

Product description

Omni-LED-LFP™ is a range of Maintained emergency lighting conversion modules for use with One-LUX LiFePO4 batteries. They are housed in a compact low-profile enclosure and suitable for use in either internal or remote self-contained applications. Their constant-power emergency driver technology with a SELV isolated output will run almost any LED lamp or array in the range of 10V – 200VDC including some GU10 and Linear tubes, so making it easy to produce an emergency version of your existing LED luminaire without the need for separate ‘emergency’ LEDs or connectors. They are available with 2W to 4W of emergency power and for 1 or 3 hour autonomy.

Features

- > Wide range of lamp voltage and power options available
- > 3-pole switching provides full isolation of lamp connections and mains driver’s power supply during emergency operation
- > Universal module with user-selectable 1 or 3 hour autonomy
- > Also available with Self-Test and DALI
- > Constant-current charger with short-circuit protection and polarised battery socket
- > Batteries include voltage, current and thermal protection with UN38.3 approval.
- > Input for optional manual low-voltage emergency test switch
- > Additional side fixing points allows mounting in restricted spaces
- > Operates High-brightness green charge LEDs. (250mm supplied. Other lengths available on request.
- > Designed and manufactured in Great Britain
- > Complies with: EN61347-1, EN61347-2-7, EN61347-2-13, EN55015, EN61000-3-2, EN61547, UN38.3 (Batteries)
- > Suitable for luminaires conforming to EN60598-2-22
Product specifications may be subject to change without prior notice

Common Technical Data	
Input Supply Voltage	230V +/- 10%
Supply Frequency	50/60 Hz
Output Voltage of the Range	10 - 200Vdc
Operating Ambient Temperature	0°C - 50°C (0°C - 45°C 4W DST)
Battery Temperature Range	0°C - 55°C
IP Rating	IP20
Omni-LED Module Weight	90g



LED Voltage	Emergency Power	Omni-LED Module	LiFePO4 Battery	Battery End Caps*	Kit Code
12 - 55V	3W	OL55/3W/M3/LFP	LFP/3.2V/4.4Ah/SS	E/SUB-C	OL55/3W/M3/LFP/SS
			LFP/3.2V/4.4Ah/PS	N/A	OL55/3W/M3/LFP/PS
			LFP/3.2V/4.5Ah/SS	E/18700	OL55/3W/M3/LFP/3SS
			LFP/3.2V/2.2Ah/SC	E/SUB-C	OL55/3W/M1/LFP/SC
12 - 55V	4W	OL55/4W/M3/LFP	LFP/6.4V/3.6Ah/SS	E/26650	OL55/4W/M3/LFP/SS
			LFP/6.4V/2.2Ah/SS	E/SUB-C	OL55/4W/M1/LFP/SS
10 - 80V	2W	OL80/2W/M3/LFP*	LFP/3.2V/3.6Ah/SC	E/26650	OL80/2W/M3/LFP/SC
			LFP/3.2V/2.2Ah/SC	E/SUB-C	OL80/2W/M1/LFP/SC
55 - 90V	4W	OL90/4W/M3/LFP	LFP/6.4V/3.6Ah/SS	E/26650	OL90/4W/M3/LFP/SS
			LFP/6.4V/2.2Ah/SS	E/SUB-C	OL90/4W/M1/LFP/SS
90 - 200V	4W	OL200/4W/M3/LFP	LFP/6.4V/3.6Ah/SS	E/26650	OL200/4W/M3/LFP/SS
			LFP/6.4V/2.2Ah/SS	E/SUB-C	OL200/4W/M1/LFP/SS

For DALI Self-Test versions add ‘/DST’ to the product codes above.

TECHNICAL INFORMATION

Model Number	Mains Input Characteristics - Charging Mode				
	Autonomy Setting	Nominal Circuit Watts* Initial Charge/ Charged state	Input Current Nominal/ Range	Inrush Current	Power Factor
OL55/3W/M3/LFP	1 hour	0.9W/ 0.5W	8mA/ (7-9mA)	4A pk	0.57
	3 hours	1.4W/ 0.5W	11.3mA/ (10-12mA)	4A pk	0.57
OL80/2W/M3/LFP	1 hour	0.9W/ 0.5W	8mA/ (7-9mA)	4A pk	0.57
	3 hours	1.4W/ 0.5W	11.3mA/ (10-12mA)	4A pk	0.57
OL55/4W/M3/LFP, OL90/4W/M3/LFP OL200/4W/M3/LFP	1 hour	1.2W/ 0.7W	9mA/ (8-10mA)	6.5A pk	0.65
	3 hours	1.9W/ 0.7W	13mA/ (12-14mA)	6.5A pk	0.65

* This figure may be used for LENO 'Parastic Power' calculations.

