

**CLIPSAL**<sup>®</sup>

by Schneider Electric

Simple to design.  
Simple to install.  
Simple to integrate.



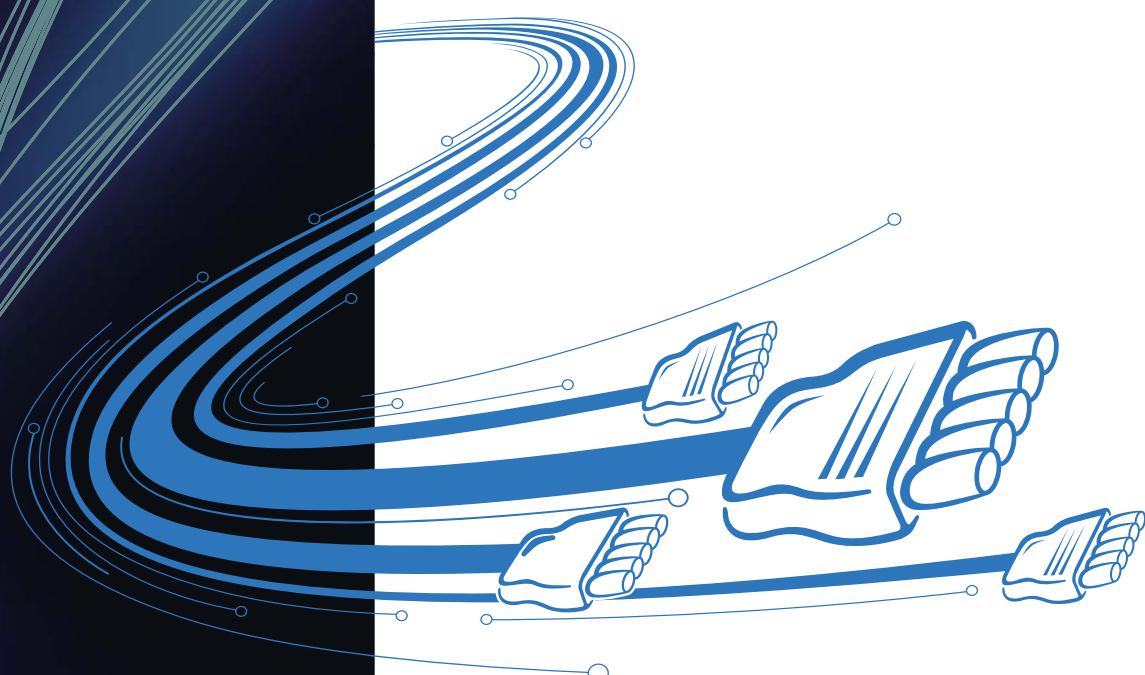
**DALI**control<sup>™</sup>

- Commercial offices
- Emergency and exit light monitoring

[dalicontrol.com](http://dalicontrol.com)

# CONTENTS

3	Create a thinking workspace
4	A worldwide standard in lighting control
6	Lighting + emergency + control
8	Soft wired for greater cost effectiveness
10	Ease of installation
11	Emergency luminaires and exit signs
12	An integrated platform
13	Superior line control technology
14	Daylight harvesting and reduced energy costs
15	Occupant comfort
16	One simple DALIcontrol™ solution
17	Tunnel lighting and emergency light monitoring
18	Now with the backing of Schneider Electric
19	Expert installation and programming





ANZ Learning Centre. Photography by Earl Carter.

## Create a thinking workspace

### **Government legislation**

Never before has it been so important for commercial buildings to be energy efficient. No building can be too green. And as we enter a new era of green building ratings and government legislation, no specifier, consultant or facilities manager today can afford to overlook the many advantages of a DALI lighting control system in the commercial office space.

### **Modular wiring and flexible configuration**

These benefits include energy savings with integrated occupancy and light level sensors. Users also benefit with local manual control and preset scenes, whilst installers can leverage the ease of modular wiring and flexible configuration and programming option.

