



The UK's Leading Manufacturer of Shelters, Canopies & Covered Walkways

0113 252 2611

The benefits of using Solar Lighting within shelters

Renewable and infinite resource

Free of emissions including carbon dioxide (greenhouse gas)

Solar energy does not add to global warming

No utility bills

Low maintenance

No delay for grid connection

Instant installation with no disruption to traffic

Increases safety at bus shelters and makes the travel experience more comfortable for passengers

Low voltage (12V)

High threshold of vandal resistance

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Energy Management Controller

The charge controller supplied is manufactured by Steca who are a leading German manufacturer of electronics with over 30 years of experience and knowledge. Steca currently develops brand products for use within solar applications with diverse switching techniques and software strategies. This fact means that the company possesses a level of expertise which far surpasses the standard for the industry.

Design for manufacturing, certifications such as CE, VDE and UL, and safety and reliability inspections such as FMEA and MTBF are taken into consideration from the outset, resulting in an optimal combination of development time, quality and safety.



The controller used in our systems allows a variety of timing options so that the lighting can be operated from dusk through to dawn or from dusk until a preset time and then on again at a preset time before dawn. To ensure we supply a system that is both robust and waterproof our controller is mounted into a fullysealed IP rated enclosure to protect the electronics from the elements.

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P.I.R (Passive Infra Red detector)

Specifically designed and manufactured for use with solar lighting. A PIR can be used to conserve energy as this means that the lights only activate when the shelter is in use. The PIR we use has been designed and built to our specific requirements and is very small and discrete therefore making it less obvious to vandals. The PIR offers two potential modes of operation - 1) the lighting is off and then illuminates during periods of occupation or 2) the lighting automatically comes on at a lower lighting level at dusk and the gets brighter during periods of occupation. It is recommended that for open sided shelters the PIR is either faced towards the enclosed side or the lighting is operated at a fixed level. The reason for this is to stop false triggers and ensure reliable operation of the system.



Using the PIR reduces the amount of Solar Panels and batteries required for the system hence reducing the cost.

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Basic system operation

During the day the solar panel is used to charge the batteries in the most efficient way using the Energy management controller/charge regulator. As the daylight fades, the solar panel acts as a day /night sensor for the controller which turns on the motion sensor (PIR). Throughout the hours of darkness the controller and PIR maintain a low level of courtesy lighting which is triggered to a higher level when movement within the shelter is sensed. The lighting will remain at this brighter level until the passenger exits the shelter after which it will revert to the lower level to conserve energy.

During the past few years, solar panel and rechargeable battery technologies have greatly improved. By matching these with the latest LED lighting products which are providing greater light output with lower power requirements our systems are a reliable and cost effective alternative to mains connection.

All of our kits are supplied with solar panels, light fitting(s), charge controller, batteries, PIR and connection looms specifically manufactured to suit each type of shelter. The system components are all designed to operate at 12V. All wiring looms are manufactured using high quality components including automotive grade waterproof connectors which allow the easy connection of various lighting, solar panel and battery options to suit the end application.

They are very simple to install but we would always be on hand to offer any advice or assistance you may require.

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Sealed Lead Acid Batteries

The batteries we supply are high quality rechargeable lead acid which have been designed to provide a cost effective solution in higher power applications. They are maintenance free, fully sealed and can be mounted in any orientation . These batteries offer a low discharge rate and long shelf life making them ideal for use within solar powered applications.