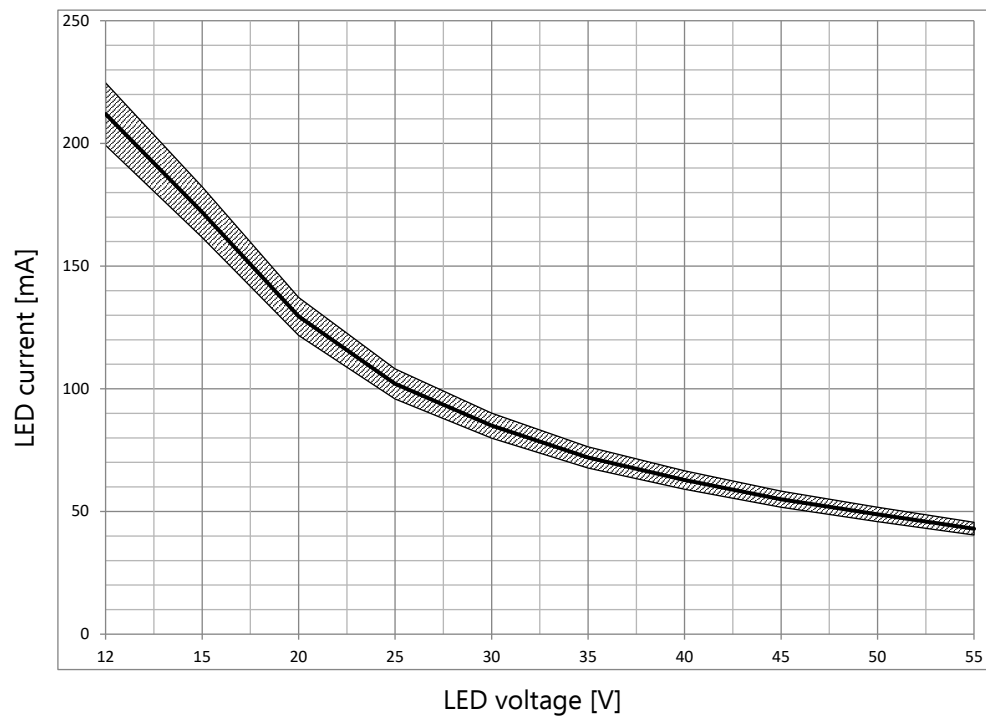
Model Number	Emergency Mode								
	Nominal Battery Capacity (1 hour/ 3 hours)	Battery Volts Range (Charge Mode)	Battery Charge Current Range	Battery Volts Range Min/ Nom/ Max (Discharge Mode)	Battery Discharge Current Nominal/ Range	DDP Voltage	LED Voltage Range	Max Output Power	Uout Max (open Circuit)
OL55/3W/M3/LFP	2.2Ah/ 4.4Ah	2 - 8V	0 - 230mA	2V/ 3.2V/ 3.6V	1.05A/ (0.8 - 1.2A)	2.8V (min)	12 - 55V	3W	80V
OL55/4W/M3/LFP	2.2Ah/ 3.6Ah	4 - 10V	0 - 230mA	4V/ 6.4V/ 7.2V	0.75A/ (0.725-0.775A)	6.0V (min)	12 - 55V	4W	80V
OL80/2W/M3/LFP	2.2Ah/ 3.6Ah	2 - 8V	0 - 230mA	2V/ 3.2V/ 3.6V	0.75A/ (0.725-0.775A)	2.8V (min)	6 - 80V	2W	100V
OL90/4W/M3/LFP	2.2Ah/ 3.6Ah	4 - 10V	0 - 230mA	4V/ 6.4V/ 7.2V	0.75A/ (0.725-0.775A)	6.0V (min)	55 - 90V	4W	100V
OL200/4W/M3/LFP	2.2Ah/ 3.6Ah	4 - 10V	0 - 230mA	4V/ 6.4V/ 7.2V	0.75A/ (0.725-0.775A)	6.0V (min)	90 - 200V	4W	260V

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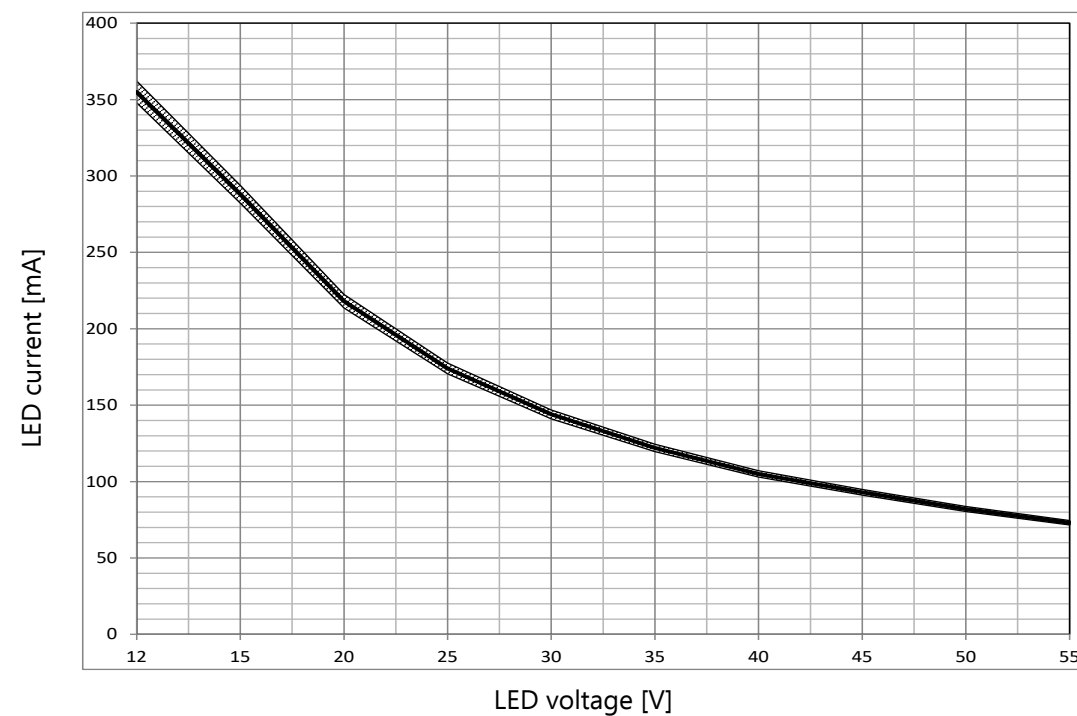
TECHNICAL INFORMATION

LED lamp output - Shaded area indicates typical forward voltage (Vf) vs forward current (If) expected throughout discharge duration.

