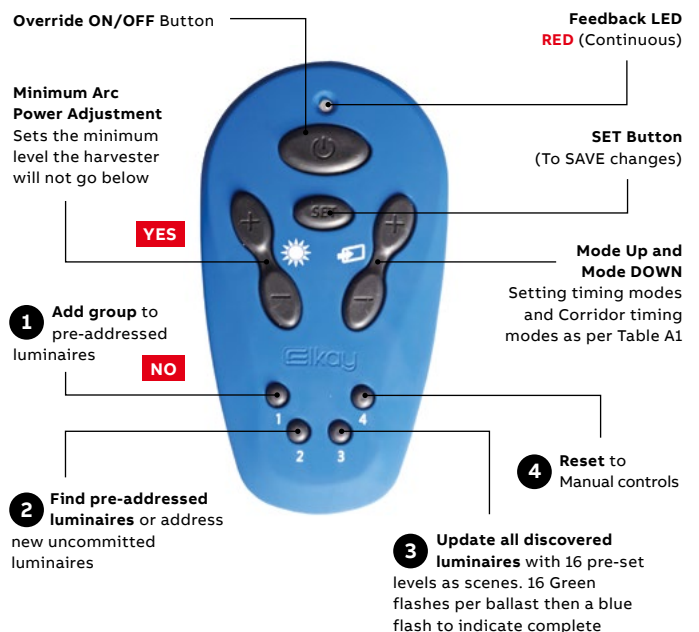
— 01 User modes.
— 02 Installer modes.

easyDALi remote control

Part No.	Type	Finish	GID No.
374-DREM	DALI remote controller	Grey	7TCA299030R0034



01



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Elkay easyDALi range

easyDALi multi-purpose box & power supply unit



Typical applications:

- For use with Elkay easyDALi system
- Suitable for lighting commercial and institutional applications luminaires

Description

The Multi-Purpose Box gives installers maximum flexibility and true freedom in building a DALI system by allowing them to use their OWN cable choice without needing expensive connectors. the box allows the installer to either use it to connect up multiple strings of DALI PIRS OR allows them to connect up to 10A of lighting loads or use it for both.

Key features:

- DALI Multi-Purpose Box for maximum connection flexibility
- Connects up multiple strings of DALI PIRS and lighting
- Maximum 10A rating per box
- 8 Multiple connections per box
- Connects power supply for Elkay easyDALi network
- Can control LED and fluorescent DALI luminaires

easyDALi multi-purpose box

Part No.	Type	Finish	GID No.
374-DMBOX	DALI multi-purpose box	Grey	7TCA299030R0033



Description

Essential to power the network of easyDALi PIR sensors and DALI luminaire ballasts connected into the system.

Key features:

- For use with Elkay easyDALi system
- Powers DALI network of PIRS and lighting ballasts
- Thermal and overload protection
- Connected to multi-purpose connection box
- 18V d.c. 250mA

Typical applications:

- For use with Elkay easyDALi system
- Suitable for lighting commercial and institutional applications

easyDALi power supply unit

Part No.	Type	Finish	GID No.
374-PSU	DALI power supply unit	Grey	7TCA299030R0035

Elkay easyDALi range

Product specification and data



Product specification and data

The Elkay easyDALi PIR needs only four elements to build a system:

	Elkay easyDALi PIR	Elkay easyDALi dual purpose remote control	Elkay easyDALi power supply	Elkay easyDALi multi-purpose box
Part No.	374-CMPIRDALI	374-DREM	374-PSU	374-DMBOX
GID code	7TCA299030R0032	7TCA299030R0034	7TCA299030R0035	7TCA299030R0033
Features	<ul style="list-style-type: none"> – Presence and Absence Detection – Automatic Daylight Harvesting – Settable Time Modes including 4 Room Options and 4 Corridor Options – Basic Luminaire set up without commissioning tools – Broadcast and Group Functions – Manual Lux Level and Sensitivity Control – Walk Test – 360° Detection – 6-7m detection range – Coloured Feedback LEDs – Can control LED and fluorescent DALI luminaires 	<ul style="list-style-type: none"> – Dual Purpose control options for End user and Installers – Sets all non-default functions – Sets Timing Room Modes and Corridor Modes – Sets Min Arc Levels – 25%, 50% and 100% brightness pre sets – Override Functions – Remote Lux Control – Remote Feedback LEDs – 3 x AAA Batteries supplied 	<ul style="list-style-type: none"> – For use with Elkay easyDALi system – Powers DALI network of PIRS and lighting ballasts – Thermal and overload protection – Connected to multi-purpose connection box – 18V d.c. 250mA 	<ul style="list-style-type: none"> – Maximum 10A rating per box – 8 Multiple connections per box – Connects power supply for Elkay easyDALi network – Can control LED and fluorescent DALI luminaires

