



DIGINET

LED CONTROL

DGLCEM035CD-AU

DGLCEM070CD-AU

DGLCEM100CD-AU

User and Installation Guide

DALI Emergency LED Driver - 350/700/1000mA Constant Current



PATENT PENDING/REGISTERED DESIGN

Designed in Australia to meet Australian Standards and installation conditions



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COMPLIANT



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V1.02 March 2014

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1. Product Item

This guide provides installation and product specification information for the Diginet DALI Emergency LED Driver modules with either a 350mA, 700mA or 1000mA Constant Current output.

Table 1 – DGLCEMxxxCD-AU Product Codes

Package Version	Control Module		Applicable Battery <i>(not included)</i>
DGLCEM035CD-AU	DALI LED EM Driver 350mA Constant Current 2hr	1LED	DGLCEM2100/4NMH
		2LED	DGLCEM2100/6NMH
DGLCEM070CD-AU	DALI LED EM Driver 700mA Constant Current 2hr	1LED	DGLCEM2100/4NMH
DGLCEM100CD-AU	DALI LED EM Driver 1000mA Constant Current 2hr	1LED	DGLCEM2100/6NMH

2. Important Notes and Safety Information

WARNING – Electric shock may result in serious injury or death. Follow all warnings in this guide and on the product while working in accordance with the latest electrical safety practices.

- ❖ The DALI Emergency LED Driver requires a Mains AC supply connection. This device may be mounted within a luminaire/enclosure or remote as an individual driver. The installer must be suitably qualified and should work in accordance with standard safety procedures for Mains-powered electrical equipment.
- ❖ DALI lines operate on an ELV DC supply between 9.5V and 22.5V and must be considered at **Mains** potential due to equipment isolation and cable segregation between the two supplies.
- ❖ There are no user serviceable parts inside the Driver. Do not attempt to disassemble or operate the Driver with any covers removed.
- ❖ The Driver is intended for indoor use only. When mounted within a luminaire or enclosure, due consideration shall be taken into account by the installer with regard to thermal conditions when operating.
- ❖ Consult the manufacturer’s instructions for ballasts, LED drivers and other DALI equipment that may also be connected to the DALI lines.

If you require information or assistance regarding the installation or operation of the Driver, contact Technical Services at Diginet Control Systems. Contact details are on the back cover of this guide and at www.diginet.net.au.

3. Product Summary

The DALI Emergency LED Driver with **DALI Xi**, can form part of any DALI compliant emergency lighting system including the DIGINET Emergency Light Monitoring System **RAPIX EM**, which incorporates the Digital Addressable Lighting Interface (**DALI**) open standard protocol for emergency lighting.

The Driver is designed to permit mounting inside a luminaire (or respective control gear housing) or as a separate Emergency Driver for connection to a remote LED emergency light engine or head. When used separately, clips are available to suitably attach and retain the battery pack to the top of the driver.

A Test Switch and LED Status Indicator is supplied with the driver. The Nickel Metal Hydride (NMH) battery pack is available and purchased as a separate item. Please refer to the Product Specification to confirm type suitable.

4. Product Capabilities

The DALI Emergency LED Driver has been expertly designed to provide a Constant Current output in either 350mA, 700mA or 1000mA to drive a designated emergency lighting LED(s) when the normal Mains AC power has failed or is unavailable.

It is rated to operate in *battery mode* for 90/120 minutes in accordance with the relevant Australian Standard for emergency escape lighting and exit signs for buildings.

When this device is not connected to a DALI Line or respective DALI network, it will automatically *self-test* and *report* the device status via the bi-coloured LED status indicator supplied.

This device incorporates **DALI Xi** which provides additional features, functionality and information when connected to the **RAPIX EM** monitoring system. Please refer to the website for further information.

5. LED Configuration and Driver Wiring

The DALI LED Emergency Driver is designed to be mounted inside a luminaire or as a separate Emergency Driver. The LED(s) should be configured to match the output and the device wired in accordance with the following.