### **Integrate lighting control with emergency and exit lighting**

In addition, commercial clients are looking to integrate lighting control with emergency and exit lighting, as well as security and HVAC systems on one network, to enable simple and effective monitoring of the building's services status at all times.

### **Achieving energy savings**

The ability to control and monitor lighting means that lighting control plays a critical role in determining and achieving energy savings. This needs to be followed up with systematic reporting to confirm those efficiencies. The sum of these parts literally creates a thinking building that can be tuned to the specific needs of each and every commercial environment.

### **Maximising energy efficiencies**

Maximising energy efficiencies in all new commercial buildings is a genuine global requirement that has given rise to standards created throughout the world including LEED3 (USA), NABERS (Australia), Greenbuildings EPBD or EN15193 (Europe), Green Building Council (China) and BEAM (Hong Kong).

By making your building project as energy smart as possible, you are creating a commercial space designed to meet world class recognised standards, which will attract more Government and corporate tenants.



## A worldwide standard in lighting control

### Intelligent control

Many lighting control systems are able to realise intelligent control and energy savings. Most achieve this with their own proprietary protocols, losing the benefit of direct compatibility between lighting devices and control hardware.

### Compatibility and interchangeability

During the late 90s, Europe's leading lighting manufacturers, Philips, Tridonic and Osram,

could see a need to create a common interface standard for digital lighting control and therefore created DALI, which stands for Digital Addressable Lighting Interface. By using DALI, specifiers, architects and end-users can rely on the compatibility and interchangeability of different control gear from different manufacturers. This includes everything from the control of electronic ballasts, transformers, LEDs, emergency lights and exit signs.

### International protocol

More than 10 years later, DALI has emerged as one of the world's preferred standards. Many lighting control manufacturers have adapted their systems with DALI interfaces; an "interpreter" that allows their product to speak to this international protocol.

### Multiple vendor choice

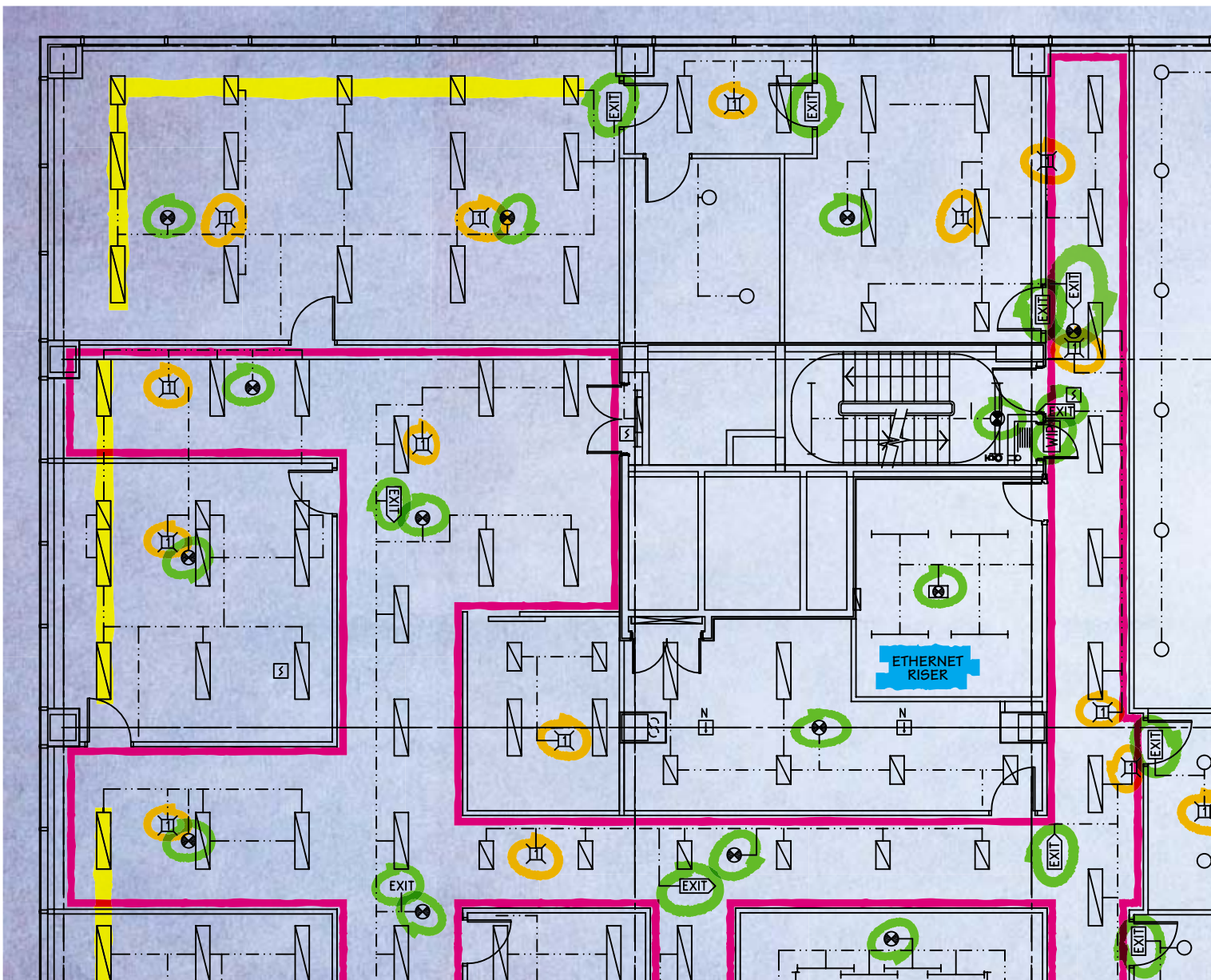
Having these combined solutions can provide access to best-in-class devices



