SEC Solar Energy Centre
www.solarenergycentre.com

SEC AnyWhere Solar Powered Lighting Kit

Installation & Operation Manual

Contents

Introduction

The SEC **AnyWhere** solar lighting system is a revolutionary, weatherproof product developed for use wherever there is sunshine where the mains electricity is unreliable or unavailable.

The **AnyWhere** lighting kit consists of a very simple set of parts that can be connected to form an expandable, super energy efficient, stand-alone lighting system.

Solar Panel

AnyWhere Light

Cable with Twist-fit plugs

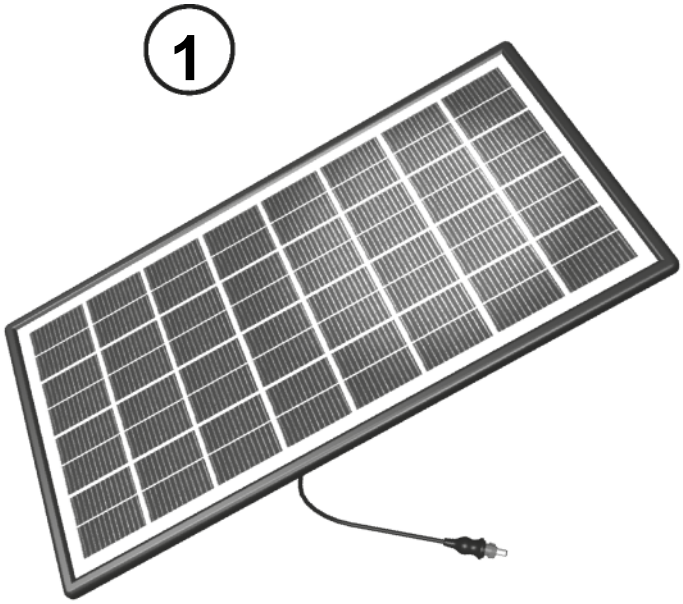
Terminal Hub

How do AnyWhere lights work?

The concept of the SEC **AnyWhere** Lighting kit is simple.

During the daytime, electricity is collected from the sun using a highly efficient Solar PV panel (1).

This electrical energy is then passed through the cables and Terminal Hub (2) to charge the battery in the **AnyWhere** lights (3) shown on page 5.



When not in use, the **AnyWhere** light will store the electricity in its internal battery, ready to convert it back to light whenever it is switched on.

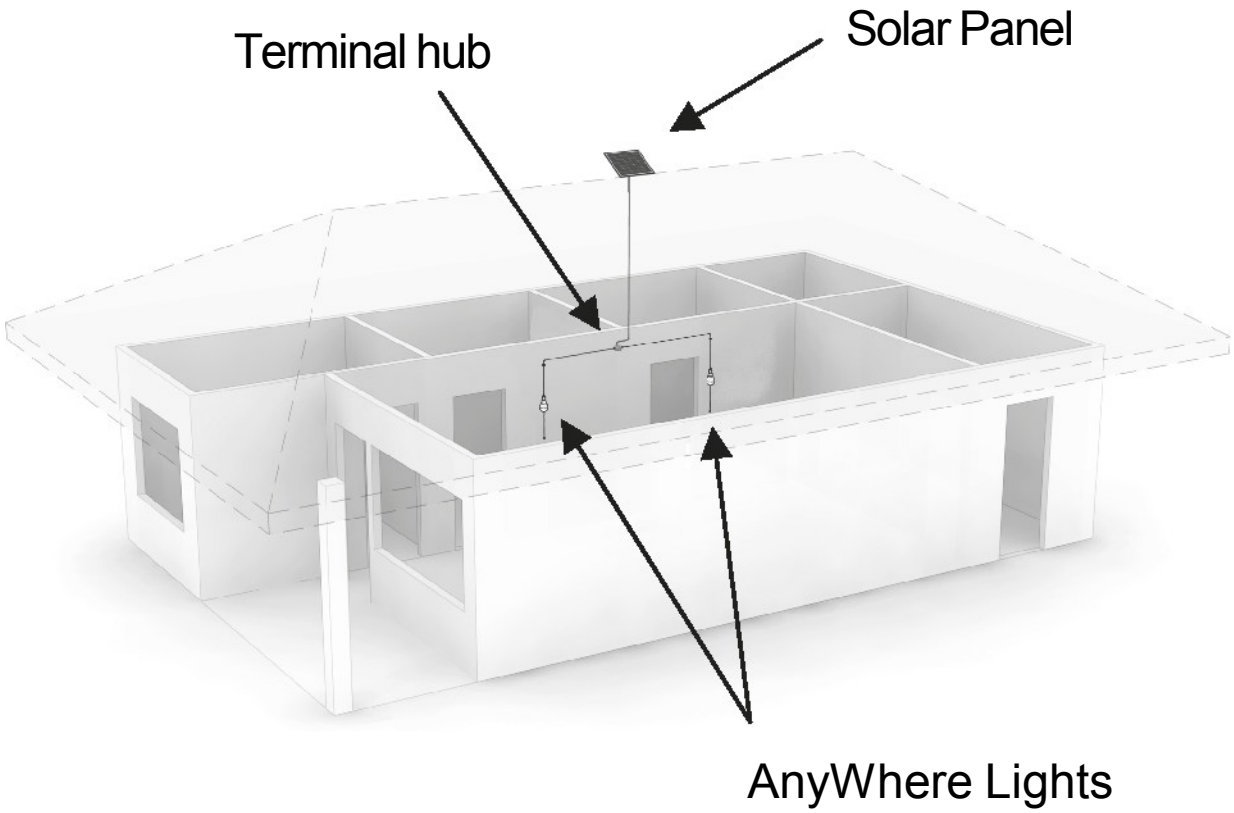
It is possible to connect as many solar panels and **AnyWhere** lights together as required, as long as there is a good balance between the electricity consumed and being harvested from the sun on a daily basis.