5.1 LED Configuration (Examples only)

Below are some examples of the possible configurations of the emergency LED(s) or load. The 700mA and 1000mA versions allow for a single LED to be connected in SERIES with the Driver as per Figure 1. The 350mA permits for one or two LED's to be connected in SERIES as per Figure 1 and 3. Multiple LED's can be connected in PARALLEL as per Figure 2 and 4.

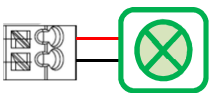


Figure 1 – ‘Single LED’ - 350mA, 700mA or 1000mA

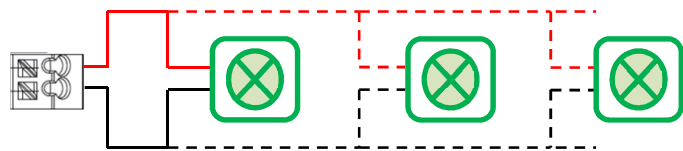


Figure 2 – Multiple ‘Single LED’ in PARALLEL - 350mA, 700mA or 1000mA

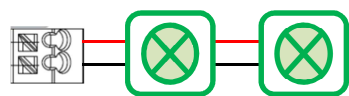


Figure 3 – ‘Two LED’ in SERIES - 350mA ONLY

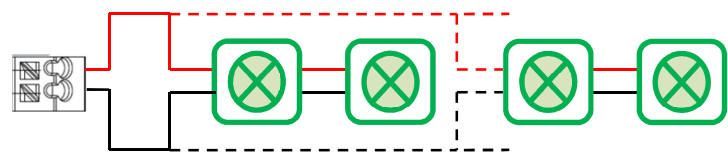


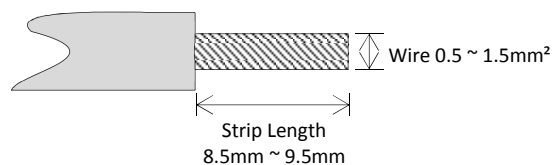
Figure 4 – Multiple Two LED in PARALLEL - 350mA ONLY



Note: Refer to the Product Specification to confirm suitable battery pack for configuration variants.

5.2 Push Connectors and Wire Preparation

The Driver incorporates terminals that are sized to allow 1 only 1.5mm² (solid or stranded) conductor per tunnel. This is applicable to the DALI Line terminals, the Mains AC supply terminals and the LED lamp (Load) terminals. A separate and suitably rated terminal block shall be used where there are multiple cores or wiring with a larger cross-sectional diameter.



5.3 Driver Wiring

The Driver can be wired to allow operation in the following modes as per **Figure 5, 5A, 5B and 5C**;

- a) Maintained (switchable) where the LED can be switched on & off with the general lighting.
- b) Maintained (permanently on).
- c) Non Maintained where the LED will only activate when the Mains AC is unavailable.

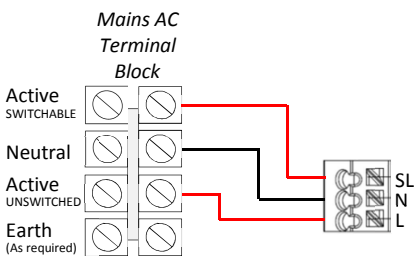
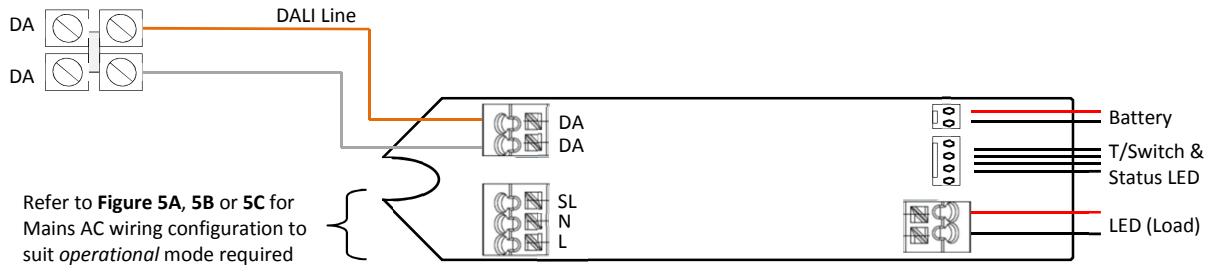