Inner Northern Busway, Queensland. Photography by Christopher Fredrick Jones.



for inputs such as Clipsal C-Bus Dynamic Labelling Technology switches and touch screens. For more straightforward systems the simple capability of DALI to provide a single solution with reduced complexity is an attractive prospect. This gives customers security of multiple vendor choice for both input and output devices with easy on-site replacement, reducing time consuming problems for facility managers.



## Lighting + emergency + control

### Maintaining compliance

When planning a lighting control system, generally foremost in the designer's mind is to ensure the needs of the customer are satisfied, whilst maintaining compliance to the myriad of standards and regulations which apply to today's commercial buildings.

This balancing act is often one of the hardest challenges to manage, particularly when there remains a degree of uncertainty about the final use of the occupied areas.

### Uniquely flexible approach

The DALIcontrol system by Clipsal provides by its very architecture; a uniquely flexible approach to floor plan control. The system

gives the designer a wide degree of flexibility in zone definition and control strategy. This allows final decisions on control strategy to be made much later in the design process. This is when more certainty is established around actual use profile, based upon the real tenants who will occupy the space.

### Precise control for individual task lighting

The clear driving force today in lighting control is to make the best use of the energy consumed by the building under design. A key area for potential energy savings, and therefore a focus for legislators, is lighting provision. It may be as simple as proper