The size of Solar PV panel supplied with each **AnyWhere** light kit has been carefully sized to fully charge the battery daily. If additional lighting is required, it may be necessary to install larger Solar panels to maintain this energy balance.

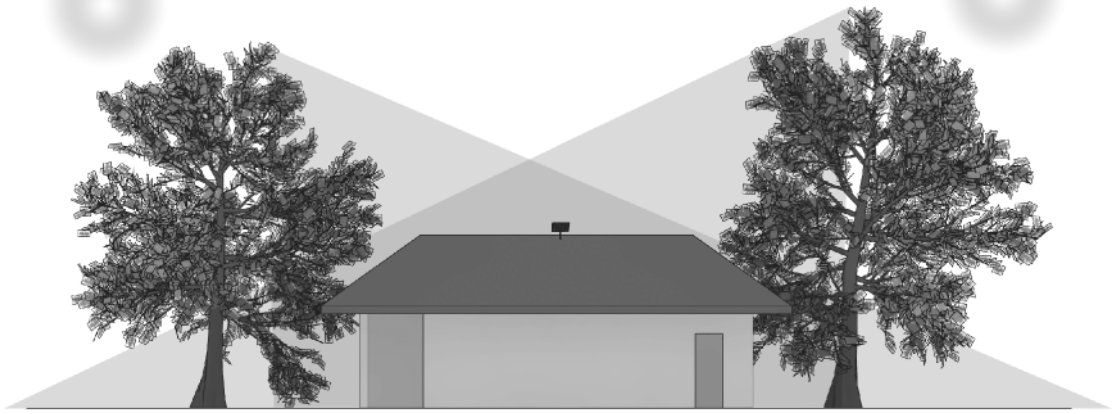
Installation Considerations

Before installing the **AnyWhere** solar lighting system, it is important to consider the position of both the solar panel on or near the roof, and the **AnyWhere** lights themselves.

Please note that the Solar panel must face the Equator to generate electricity most efficiently, so please bear this in mind when fixing and adjusting the panels.



The solar panel should be positioned where there is uninterrupted access to sunlight, with no shadows from nearby objects such as trees or buildings. The Solar PV panel will not charge the battery fully if the panel is positioned in a shadowed area as shown.

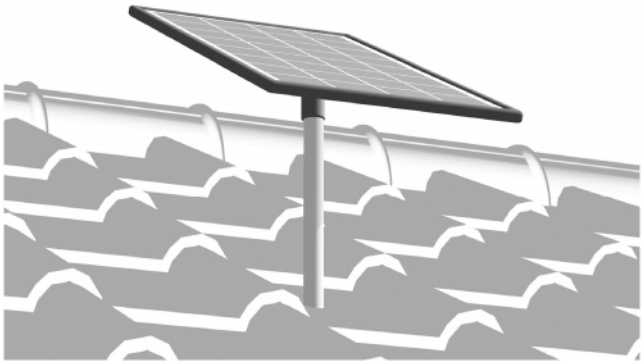


Once the panel is fixed, next check the best position and height for your **AnyWhere** lights, to give the best light distribution in the room. See page 13 for more information about light operation if you would like check the position before fixing. Make sure that the total distance from the Solar Panel to the Terminal Hub, and from the Hub to the light does not exceed the length of the cables. The Hub should be placed above the ceiling at approximately equal distances to all devices.