OL55/3W (&/DST)

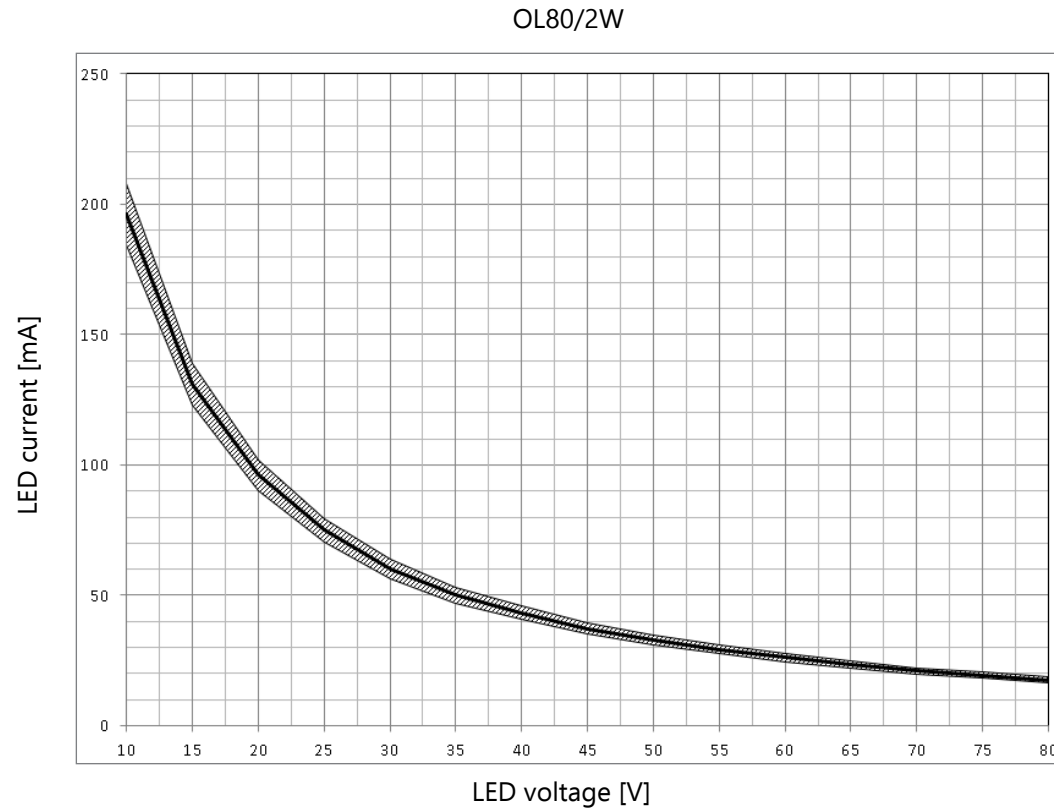


OL55/4W (&/DST)



TECHNICAL INFORMATION

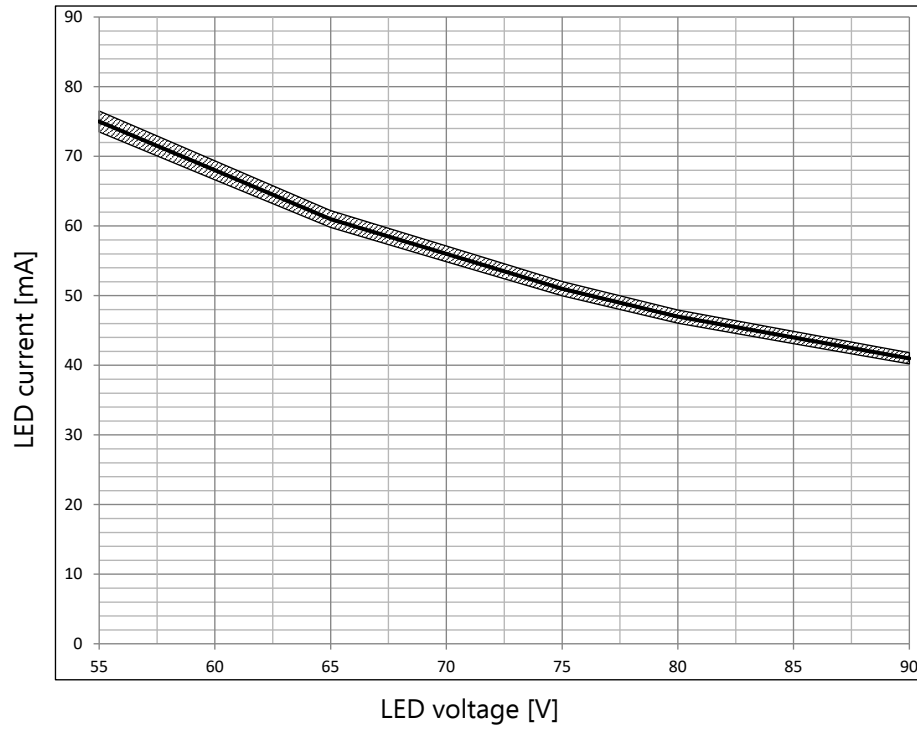
LED lamp output - Shaded area indicates typical forward voltage (V_f) vs forward current (I_f) expected throughout discharge duration.