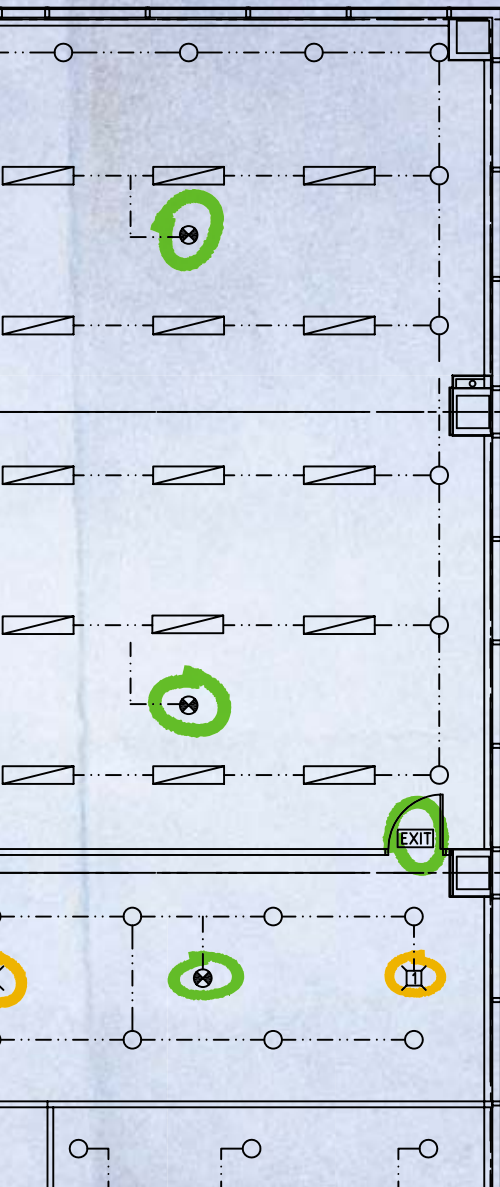
timed control, the use of sensors and dimming technology for daylight harvesting or precise control for individual task lighting.

### Easily configured system

The DALIcontrol system by Clipsal provides all of these functions and many more within a simple to use and easily configured system. This gives greater flexibility to select implementation strategies to best fit user and legislative requirements.

### Deliver significant savings

Obviously a clear driver is the overall cost of the installed system. Simple logic will allow anyone to understand that a single system, which can integrate the monitoring and



- INTEGRATE EMERGENCY AND EXIT LIGHTS INTO SYSTEM.\*
- CORRIDOR LINKING ESSENTIAL.
- OCCUPANCY CONTROL ON SPECIFIC DALI ZONES.
- DAYLIGHT HARVESTING, MUST SITE PHOTO CELLS.
- SYSTEM MUST RESIDE ON ETHERNET BACKBONE.

### NOTES FOR SPEC

1. ALL FITTINGS TO BE DALI.
  2. LIGHTING ZONES TO MEET GREEN STAR REQUIREMENTS\*.
  3. REPORTING ON EMERGENCY/EXIT AS/NZ 2293\*.
  4. CUSTOMER WANTS DESKTOP AND WEB ACCESS TO REPORTS.
  5. SYSTEM MUST COMPLY WITH DALI STANDARD IEC 62386.
  6. TOUCH SCREENS AND LCD SWITCHES IN MEETING ROOMS/BOARDROOM.
- \*SYSTEM MUST DO REPORTS.

reporting of emergency lights and fittings with the general office lighting control will deliver significant savings over two separate systems.

#### Cutting edge lighting control

The DALI control system by Clipsal not only provides cutting edge lighting control for commercial lighting requirements but also within the same single system structure, a fully compliant emergency lighting monitoring and reporting solution to International Standards, including AS/NZS 2293.

#### Reside upon Ethernet

Ethernet is ubiquitous in commercial buildings. The ability for DALI control products to reside upon Ethernet and make use of the existing infrastructure as its primary backbone both simplifies and reduces system cost.

DALI control products are fully compliant to the DALI international open lighting control protocol IEC 62386.

**If you would like to see an example of this building layout, showing how a DALI control system would be applied, please contact your local Clipsal Representative.**



## Soft wired for greater cost effectiveness

DALIcontrol's cabling requirements can be enhanced by flexible wiring solutions provided by the Clipsal Moduline range of cable management products. The famous Clipsal brand is backed by Schneider Electric, the world's global specialist in energy management. The cable management range includes all soft-wiring accessories, busbar trunking as well as a range of unique power and data accessories with customised solutions – perfectly suited to today's office workspace.