Figure 5A – Wiring to permit switching of ‘Maintained’ lamp via Mains AC

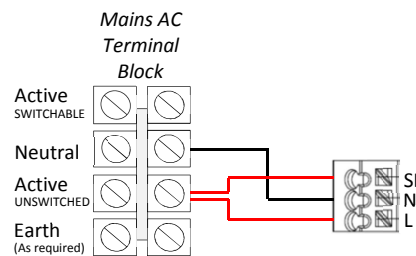


Figure 5B – Wiring for permanent ‘Maintained’ operation such as exit signs

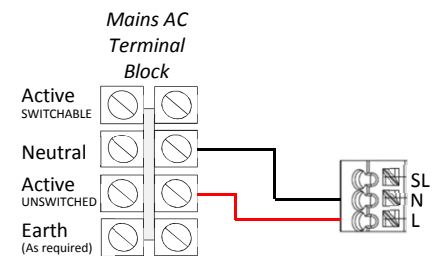


Figure 5C – Wiring for ‘Non Maintained’ operation such as emergency luminaires

Figure 5 – DGLCEMxxxCD-AU Electrical terminations



Note: The DALI standard requires power supplies to be marked +/- however when connecting this unit polarity of the DALI line is not applicable.



Note: The exit sign or emergency luminaire shall be ultimately installed and tested by a qualified person in accordance with relevant local Standards and wiring regulations to ensure correct operation.



Note: This Driver is **not** DALI dimmable on Mains AC or in battery mode.

6. Operation and Status Indicator

Following installation, the Driver can be connected to both the Mains AC supply and the DALI line and shall remain powered up continuously for a minimum of 24 hours to allow the batteries to charge. There is no further configuration required for this device other than integration into the DALI Emergency light monitoring system and the allocation of the respective *Short Address* for the device.

Each device is supplied with a ‘bi-colour’ LED Status indicator and momentary press Test Switch as standard.

6.1 Operation

The DALI Emergency LED Driver, in accordance with the respective local Standards for exit and emergency luminaires in buildings, is designed to;

- Automatically illuminate the connected emergency LED(s) when the Mains AC supply is unavailable.
- Automatically ‘self-test’ if/when the device is not connected to the DALI line or network.
- Be systematically ‘duration’ tested by the DALI Emergency light monitoring system as required.
- Report the test result and status of each device;
 - Back to the DALI Emergency light monitoring system when polled.
 - Via the bi-colour LED Status Indicator located on each luminaire as per Section 6.2.

The Driver can be wired to operate in various modes as detailed in Section 5 LED Configuration and Driver Wiring. This includes Maintained ‘switchable’ on Mains AC, Maintained ‘permanently’ on or, Non Maintained where the emergency LED(s) will only illuminate with the loss of the Mains AC supply.

6.2 Status Indicator

The operational status and the result of the last test is displayed via the bi-colour LED Status Indicator supplied with each device as per Table 2 below.

Table 2 – Device Status Indicator

Indicator Colour	Outcome	Meaning
Green Solid	Device OK	All OK, AC power is present, Battery is connected & charging
Green fast flash (0.1s on, 0.1s off)	Function Test in Progress	AC power is present, functional test in progress
Green slow flash (1s on, 1s off)	Duration Test in Progress	AC power is present, discharge test in progress
Green very slow flash (4s on, 1s off)	Automatic Duration Test Passed	AC power is present, Automatic discharge test has completed within the last 7 days and was OK
Red Solid	Emergency LED Fault	Emergency LED is open circuit, short circuit or has otherwise failed in same way. Fault can indicate the live status or the result of a test
Red fast flash (0.1s on, 0.1s off)	LED Driver Fault	Unit unable to deliver current to Emergency LED. Fault can indicate the live status or the result of a test
Red slow flash (1s on, 1s off)	Battery Fault	Battery failure (Battery failed the duration or functional test, battery appears to be defective, battery has incorrect voltage). Fault can indicate the live status or the result of a test
Red/green alternating	Identification Mode	The unit is in Unit Identification Mode
Red & Green off	No power available	AC power is lost, unit is in Emergency Mode