Supporting & providing lighting controls

Lighting controls for commercial premises

An education in lighting control. Commercial lighting is one of the most energy-intensive operational processes and taking it for granted, especially when it comes to control – or rather lack of it – can dramatically increase a building's operational costs.

Despite the drive towards efficient light sources, failing to reinforce any investment with a suitable control network will still leave facilities managers financially worse for wear.

Shining a light on the need for change

Many public sector buildings, such as schools, colleges and wider educational facilities, have tight maintenance budgets which limit the extent to which facilities managers keep on top of a building's energy-draining systems. Whilst their hands are often forced into action by the impact of legislative updates such as Part L of the Building Regulations or the European Commission's Energy-related Products Directive (ErP Directive), taking the plunge and investing in a mass system upgrade can ultimately lead to significant long-term savings on energy bills, which would soon cover the capital expenditure of new equipment.

Lighting is a prime example. Some educational facilities systems are in operation for as much as ten years between serious maintenance cycles, and with the Carbon Trust identifying that lighting accounts for as much as 25% of a school's total energy consumption, an out-of-date system can contribute to a significant amount of unnecessarily high running costs. When put into the context of a ten-year period, the potential overspend is staggering.

Installing high-efficiency lamps or LEDs is often the first port of call when aiming to tackle a poorly-performing lighting system. However, doing so without upgrading the wider lighting control infrastructure only scratches the surface of potential energy savings that could be made. Many existing lighting systems operate using simple on/off switches. As such, lights are either operating at full or no power, and the only energy-saving measure in place is reliant on staff, or students, turning the lights off when they leave the classroom.



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Taking control

Greater control over energy-saving lighting isn't as seemingly inaccessible as it once was. Technological innovations have become more widespread, driving down costs and increasing availability to end-users with limited maintenance and operational expenditure.

One innovation – which some schools may already be familiar with – is absence detection, which makes use of a Passive InfraRed (PIR) technology built into an energy management device. A PIR sensor is an electronic device that measures infrared light radiating from objects in its field of view, and it can be used in the construction of PIR-based motion detectors. It is activated when an infrared source with one temperature, such as a human, passes in front of an infrared source with another temperature, such as a wall.

Absence detectors are operated by a switch as normal but when the person leaves the room the electrical load is turned off after a pre-determined period of time. Upon returning the switch must be operated to reactivate the load. As such, there is no risk of the light either switching off when someone is in the room, or switching on if the room is empty.

Balancing act

One final benefit which is offered by some PIRs, such as those from Elkay, is the ability to monitor and adjust lux level. This facilitates the potential integration of both daylight and artificial light to ensure a classroom is optimally lit, yet uses no more energy than necessary. As already alluded to, lighting systems which use standard on/off PIRs have two settings: full light, or no light. There isn't a dimming option, and in many cases lights are used without really having much of an impact as the classroom may already be nearly fully lit by natural daylight.

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02



However, by setting a pre-determined time and then using a sensor to monitor a room's lux level, facilities managers can further reduce the amount of energy consumed by the lighting system. If there isn't sufficient ambient light to meet the required lux level, a classroom's LED luminaires can be alerted by the sensor, via DALI, to supplement daylight with artificial light in order to bring the room up to its required lux level. As such, not all of a lamp's output may be required to further reduce the amount of energy consumed.

Final thoughts

Ultimately, upgrading lighting systems will help facilities managers in the education sector significantly cut operational costs. The technology to facilitate such an upgrade is readily available yet its accessibility perhaps remains beyond the knowledge of some who might think it out of their budget. Educating the market on the benefits of technology such as PIR sensors is central to driving forward change within the sector. Whilst maintenance and operational budgets for many schools may not be on a par with private sector companies, grasping the mettle and making the upgrade to an efficient lighting system which includes both low-energy lamps as well as sensor-based control elements will offer a tangible and long-lasting return on investment in terms of reduced operational costs and lower carbon consumption.



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