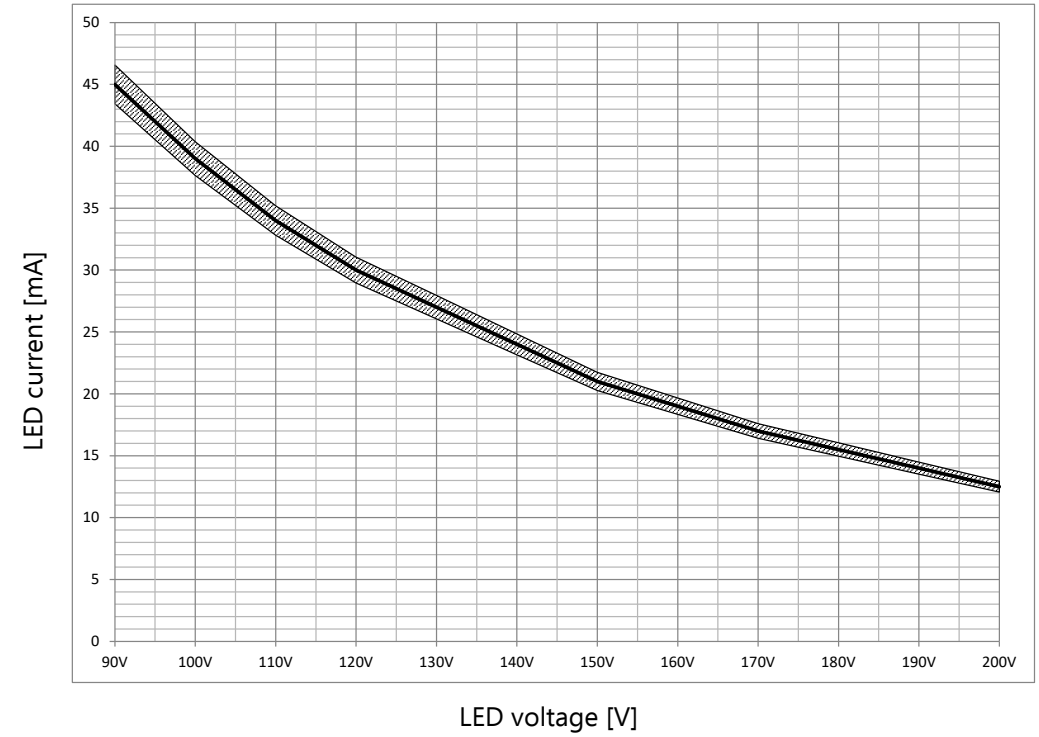
TECHNICAL INFORMATION

LED lamp output - Continued.

OL90/4W (&/DST)



OL200/4W (&/DST)



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LITHIUM IRON PHOSPHATE (LiFePO4) BATTERIES

Applicable LiFePO4 battery packs to Omni-LED models (Available as module and battery kits or remote box solutions)

		Battery Options						
		1 x 22650 Cell	2 x 22650 Cell Stick	1 x 26650 Cell	2 x 22650 Cell Pack	3 x 18650 Cell Stick	2 x 22650 Cell Stick	2 x 26650 Cell Stick
Model Number		LFP3.2V/2.2Ah	LFP3.2V/4.4Ah/SS	LFP3.2V/3.6Ah	LFP3.2V/4.4Ah/PS	LFP3.2V/4.5Ah/SS	LFP6.4V/2.2Ah/SS	LFP6.4V/3.6Ah/SS
Battery Dimensions Length x Width, Height		66 x 23 x 28mm	132 x 23 x 28mm	66 x 27 x 30mm	68 x 46 x 28mm	200 x 19 x 22mm	132 x 23 x 28mm	132 x 27 x 30mm
With End Caps Length x Width, Height, (Fixing centres)		106 x 28 x 31mm (84) mm	172 x 28 x 31mm (150) mm	106 x 31 x 31mm (86) mm	N/A	224 x 23 x 26mm (212) mm	172 x 28 x 31mm (150) mm	172 x 31 x 32mm (152) mm
OL55/3W/M3/LFP	1 hour	✓						
	3 hours		✓		✓	✓		
OL55/4W/M3/LFP	1 hour						✓	
	3 hours							✓
OL80/2W/M3/LFP	1 hour	✓						
	3 hours			✓				
OL90/4W/M3/LFP	1 hour						✓	
	3 hours							✓
OL200/4W/M3/LFP	1 hour						✓	
	3 hours							✓

Product specifications may be subject to change without prior notice.

INSTALLATION & OPERATION (Standard Non-DST Versions)

Disclaimers

This product and its associated accessory products have been manufactured and designed to comply with the requirements of EN60598-2-22 in addition to the standards detailed on page 1 of this document. Operation beyond the parameters specified in this document and the associated standards may result in reduced performance and ultimate premature failure, with the warranty made void. It is the users responsibility to ensure full compatibility of the Omni-LED™ product for the intended application and for compliance of the emergency conversion to relevant Standards. The user should be aware of the environment to which the luminaire and these components are used and follow the luminaire manufacturer's specifications. The Omni-LED modules are not intended for use in high-risk task area luminaires. Installation should be in line with the following guides. Please contact our Technical department if you are in any doubt.