* RAPID Find is a feature of DALI Xi



Note: The colour requirement of the Status indicator may vary in accordance with relevant local Standards and regulations and should be confirmed by the installer of the device to ensure compliance.

7. Power Surges






The DALI Emergency LED Driver should only be connected to a Mains AC supply within the range stated in Section 9 Product Specifications. Nominal fluctuations in Mains AC supply voltage will have no effect on the operation of the unit however, induced voltages or surges may occur on electrical circuits in an installation as a result of excessive voltages from external influences which can damage electronic equipment. It is strongly recommended that the electrical installation be fitted with suitable over-voltage protection at the electrical switchboard to avoid these situations.

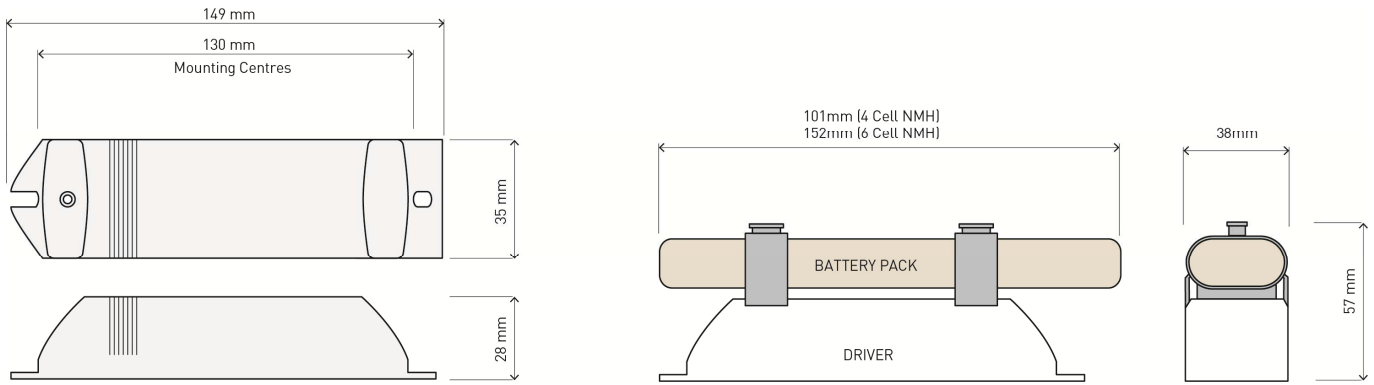
8. Insulation Resistance Testing

Performing IR tests on the Mains AC supply circuit connected to the DALI Emergency LED Driver is not recommended. In the event it is required, the Driver must be disconnected from the Mains AC supply to conduct the test and then reconnected.

It is generally not a requirement to perform an IR test on the DALI lines. In the event it is required, the DALI line cables must be disconnected from the DALI Emergency LED Driver to conduct the test and then reconnected.

