SUB-ZERO™ | ACTIVE BATTERY THERMAL SUPPORT

Product description

Sub-Zero™ is an emergency lighting battery solution for low temperature applications.

The system comprises a mains powered control unit that operates alongside the normal emergency control gear to provide low temperature support when needed. It is available for batteries of many traditional formats, so making them suitable for retrofitting or upgrading existing luminaires.

The system is UK designed and built and comprises a compact microprocessor based controller, which constantly monitors the temperature within a specially configured battery pack and maintains the battery's temperature within safe levels. If however the battery's temperature rises above 25°C then no heating is applied and the system is in standby.

Properties

- Extends the lower operating temperature of an emergency luminaire down to -20°C
- Maintains safe battery temperature in outdoor applications
- Negligible affect on existing maximum battery temperature
- Available in NiCd, NiMH & LiFePO4** battery formats
- Built-in data logging of under and over temperature events
- Extended battery warranty of 4 years*
- Compact controller allows retrofit upgrade for existing luminaires
- Proportional heating control system with maximum 6W capability
- Minimal standby consumption when the battery is over 25°C
- 12V SELV isolated heater control
- Simple plug-in battery heater connection
- Push-wire mains terminals for solid or stranded conductors up to 1.5mm^2
- Complies with: EN55015, EN61000-3-2 & EN61547

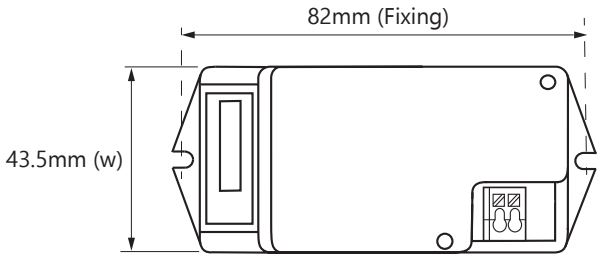
* Battery warranty valid when products are operated and maintained strictly within specification. Contact One-LUX for further details.

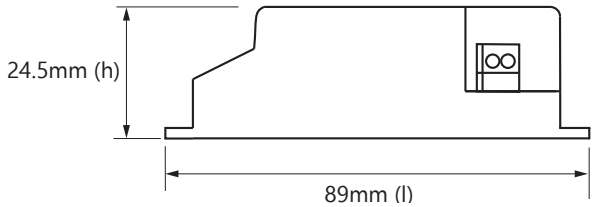
** Available soon. Contact One-LUX for further details.

Common Technical Data	
Input Supply Voltage	230V +/- 10%
Supply Frequency	50/60 Hz
Minimum/ Standby Power (>25°C)	0.4W
Maximum Power Consumption (At -20°C)	8W
Operating Temperature (Controller)	-20° to 50°C Ambient
Battery Ambient Temperature Range	NiCd -15°C to 50°C NiMH -10°C to 40°C LiFePO4 -15°C to 50°C
IP Rating	IP20
Weight	50g

Model Number	Standard Pack Quantities	Weight
SZ/HC/6W	100	5.5kg

See pages 2 and 3 for battery details and order codes





Product specifications may be subject to change without prior notice.

Issue-2 May 2020

NICKEL CADMIUM (NiCd) SUB-ZERO BATTERIES

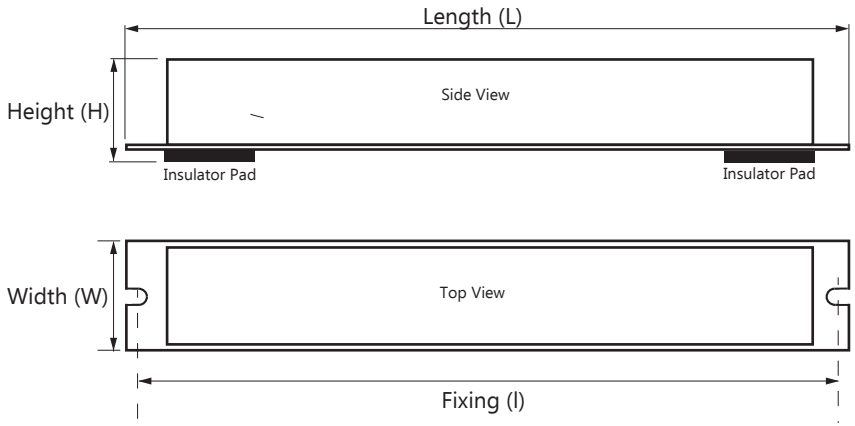
Product description

A range of high temperature Nickel Cadmium (NiCd) batteries incorporating Sub-Zero™ technology suitable for emergency lighting applications. They are available as 1.6 or 4.0Ah capacity and supplied with a built-in mounting plate with fixing points to match existing One-LUX stick variants when fitted with end caps or Side-by-Side mounted on plates. Rated at a continuous operating temperature 55°C down to -15°C ambient. Batteries are supplied with a 150mm controller connecting lead as standard.