Precautions

This product should be installed as per the following guidelines, electric shock or damage to the product may result if incorrectly installed. The luminaire should be installed by a qualified and competent electrician. If the luminaire is to be mounted in an external location, consider the battery as temperatures below 0°C may be frequent in cold months. In this case, the design life of 4 years will be compromised and more frequent battery replacements may be needed. Likewise, if the luminaire is situated in a hot environment where the temperature is maintained at 25°C or above, or sited next to large panes of glass in which case it may be exposed to thermal magnification.

It is recommended that IP65 luminaires are avoided for use in internal applications as undue thermal stress may result.

Installation notes

Wire Preparation: maximum strip length 10mm (recommended 6mm)
Min/max Conductor sizes: 0.5 - 1.5 mm².

Best effort should be made to keep the Omni-LED and battery away from direct sources of heat, i.e. mains LED drivers and LED lamps. Avoid obstructing airflow around the sides of the Omni-LED and other electronic products. Allow a clearance of 10mm or more wherever possible.

The battery supplied is fitted with a non reversable plug to avoid reverse polarity connection and care should be taken when plugging it in.

If it is anticipated that the un-switched supply may be interrupted, it is imperative that the battery is left disconnected and commissioning is delayed until the supply is stable.

Lamp Connections should be kept as short as possible and under no circumstances exceed 1m for self-contained luminaires.

The Omni-LED product should be secured using both fixing points and the use of M4x 6mm screws are recommended for most applications.

Test Switch inputs - Emergency Test Function (Optional)


This product offers the facility to perform a function test for the duration which the switch is held. A non-latching push-to-make switch should be used as shown in the wiring diagram.

EMC considerations: Mains input connections should be as far from the lamp leads as possible and no ideally less than 10cm. Mains input wires should be as short as possible and run direct from input terminations to the Omni-LED product; they should not run alongside the case.

Other EMC tips:

- > Keep the lamp wires raised off any earthed metalwork
- > Twist mains leads together when 'looping' or 'through wiring'

The switched and un-switched lives may be joined together for continuous operation (un-switched) applications.

The symbol  confirms the controlgear is built-in type, but accessible parts (excluding terminals) are insulated from live parts by double/reinforced insulation.

The unit employs self-resetting protection against short-circuit of battery terminals. Normal charging will resume automatically once a fault is removed. The mains supply should always be disconnected when servicing the luminaire.

If other devices are connected to the un-switched supply, please be aware that to maintain compliance with EN60598-2-22 that in event of its failure it will not affect other devices on the same circuit. In this case we recommend the use of separate fused terminal blocks to each device.



Internal fuses used within Omni-LED product are not user serviceable.

Omni-LED™ modules are supplied with a small plastic selector fitted, which denotes 3 hour operation as standard. If 1 hour emergency operation is required with the correct battery, the selector should be removed.

Warning! Only the LiFePO4 battery supplied with the Omni-LED™ module by One-LUX may be used. Permanent battery damage can occur if the 3 hour setting is used with the incorrect battery.

See "Applicable LiFePO4 battery packs to Omni-LED™ models" table for cross reference.

Emergency Output Characteristics' can be seen from page 2.

Autonomy Selection Information	
Emergency Duration	Jumper Setting
3 Hours (Default Setting)	 1-3HR Omni-LED
1 Hour (Remove plastic jumper)	 1-3HR Omni-LED

Installation particulars for end user

Commissioning: Once the luminaire has been installed in line with the manufacturer's recommendations, the battery should be allowed to charge for a minimum period of 24 hours before testing for its rated duration.

If the luminaire has been stored for a number of months, it may be necessary to repeat the charge/discharge process several times to re-condition the battery.

After successful commissioning, the battery should be marked with the date of commission.

Routine test and inspection should be performed in accordance with EN50172 or otherwise local legislation. Short discharge periods of around 5 – 10 minutes each month for the purposes of inspection will not adversely affect One-LUX batteries and should be considered as a maintenance exercise for the battery.

Regular full discharge cycles in excess of once per month may adversely affect the design life of the battery. Replacement batteries are available if the rated emergency duration is no longer achieved.

INSTALLATION & OPERATION (DST Versions)

Disclaimers

Omni-LED DST™ module and its associated accessory products have been manufactured and designed to comply with the requirements of EN60598-2-22 in addition to the standards detailed on page 1 of this document. Operation beyond the parameters specified in this document and the associated standards may result in reduced performance and ultimate premature failure, with the warranty made void. It is the users responsibility to ensure full compatibility of the Omni-LED DST product for the intended application and for compliance of the emergency conversion to relevant Standards. The specifier/ system designer should follow the luminaire manufacturer's specifications and be aware of the environment to which the luminaire and these components are used and ensure compatibility of One-LUX products with other components in the lighting/ DALI system. Installation should be in line with the following guides. Please contact our Technical department if you are in any doubt.

Precautions

Omni-LED DST™ module should be installed as per the following guidelines, electric shock or damage to the product may result if incorrectly installed. The luminaire should be installed by a qualified and competent electrician. If the luminaire is to be mounted in an external location, consider the battery as temperatures below 0°C may be frequent in cold months. In this case, the design life of 4 years will be compromised and more frequent battery replacements may be needed. Likewise, if the luminaire is situated in a hot environment where the temperature is maintained at 25°C or above, or sited next to large panes of glass in which case it may be exposed to thermal magnification. It is recommended that IP65 luminaires are avoided for use in internal applications as undue thermal stress may result.

Installation notes

Wire Preparation: maximum strip length 10mm (recommended 6mm)
Min/max Conductor sizes: 0.5 - 1.5 mm².