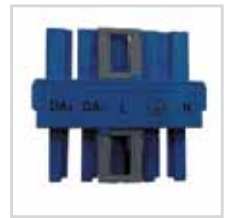
The advantage of this "plug and play" system is to simplify installation and

commissioning. The five-pin soft-wiring system reduces labour costs and the distributed architecture enables sections to be tested and commissioned ready for the tenant as each area is installed. A soft wiring solution offers a quick and efficient method of connectivity and installation of light fittings. DALIcontrol's soft wiring five-pole system provides all power and DALIcontrol requirements in one convenient five-core cable. This reduces cabling and installation costs and enables easy connection and disconnection of luminaires, emergency fittings and exit signs.

### **The ultimate flexibility**

Alterations or additions are easy to achieve as the installation can be reused over and over, saving you money and downtime. Our case studies show that the use of soft wiring systems offer advantages to the electrical contractor, with installation time savings of up to 55%. This coupled with the commissioning flexibility of the DALI system, satisfies the varying demands of commercial lighting designs where many last minute layout changes occur, offering measurable labour savings.





The M3 DALI control soft wiring solution consists of a simple range of components that can be configured to suit any type of installation requirement. It's three ranges in one, designed to provide you with the most flexible soft wiring solution available on the market.

The M3 soft wiring solution includes:

- Soft wiring couplers, leads and accessories
- Canalis Busbar Trunking System
- Cable ducting and desktop accessories.

#### Fast installation

With Clipsal Moduline M3, there is no waste. Our soft wiring system gives both installers and end-users an efficient and complete flexible solution for commercial and other wiring requirements.

The end result is an eco friendly DALI lighting solution with the flexibility of our soft wiring system; a flexible and economical solution to suit everyone's needs.

Advantages of soft wiring:

- One socket solution for installation.
- Simple and easy to install.
- Unique key-way sockets indicating DALI circuits.
- Easy disconnection and reconnection of luminaires for relocation and maintenance.
- Easy installation of luminaires, emergency fittings and exit signs on one system.



## Ease of installation

DALIcontrol products have struck a chord with systems integrators who have welcomed its capability and versatility.

### **Extensible design**

Changing tenancies, future expansion and new features are easily catered for using the DALIcontrol system. The extensible design of the system means that control groups can typically be reconfigured at any time without alterations to wiring.

### **Late differentiation**

For lighting designers it can often be challenging to precisely define the full

control strategy for a given area before the tenant takes occupancy. The DALIcontrol solution lends itself to late differentiation in design, allowing the control strategy to be configured much later in the install process when the overall installation is more finalised.

### **Configuration based approach**

The DALIcontrol system lends itself to templated programming techniques, significantly reducing time to configure against more conventional lighting control solutions. The configuration based approach of the system sets it apart from other products that require specific codes

to be written to define individual control behaviour, allowing installer and even end-user to define late changes in behaviour.

### **Rapid deployment**

The DALIcontrol commissioning wizard aids with the first commissioning phase. Creating rapid deployment and establishment of basic control during the installation phase is essential to obtaining beneficial use of the lighting installation. The wizard also greatly improves the process of replacing fittings where necessary.



## Emergency luminaires and exit signs

Every aspect of the lighting control system can be incorporated into a DALIcontrol solution, including office emergency luminaires and exit signs. The DALI standard provides the capability to collect status information from ballasts, emergency and evacuation lighting. This eliminates the need for a separate monitored emergency system. The DALIcontrol system provides ballast and lamp failures, and emergency lighting reports. Legislation demands that emergency lights are regularly tested and maintained in full working order to ensure they function effectively in an emergency situation. Automatic testing

of the emergency fittings is carried out in accordance with worldwide standards. Furthermore, DALIcontrol is able to generate test reports to meet all legislative requirements.



Centra Plaza. Department of industry, Tourism and Resources, Canberra.



## An integrated platform

### Complementary and compatible products

Given that DALI is an open standard in lighting control, there are many manufacturers producing complementary and compatible products, particularly for building management, these include: BACnet and LON gateways. There are also capable integrations available with other open lighting standards including DMX and DSI.