Common Technical Data	
Absolute Maximum Temperature	70˚C
Maximum Continuous Temperature	55˚C
Minimum Ambient Temperature	-15˚C
Charge Requirements	C/20 Constant Current (CC)
Storage	0-25˚C for 12 months

Properties

- High temperature Nickel Cadmium batteries
- Continuously rated to 55°C
- 'D' size 4Ah and 'SC' size 1.6Ah batteries as standard
- Industry standard configurations
- Connections via polarised tags
- Supplied with flying leads as standard. Alternative options available
- Complies with EN61951-1 and suitable for luminaires conforming to EN60598-2-22
- Suitable for installations to EN50172
- Other capacities and non standard, custom configurations available upon request



Product Code	Number of cells	Capacity	IEC Cell Size	Format	Length (L)	Width (W)	Height (H)	Fixing (l)	Fixing (w)	Standard Pack Quantities	Weight
NCD216SS/SZ	2	1.6Ah	'Sub-C' (SC/Cs)	Sticks with mounting plate	125mm	25mm	30mm	105mm	n/a	140	14.5kg
NCD316SS/SZ	3	1.6Ah			165mm	25mm	30mm	145mm		60	10.0kg
NCD416SS/SZ	4	1.6Ah			210mm	25mm	30mm	190mm		60	12.0kg
NCD24SS/SZ	2	4Ah	'D'		150mm	35mm	38mm	140mm		40	11.0kg
NCD34SS/SZ	3	4Ah			210mm	35mm	38mm	200mm		30	12.0kg
NCD24BS/SZ	2	4Ah		Side-by-side with mounting plate	66mm	63mm	38mm	n/a	40mm	40	11.0Kg
NCD34BS/SZ	3	4Ah			99mm	63mm	38mm	32mm	40mm	30	13.0kg
NCD44BS/SZ	4	4Ah			132mm	63mm	38mm	64mm	40mm	22	12.0kg

Battery leads

Batteries are supplied with single core flying leads with stripped ends as standard. These are 1000mm for sticks and 250mm for packs. A 100mm link wire 'CAS012' should be ordered separately if connecting sticks together. For battery leads with a miniature JST plug for Omni-LED and Unity-LED add '/JST' to the part numbers above. Various lead options are available to order separately. Please enquire with your requirements.

NICKEL METAL HYDRIDE (NiMH) SUB-ZERO BATTERIES

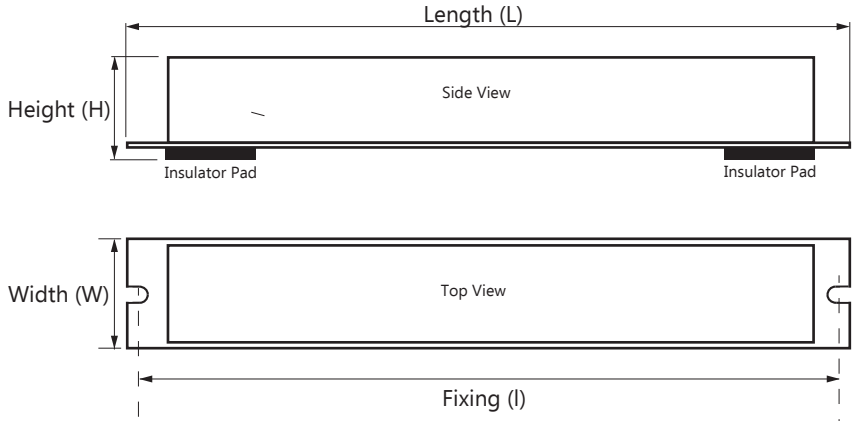
Product description

A range of high temperature Nickel Metal Hydride (NiMH) batteries incorporporating Sub-Zero™ technology suitable for emergency lighting applications. They are available as 4.0Ah capacity and supplied with a built-in mounting plate with fixing points to match existing One-LUX variants when fitted with end caps. Rated at a continuous operating temperature 40°C down to -10°C ambient. Batteries are supplied with a 150mm controller connecting lead as standard.