Best effort should be made to keep the Omni-LED DST™ module and battery away from direct sources of heat, i.e. mains LED drivers and LED lamps. Avoid obstructing airflow around the sides of the Omni-LED DST™ module and other electronic products. Allow a clearance of 10mm or more wherever possible.

The battery supplied is fitted with a non reversible plug to avoid reverse polarity connection and care should be taken when plugging it in. If it is anticipated that the un-switched supply may be interrupted, it is imperative that the battery is left disconnected and commissioning is delayed until the supply is stable. Lamp Connections should be kept as short as possible and under no circumstances exceed 1m for self-contained luminaires. The Omni-LED DST™ module should be secured using both fixing points and the use of M4x 6mm screws are recommended for most applications.

Test Switch input (Optional accessory)

The Omni-LED DST™ module offers the facility for the user to perform a multiple functions with a switch connected to the 'TEST SWITCH' input. A non-latching push-to-make switch should be used as shown in the wiring diagrams on Page 11. See below for details of use.


Test Switch Information	
Function	Test Switch Action
Disable Sounder	Press and hold for longer than 5 seconds (Sounder beeps once for confirmation)
Enable Sounder	Press and hold for longer than 5 seconds (Sounder beeps twice for confirmation)
Start a Function Test*	Press and release 2 times within 5 seconds
Confirm physical selection	Press once during physical selection mode initiated by DALI system
Stop Identification	Press once during identification mode to exit.
Set Test Time of Day	Press and hold for longer than 10 seconds

EMC considerations: Mains input connections should be as far from the lamp leads as possible and no ideally less than 10cm. Mains input wires should be as short as possible and run direct from input terminations to the Omni-LED DST™ product; they should not run alongside the case.

Other EMC tips:

- > Keep the lamp wires raised off any earthed metalwork
- > Twist mains leads together when 'looping' or 'through wiring'

The switched and un-switched lives may be joined together for continuous operation (un-switched) applications.

The symbol  confirms the controlgear is built-in type, but accessible parts (excluding terminals) are insulated from live parts by double/reinforced insulation. The Omni-LED DST™ module provides SELV reinforced insulation between the mains supply and battery charging circuit and employs self-resetting protection against short-circuit of battery terminals. Normal charging will resume automatically once a fault is removed. The mains supply should always be disconnected when servicing the luminaire.



If other devices are connected to the un-switched supply, please be aware that to maintain compliance with EN60598-2-22 that in event of its failure it will not affect other devices on the same circuit. In this case we recommend the use of separate fused terminal blocks to each device.

Internal fuses used within Omni-LED DST™ module product are not user serviceable.

Omni-LED™ modules are supplied with a small plastic selector fitted, which denotes 3 hour operation as standard. If 1 hour emergency operation is required with the correct battery, the selector should be removed.

Warning! Only the LiFePO4 battery supplied with the Omni-LED™ module by One-LUX may be used. Permanent battery damage can occur if the 3 hour setting is used with the incorrect battery.

See "Applicable LiFePO4 battery packs to Omni-LED™ models" table for cross reference. Emergency Output Characteristics' can be seen from page 2.

Autonomy Selection Information	
Emergency Duration	Jumper Setting
3 Hours (Default Setting)	 1-3HR Omni-LED
1 Hour (Move plastic jumper)	 1-3HR Omni-LED

INSTALLATION & OPERATION (DST Versions)

Commissioning:

Once the luminaire has been installed and availability of the un-switched supply is deemed stable, **connect the battery, then apply mains power.** After applying power, the Omni-LED DST™ will determine if there is a DALI bus present and or not. With **no** bus present, the indicator LED will flash red then green and the module will automatically carry out an initial 24 hour charge and a then a full Duration Test. Once this commissioning test is complete, a further 24 hours will be needed to recharge the battery before normal use. If a DALI bus **is** present, the module will begin standby/ charge mode and await further instruction from the DALI master.

The duration of stand-alone self tests, and capability of the product recognised by a DALI master will be determined by the configuration link, which is accessible through the enclosure lid. (See previous page for details).

Caution should be taken to ensure the battery charge current compatibility before adjusting configuration.

If it is anticipated that the un-switched supply may be interrupted before normal use, we advise that the battery is left disconnected and commissioning is delayed until the supply is stable. If mains is not applied after connecting the battery, the unit will continue to draw a minimal amount of power from the battery whilst in standby mode. **Continued use in this state in excess of several months can cause permanent damage to some batteries.**

It may be necessary to repeat the initial charge/discharge process several times to re-condition the battery and achieve full rated emergency duration.

This can be initiated by cycling the unswitched mains supply off and on, or activating the test switch twice within 5 seconds. After successful commissioning, the battery should be marked with the date of commission.

Automatic Testing

If Standalone Self-Test mode is detected, the module will establish randomised delay times to ensure the next scheduled tests do not coincide with the same test of adjacent luminaires. (See table below for details of 'Test Delay Time' ranges).

Subsequent routine testing will then take place according to the 'Test Interval' times detailed in the table below.

When a scheduled test is due, the Omni-LED DST™ module will check status of the 'Control Switch Live Lin' to try and determine if the lamp is already in use and avoid disruption to the user for up to 36 hours wherever possible.

If the Omni-LED DST™ module has detected it is installed on a DALI network, it will configure itself according to the default DALI specification. (See table below). **It is important to note that in DALI mode, randomisation will not be set and it will await test delay times to be configured by the DALI master.**

In the event of loss of communication with the DALI master, automatic testing will revert back to the Self-Test 'Test Intervals', but 'Test Delay Times' will remain as configured by the DALI master.