9. Product Specifications

Parameter	DGLCEM035CD-AU	DGLCEM070CD-AU	DGLCEM100CD-AU
Input Voltage/Frequency	220~240V AC / 50~60Hz		
Input PF	≥ 0.6		
Input Current	10mA @ 240V (Idle) 20mA @ 240V (Charging) 26mA @ 240V (1 LED Maint) 32mA @ 240V (2 LED Maint)	10mA @ 240V (Idle) 20mA @ 240V (Charging) 32mA @ 240V (1 LED Maint)	10mA @ 240V (Idle) 20mA @ 240V (Charging) 40mA @ 240V (1 LED Maint)
Input Power	0.8W @ 240V (Idle) 2.8W @ 240V (Charging) 3.9W @ 240V (1 LED Maint) 5.0W @ 240V (2 LED Maint)	0.8W @ 240V (Idle) 2.8W @ 240V (Charging) 5.0W @ 240V (1 LED Maint)	0.8W @ 240V (Idle) 2.8W @ 240V (Charging) 6.2W @ 240V (1 LED Maint)
Nominal Output Voltage	1.0V ~ 8.0V	1.0V ~ 4.0V	
Nominal Output Current	350mA (±7%)	700mA (±7%)	1000mA (±7%)
Maximum Load Power	2.8W (2 LED)	2.8W (1 LED)	4.0W (1 LED)
Battery Cell Count	4 Cells (1 LED) 6 Cells (2 LED)	4 Cells	6 Cells
Battery Type (not included)	Nickel Metal Hydride (NiMH)		
Battery Cell Capacity	2100mA		
Battery Pack Product Code	DGLCEM2100/4NMH (4 Cell) DGLCEM2100/6NMH (6 Cell)		
Battery Charger	Dual Rate		
Battery Detection	Auto Detection		
Battery Clips Product Code	DGLCEMCLIP-40PK (2pcs required per Driver)		
DALI Line Current Draw	≤2mA		
DALI Dimming	NOT DIMMABLE on Mains AC or Emergency		
Operational Modes (Wiring)	Non Maintained/Maintained-Switchable/Maintained-Permanent		
Isolation	≥ 3.75kV AC Line to SELV terminals ≥ 1.5kV AC Line to DALI terminals		
Load Protection	Open Circuit/Short Circuit/Overload/Thermal		
Short Circuit	Auto Recover		
System Rated Life	50000 Hours		
Ambient Operating Temp	0°C to 50°C		
Ambient Storage Temp	-10°C to 70°C		
Case Temp (max)	85°C (@ TA = 50°C)		
Humidity	0% to 95% RH non condensing		
Ingress protection	IP20		
DALI Line terminals	1 x 1.5mm ² solid/stranded per tunnel (2 tunnels)		
Mains AC Supply terminals	1 x 1.5mm ² solid/stranded per tunnel (3 tunnels)		
Emergency LED terminals	1 x 1.5mm ² solid/stranded per tunnel (2 tunnels)		
Material (Driver Housing)	Flame Retardant Polycarbonate		
Weight (Driver)	90 grams		
Mounting Centres (Driver)	130mm		
Dimensions (Driver)	(L)149mm x (W)35mm x (H)27.5mm		
Dimensions (Battery Pack)	(L)101mm x (W)35mm x (H)18mm (4 Cell)	(L)152mm x (W)35mm x (H)18mm (6 Cell)	
Lead Length (Battery Pack)	230mm (4 Cell)	230mm (6 Cell)	
Lead Length (Remote Head)	Maximum 2 metres between the Driver & the remote LED head		
Lead Length (T/Switch_LED)	300mm		
Compliance Marks	    		



10. Standards and Compliance

As a component that may be installed into an exit or emergency luminaire, the Diginet Emergency LED Driver is designed to meet/exceed the following Australian and International standards.

Australian/New Zealand EMC and Electrical Safety Frameworks and Standards

Regulation	Standard	Title
EMC	AS/NZS CISPR 15:2011	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
Electrical Safety	AS/NZS 61347.1:2002	Lamp Control Gear – General and Safety requirements (IEC 61347-1:2000, MOD)
	IEC 61347.2.13	Lamp Control Gear – Part 2-13: Particular requirements for DC or AC supplied electronic control gear for LED modules – edition 1.0 (2006)