### “Plug and play” compatibility

Many of the proprietary solutions available on the market also provide integration to DALI, including of course, Clipsal

C-Bus. This “plug and play” compatibility provides you with the opportunity to create one platform to build a true integrated building solution, including climate control, security, access and more. This does away with the need for multiple systems running in parallel. Instead, you can design one cohesive and streamlined system with master control.

### Wide range of technology

Boardrooms need to accommodate a wide range of technology needs. DALIcontrol lighting can be configured to create a number of scenes for PowerPoint

presentations, video conferencing, Internet meetings and training seminars. Integration with intuitive touch screens and user friendly interfaces are all part of the DALIcontrol range.



## Superior line control technology

### **Clever DCBM line controllers**

The solution offered by DALIcontrol is based on its clever DCBM line controllers. These are installed around a building on an Ethernet network and use time schedules, push buttons, switches and sensor inputs to control lighting on DALI communication lines. DALI ballasts are controlled by commands that can be sent to individual ballasts, groups of ballasts or broadcast to all ballasts on the line. No relays or dimmers are required as the lighting output control is designed in the lighting ballast itself.

A standard DALI line is a network of up to 64 DALI light sources (ballasts, transformers, emergency fittings, etc.). Only this limitation traditionally restricted DALI systems to smaller buildings or to providing multiple non-integrated systems within one site.

### **Breaks the barrier of 64 devices**

The DCBM line controller breaks the barrier of 64 devices on a DALI network by cleverly combining the strength of Ethernet networks, together with DALI, to produce a unique offering.

### **Simple but intelligent system**

The result is a simple but intelligent system, perfectly tailored to the control of office lighting in multistorey buildings. You can scale your lighting system from a room, to a floor, to a building and beyond. Each line controller uses time schedules, push buttons, switches and sensors to control lighting and emergency lights on DALI lines.



## Daylight harvesting and reduced energy costs

The DALIcontrol line controller can help the energy conscious facility manager achieve reduced energy bills. Each DALIcontrol line controller includes an integrated real-time clock with automatic daylight savings correction, sunrise and sunset calculation, and holiday exceptions. Control schedules are configured in the controller to automatically switch and vary lighting levels to harvest daylight and enforce energy savings. Sensors can be incorporated into the DALIcontrol network to provide automatic dimming, to compensate for the amount of natural lighting.

### **Higher energy efficiency rating**

In maximising lighting energy efficiencies, DALIcontrol can help you achieve a higher energy efficiency rating and consistently meet your local green building requirement initiatives for energy targets. Equally important, is that DALIcontrol also equips you with the reporting tools to provide the data you need, ensuring your building is delivering on these energy targets and continuing to meet those green building ratings.



DLA Phillips Fox. Photos courtesy of Northrop.