An Omni-LED DST™ module can be returned to standalone self test at any time by disconnecting it from the DALI network and forcing a Function Test from the test switch or by cycling the un-switched mains supply. (See page 10 for details).

To fully reset all test times, disconnect the mains, battery power and DALI connections. Once power is restored, the commissioning cycle and randomisation process will be re-initiated.

Short discharge periods each month for the Function Test will not adversely affect One-LUX batteries and should be considered as a maintenance exercise for the battery. Regular full discharge cycles will however adversely affect the design life of the battery, so excessive testing should be avoided wherever possible.

A full summary of automatic test timings can be seen in the table below.

The status of the Omni-LED DST™ module can be determined at any time from the indicator LED. Details of the indicator LED status conditions and optional test switch functionality can be found on page 10.

Automatic Testing Information					
Test Type	Mode	Duration	Test Delay time	Test Interval / Occurrence	Notes
Commissioning Test	Self-Test	1 or 3 Hours*	24 Hours	Once*	The module will carry out a Duration Test 24 hours after initial power up. *This test cycle will be repeated if un-successfull Caution! An initial Duration Test must be initiated by the DALI Master to commission a new installation.
	DALI	1 or 3 Hours*	N/A	N/A	
Function Test	Self-Test	20 Seconds	1-15 Days	Every 28 Days	-
	DALI	20 Seconds	0	Every 7 Days	Caution! Factory default of zero test delay time is set for DALI Mode
Duration Test	Self-Test	1 or 3 Hours*	1-51 Weeks	Every 51 Weeks	The module checks if the lamp is in use before initiating a test to avoid disruption. Maximum test delay is 36 hours
	DALI	1 or 3 Hours*	0	Every 52 Weeks	Caution! Factory default of zero test delay time is set for DALI Mode

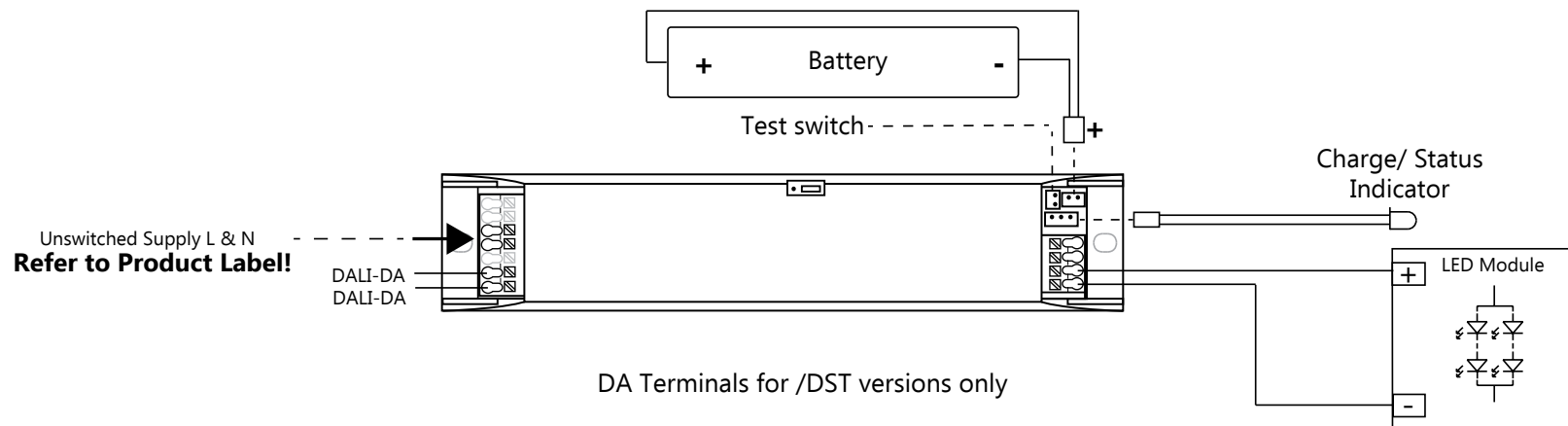
INSTALLATION & OPERATION (DST Versions) Continued

Module Status Information								
LED Colour	LED Status	On Time (Seconds)		Off Time (Seconds)		Sounder	Purpose	Action required
Green	Steady On, or Very Slow Flash	Permanent 10		0 0.5		-	Normal status with fully charged battery (Commissioned unit)	None - In standby mode and operating as normal
	Slow Flash	1.5		0.5		-	First 24 hour charge and Duration Test. (Non-Commissioned unit)	None - Await commissioning process to complete
	Fast Flash	0.5		0.5		-	Function Test or Duration Test in progress. (Commissioned unit)	None - Await current test to complete
Varied		On	Off	On	Off		Purpose	Action required
Green	Long ‘On’ then flash	10	0.5	0.5	0.5	-	Battery being charged (Commissioned or DALI bus present unit)	None - Await battery to charge (Normally 24 Hours)
Red & Green (alternate)	Fast Flash	0.5	0.5	0.5	0.5	-	Physical select enabled by DALI system only	Confirm Physical select with optional Test Switch
Module Status Information (Fault Conditions) *A function test can also be initiated at anytime whilst mains power is present by shorting the test switch connections 2 times within 5 seconds. A push switch is also available.								
LED Colour	LED Status	On Time (Seconds)		Off Time (Seconds)		Sounder	Cause	Suggested action required
Red	Slow Flash	0.5		1.5		Yes	1) Possible initial commissioning duration test failed: <	