Other International Directives and Standards

Regulation	Standard	Title
Digital Addressable Lighting Interface (DALI)	IEC 62386-101	Digital Addressable Lighting Interface – Part 101: General Requirements – System
Digital Addressable Lighting Interface (DALI)	IEC 62386-102	Digital Addressable Lighting Interface – Part 102: General Requirements – Control Gear
Digital Addressable Lighting Interface (DALI)	IEC 62386-202	Digital Addressable Lighting Interface – Part 202: Particular Requirements for Control Gear – Self Contained Emergency Lighting (Device Type 1)

11. Product Warranty

The DALI Emergency LED Driver has a five-year warranty against manufacturing defects in accordance with the following terms:

- Nothing in this Warranty affects any person's rights under the Australian Consumer Law. The benefits to any person under the DIGINET Warranty are in addition to the rights and remedies available under any Consumer Guarantees.

2. Subject to the other clauses of this Warranty, DIGINET warrants that the Goods will be free of manufacturing defects and will perform to DIGINET's specifications.
3. The benefit of the DIGINET Warranty extends only to the owner of the property in which the Goods are installed (the Owner) for five (5) years after the date of purchase (Warranty Period).
4. If within the Warranty Period the Goods fail to perform to DIGINET's specifications as a result of some defect in material or workmanship in the Goods (Defect) then DIGINET will, at its option, repair the Goods or supply replacement Goods free of charge.
5. The DIGINET Warranty will not apply to Goods:
 - 5.1. Installed by any person other than a qualified tradesperson; or
 - 5.2. Subjected to misuse, neglect, negligence or accidental damage; or
 - 5.3. Operated in any way contrary to any operating or maintenance instructions; or
 - 5.4. Improperly handled, installed or maintained; or
 - 5.5. Altered or modified prior to or after installation.
6. The DIGINET Warranty does not apply to faulty or defective design of Goods unless DIGINET has designed the Goods and DIGINET expressly accepts responsibility for such design in writing.
7. In order to make a claim under the DIGINET Warranty, the Owner must:
 - 7.1. Contact DIGINET to obtain a Returned Goods Authorisation Number for the Goods and to be notified of DIGINET's return address for the Goods by:
 - 7.1.1. Freecall **1300 95 DALI (3254)**; or
 - 7.1.2. Post to **PO Box 314, Padstow NSW 2211**; or
 - 7.1.3. Fax to **1300 95 3257**; or
 - 7.1.4. Email to sales@diginet.net.au.
 - 7.2. Return the Goods at the Owners expense to the return address notified by DIGINET together with all accessories, instructions, specifications or other material supplied with the Goods and a notice in writing:
 - 7.2.1. Stating the Returned Goods Authorisation Number for the Goods;
 - 7.2.2. Describing in detail the defect or fault in the Goods;
 - 7.2.3. Setting out the Owner's contact details (including postal address, email address and telephone numbers at which the Owner can be contacted during usual business hours).
 - 7.3. DIGINET will not accept any returned Goods which have not been returned strictly in accordance with the above instructions.
8. DIGINET will examine any returned Goods and if DIGINET determines that they are defective through no fault of the Owner and are otherwise undamaged, DIGINET will repair or replace the Goods free of charge.
9. DIGINET will notify the Owner whether it accepts the Goods are defective within a reasonable time of return.
10. DIGINET will not be responsible for any costs of de-installation, re-installation, returning Goods or for redelivery of the Goods (whether original or repaired and/or replacement Goods) by DIGINET and any other related expenses of the Owner in claiming under the DIGINET Warranty.
11. DIGINET will not be responsible for any loss or damage to the Goods occurring while the Goods are in transit (either on return to DIGINET or upon redelivery to the Owner of the original or repaired and/or replacement Goods).
12. DIGINET will not be responsible (whether arising in contract or tort (including negligence) or under any statute) for any special, indirect, incidental, consequential or economic losses or damages (including loss of data, business, profits, revenue, anticipated savings, bargain, opportunity or goodwill) whether or not the possibility of those losses or damages being suffered had been brought to the attention of DIGINET.

The Australian Consumer Law requires the inclusion of the following statement with the DIGINET Warranty:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.



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