## Occupant comfort

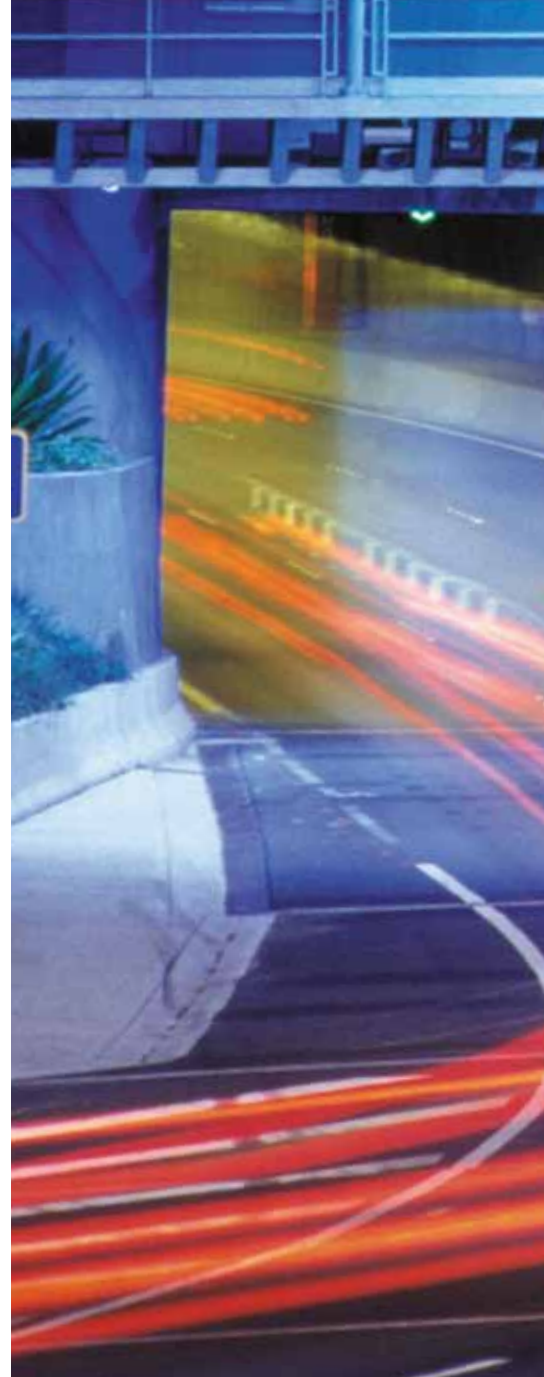
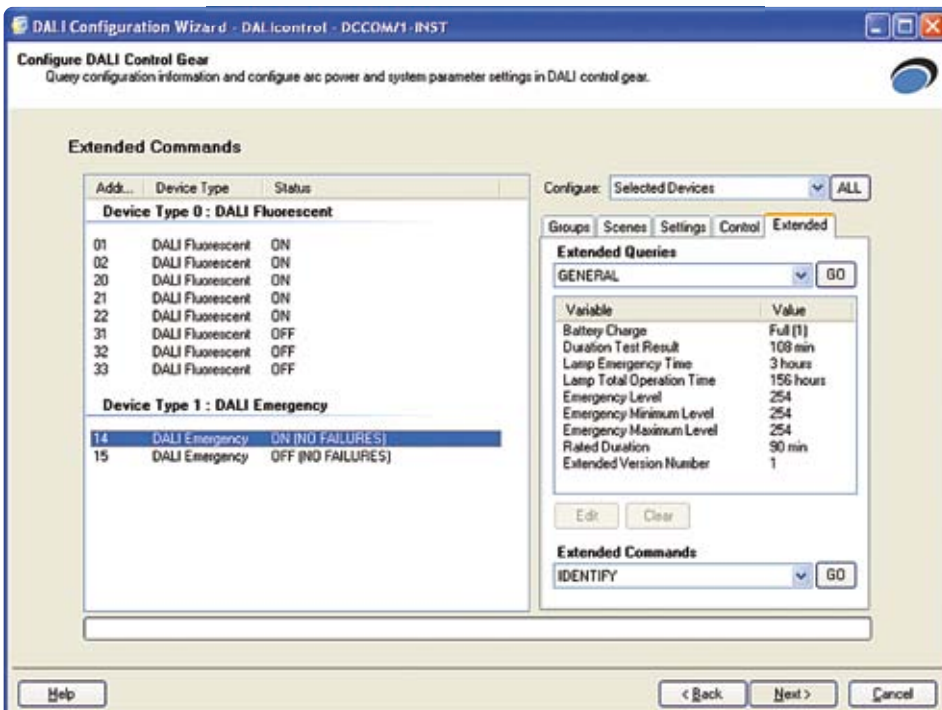
### **Easily integrated**

Inputs for connection to push buttons, switches and occupancy detectors can be used to reduce lighting levels after a predefined period. Digital outputs are included to control fans, blinds and more. The DALIcontrol system can be easily integrated with security and access control systems. Use alarm conditions and card readers to control lighting in a building.