Properties

- High temperature Nickel Metal Hydride batteries
- Continuously rated to 40°C
- Connections via polarised tags
- Supplied with flying leads as standard. Alternative options available
- Complies with EN61951-2 and suitable for luminaires conforming to EN60598-2-22
- Suitable for installations to EN50172
- Other capacities and non standard, custom configurations available upon request

Common Technical Data	
Absolute Maximum Temperature	70˚C
Maximum Continuous Temperature	40˚C
Minimum Battery Ambient Temperature	-10˚C
Charge Requirements	200mA Constant Current (CC)
Storage	0-25˚C for 12 months



Model Number	Number of cells	Capacity	IEC Cell Size	Format	Length (L)	Width (W)	Height (H)	Fixing (l)	Standard Pack Quantities	Weight
NMH24SS/SZ	2	4.0Ah	18720	Sticks with mounting plate	170mm	26mm	23mm	160mm	96	7.0kg
NMH34SS/SZ	3	4.0Ah			240mm	26mm	23mm	230mm	54	11.0kg
NMH44TSSZ	4	4.0Ah	18720	Twin 2 Cell Sticks Side-by-side with mounting plate	170mm	46mm	23mm	160mm	24	7.0kg

Battery leads

Batteries are supplied with single core flying leads with stripped ends as standard. For battery leads with a miniature JST plug for Omni-LED and Unity-LED add '/JST' to the part numbers above. Various other lead options are available to order separately. Please enquire with your requirements.

INSTALLATION

Disclaimers
This product and its associated accessories has been designed and manufactured to comply with applicable 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 Sub-Zero™ product for the intended application and for compliance of the emergency conversion to relevant Standards. The user should be fully aware of the environment to which the luminaire and these components are used and ensure compliance with these specifications.
This product should be installed as per the following guidelines, as electric shock, damage or poor performance may result if incorrectly installed. Please contact our Technical department if you are in any doubt.

Precautions
If the luminaire is to be mounted in an external location, fully consider the battery temperature in relation to possible external ambient temperature extremes. If the luminaire can be sited in direct sunlight or behind large panes of glass, consider possible greenhouse affects of any diffuser where the battery and other internal components may be exposed to thermal magnification.

Also take into account the possible mounting orientations of the luminaire with respect to internal temperature. Ceiling or wall mounting the same luminaire can significantly affect internal component temperatures in different ways.

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

Fully compliant emergency modules other than those supplied by One-LUX may be used with the Sub-Zero™ batteries, but in all cases refer to the Battery specifications on pages 2 and 3. Operating batteries outside of the specifications will invalidate the warranty.

Fixing
Best effort should be made to keep the Sub-Zero™ controller and battery away from direct sources of heat, such as mains LED drivers, LED lamps etc. Avoid obstructing airflow around the sides of both the Sub-Zero™ controller and battery and other electronic products within the luminaire. Allow a clearance of 10mm or more wherever possible.

Once a suitable location has been determined, the Sub-Zero™ components should be secured using fixing points provided. The use of M4 screws are recommended for most applications.
Importatant - Do not bend the battery or drill additioal fixing holes! Plated battery packs should only be fixed in place with the screws provided, which are the correct length to avoid internal damage and potential short circuit.

Always ensure the batteries are mounted on the insulating pads provided so the underside of the battery`s mounting plate (or any other surface of the battery) is not in direct contact with the luminaire or remote box, such as a gear tray. Reduction in the mounting clearance will reduce battery heating efficiency and could cause malfunction of the battery during cold periods. The mounting gap clearance should be no less than 2mm, but can be increased if required.

Wiring
EMC considerations: Mains input connections should be as far from any lamp leads as possible and ideally not less than 10cm. Mains input wires should be as short as possible and run direct from input terminations to the Sub-Zero™ controller; they should not run alongside the case.

Other EMC tips:
- Keep any lamp wires raised off any earthed metalwork
- Twist mains leads together when ‘looping’ or ‘through wiring’

The Sub-Zero™ controller`s SELV output is double/ reinforced insulated from live parts, so the original battery isolation provided by the emergency module is not affected.

Mains supply wire should have a recommended strip length of 6mm and Min/max Conductor sizes: 0.5 - 1.5 mm^2.
Connect terminals marked Unsw.Live and Neutral of the heater controller to a permanent Live and Neutral supply feed. This supply must be present at all times for the battery temperature to be maintained.
If other devices are connected to the same 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 the Sub-Zero™ controller product are not user serviceable.
Connect the white 6-way flying lead from the battery into the `Heater Output` socket on the heater controller. The plug is polarised so care should be taken to ensure it is inserted to correctly.
Connect the battery`s positive and negative connections to the emergency module as normal.

Operation and Test
Once power is applied to the luminaire, check both the green indicator near the 6-way connector on the heater controller and the normal battery indicator LED are illuminated showing the battery is charging.

Once in use, the Sub-Zero™ system is fully automatic and there are no adjustments to make. As long as the indicator LED is green, the system is powered and active. The temperature of the battery pack will be maintained as required, so will feel warm to the touch in cold applications.
Normal routine test and inspection of the emergency luminaire should be performed in accordance with EN50172 or otherwise local legislation.

In the event of any battery over-temperature, or under temperature condition, the Sub-Zero™ indicator LED will change colour to either red or blue respectively. This indication can be reset by cycling the power supply, but the cause should be investigated and further occupancies prevented. All events which cause a fault indication are logged in memory for future diagnostic purposes and data recorded will be considered in an warranty claim.