- Sealed construction eliminates the need for watering
- Increased durability and deep cycle ability for heavy demand
- Low impurity electrolyte
- Spill proof/leak proof
- Multi-position usage
- ABS case and cover
- Low self discharge
- **CE** approved
- Voltage 12V
- Design life 3-5 years
- Operating Temperature -20°C to $+50^{\circ}\text{C}$
- Grid alloy – Calcium/ tin lead alloy
- Plates – Flat pasted
- Separator – Absorbant glass mat
- Terminal – Various, epoxy sealed by extended mechanical paths
- Container/Cover – ABS
- Charge voltage – Float 2.27-2.30 VPC 25°C
- Electrolyte – Sulphuric acid



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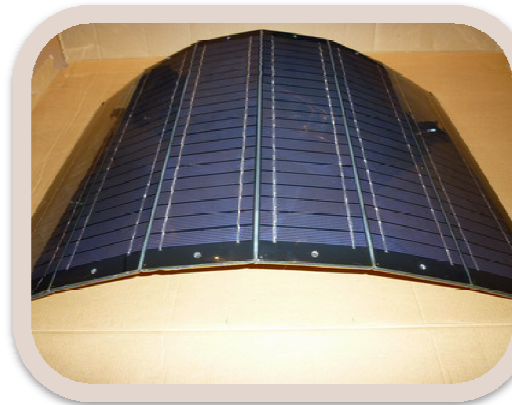


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Solar Panels

All of our solar panels are very high quality and manufactured to our own multifaceted design. We can supply these to fit both flat or curved roofs to ensure that they are as discrete as possible making them as unattractive to vandalism as possible whilst complimenting the shelter design.



The panels are 33W with unique features to provide a robust solution for solar applications in harsh street environments.

The panel has 3 x 11W solar panels that operate independently, allowing the system to continue to produce power even if one of the panels is attacked or shaded from sunlight. Damage is prevented by additional mechanical features, being only 5mm thick and using a strong plastic coating over crystalline cells, the panel offers the efficiency advantage of glass panels without the risk of shattering and feature a strong self adhesive backing and pre-drilled mounting holes for extra security.

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12V LED Lighting

The Microlux has been designed with both affordability and application in mind without having to compromise on the quality of LEDs used – the Microlux also utilises the latest in LED technology. The Microlux utilises 2 x 1.25 watt high powered LEDs, with a 90 degree viewing angle, which has been designed to maximise the light output from this compact device. The Microlux excels in a variety of applications due to its price tag and performance. With more than 50,000 hours of life and multi-voltage as standard, this is the ultimate in bright low cost LED solutions.



Safe, bright LED True white™
IP67 Rating
Low energy consumption
Ultra slim profile

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12V LED Strip Lighting

The Power Nebula utilises 6 x 0.5W Power LEDs to create a clean bright, energy efficient light source which can be fitted into a wide range of applications. Mounted in a tough aluminium housing, the extruded profile provides rigidity and strength but keeps weight to a minimum, and the anodised finish protects against corrosion. Waterproof to IP68, the PCB, electronics and cable exits are all completely encapsulated with polyurethane protecting against moisture ingress. The combination of using high quality materials and electronics in the manufacture of this light significantly increases the life of the light to over 60,000 hours.



Features:-CREE LED's, Waterproof to IP68, Easy to install low profile unit, Tough aluminium housing

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Warranty

Warranty information:-

Controller : 2 years
LED lighting : 1 year
Batteries : 1 year
Wiring harness : 1 year
PIR : 1 year
PV : 1 year

Life expectancy information:-

Controller : 10 years
LED lighting : 60,000 hours
Batteries : 3 - 5 year
Wiring harness : 10 years
PIR : 10 years
PV : 10 years

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Site and cleaning guidelines

Shading from buildings or trees will reduce the amount of solar energy the panel receives, so the less shade the better. Ideally, the panels should face South to gain access to optimum day light but anything between South East and South West is fine.

Do not install solar panels directly under or very close to street lights.

If there are any trees or foliage nearby ensure that this is not allowed to grow to an extent that it overhangs the panels.

However, it is important to distinguish between solar radiation levels and air temperature. Even if you cannot see the sun, if there is daylight there will be 'diffuse' solar radiation. This is what heats up the panels and solar radiation levels in the U.K are as high as parts of Spain and 60% of the levels at the equator.

Cleaning is recommended twice annually by wiping the panels with a damp sponge or cloth to remove any dust build up and debris.

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