### **Typical office environment**

In a typical office environment, lighting can be scheduled to activate at 7am with the swipe of a card when the first staff member arrives. This may exclude perimeter lighting near external windows

which are already receiving sufficient natural light. As the day wears on, lighting zones within the office floor not frequented for a period of 20 minutes e.g. kitchen and bathroom, can be configured to dim and switch off and then reactivate as required with motion sensors. Approaching 8pm, the entire office floor lighting can be timed to turn off with the exception of common access areas and motion sensors for those staff members working back after hours.



## One simple DALIcontrol™ solution

In 2003, Australian based DALIcontrol was formed, after close work with several control gear manufacturers. DALIcontrol designed and developed control hardware and software to support the intelligent features of DALI.

### Utilises an Ethernet backbone

DALIcontrol incorporates process control and automation technology to monitor the status of every light circuit and fitting. The DALIcontrol software and hardware is designed and manufactured as an

open system from the ground up and establishes a lighting control system that not only speaks the DALI protocol but utilises an Ethernet backbone to extend the system footprint. This offers individual control of every single light, whilst monitoring its status. In addition, the DALIcontrol lighting system uniquely combines lighting, controls and emergency lighting into one complete lighting system.





## Tunnel lighting and emergency light monitoring

### **Every fitting is monitored**

Tunnel lighting represents a perfect opportunity to integrate a DALIcontrol lighting control solution. Lighting is monitored and controlled using distributed control boxes containing BM2600-DALI line controllers. These can manage many hundreds of metres of tunnel lighting. Every fitting is monitored for ballast status, lamp status and lamp hours.

### **Full operator control**

Tunnel emergency light fittings are monitored for inverter status and battery

charge level. Discharge tests are initiated and reported through the DALIcontrol system. Overall management of the system takes place from an external building, providing full operator control and integration with the tunnel zone alarm system. The Tunnel Monitor program displays a view of the system with control options for each zone. Status reports, showing where fittings are located, keep the system in full working order. The combination of DALI lighting, emergencies and DALIcontrol line controllers provides a complete tunnel lighting system that is easy to install, commission and maintain.



## Now with the backing of Schneider Electric

The procurement of a lighting control package for any commercial space can be difficult to manage. However, DALIcontrol is brought to you by Schneider Electric and its subsidiary Clipsal Australia, Australia's market leading manufacturer in electrical accessories, lighting control and management systems. Schneider Electric and Clipsal can provide you with a full complement of compatible wall switches, touch screens, data products and much more.

With its global network, Schneider Electric, the world's biggest electrical company, has operations in over 100 countries.

As an energy management specialist, Schneider Electric is focused on helping customers develop solutions that save costs, improve existing assets and reduce environmental impact by using their

energy more productively and efficiently.

With electricity prices set to quadruple by 2020, Schneider Electric's goal is to be the benchmark in sustainable development. Schneider Electric is committed to green building programs and initiatives such as Green Star. To go even further in meeting the environmental challenge, Schneider Electric provides customers with leading-edge solutions and technologies for energy efficiency.

By choosing DALIcontrol you are in fact tapping into a vast network belonging to the world's leading specialist in power, control and energy management. There is no one better placed to offer you the world's standard for digital lighting control.



## Expert installation and programming

To ensure your DALIcontrol system is installed and commissioned correctly, Clipsal has established worldwide partner programs. The backing of Schneider Electric is your assurance that the systems integrator has attained a high level of competence and is up to speed with the latest DALIcontrol developments. We know this because we've trained and inspected their work. In addition, we back

up the installation with vendor support and extended warranties.

If you are at the planning stages of a commercial project then a DALI addressable lighting control system is, without doubt, the simplest and easiest method of achieving superior and hassle free lighting control and energy management goals.



For more information visit [www.dalicontrol.com](http://www.dalicontrol.com) or email [info@dalicontrol.com](mailto:info@dalicontrol.com)

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You can find this datasheet and many others online in PDF format at:  
[www.dalicontrol.com](http://www.dalicontrol.com)

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