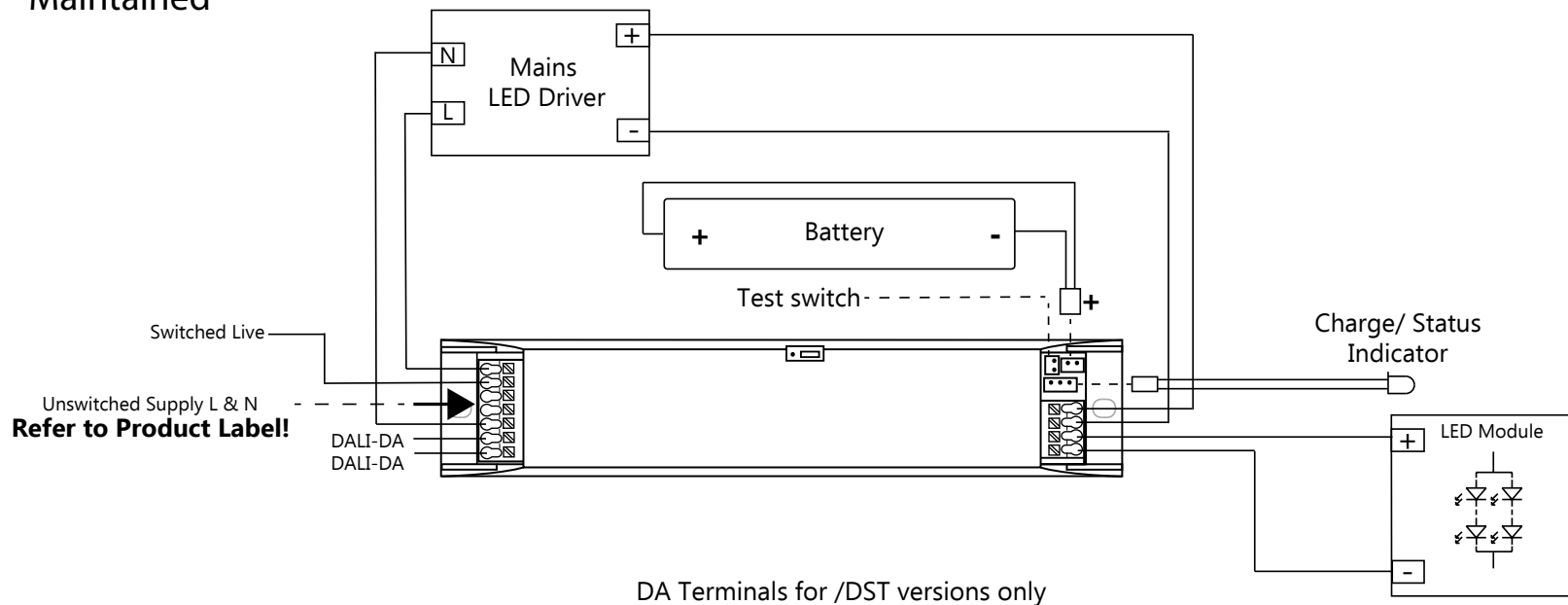
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INSTALLATION & OPERATION - WIRING & CONNECTION DETAILS

Non-Maintained



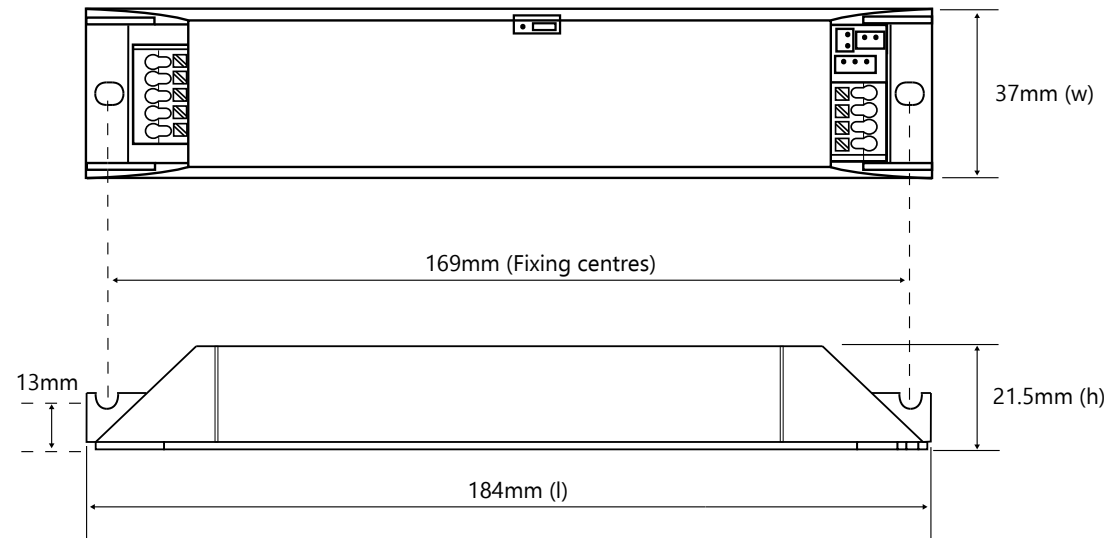
Maintained



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TECHNICAL INFORMATION

Enclosure Dimensions.



Product specifications may be subject to change without prior notice.