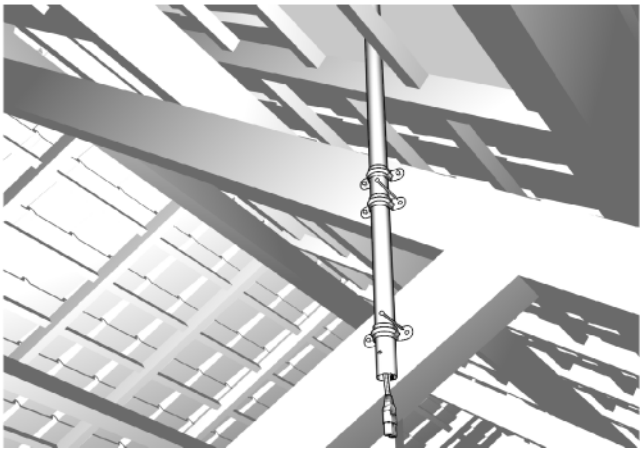
Installing the Solar Panel

The Solar Panel is designed to be mounted on a rigid pole, either on the roof top or adjacent to it.

The pole should be fixed with brackets to a roof support (as shown below).



If roof mounting is not possible, the pole can also be fixed to an outer wall of the building, as long as the panel can face the Equator and is not overshadowed at all. In either case, an aluminium or galvanized steel pipe of 26 mm diameter is ideal, but a PVC pipe is also acceptable.



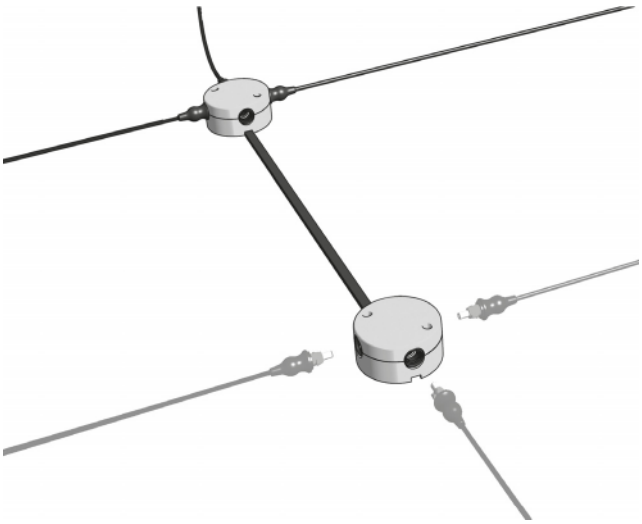
It is very important that the Solar Panel points towards the Equator. If necessary, adjust the tilt angle at the rear of the panel using the Allen key supplied so that the sun's rays fall directly onto the surface of the panel at 12.00hrs (midday). This will ensure the best possible electricity generation and ongoing performance.

Connecting the Terminal Hub

The Terminal Hub should be installed under the roof, and spaced approximately equally between the lights themselves.

Once positioned, insert the twist-fit plug at the end of the cable from the Solar Panel into one of the four ports on the Terminal Hub. Twist the plug clockwise to lock into place.

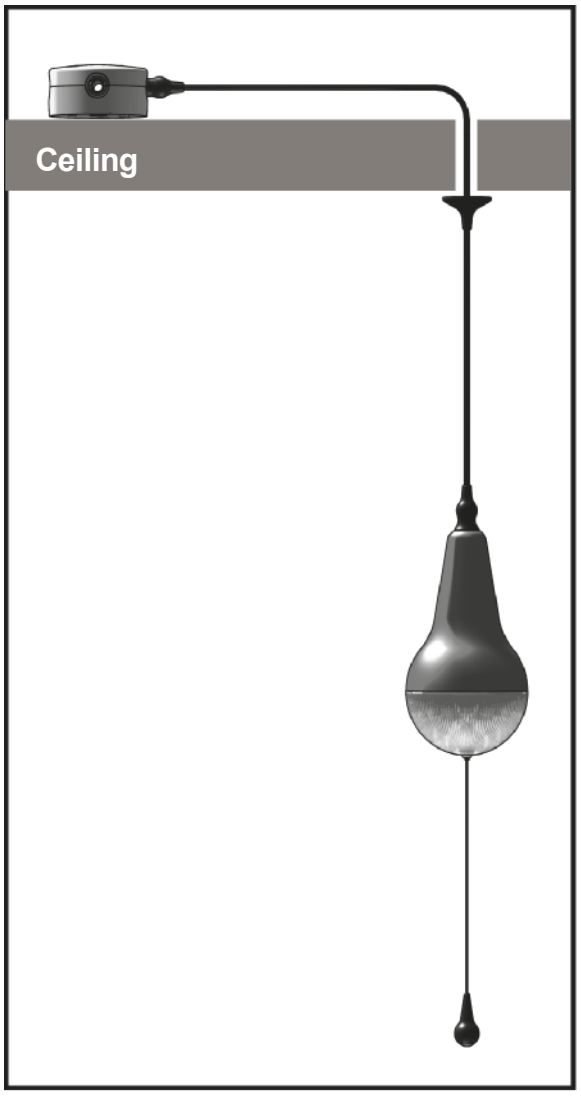
For four Light kits, connect one Terminal Hub to another using the extra cable with twist-fit plugs.



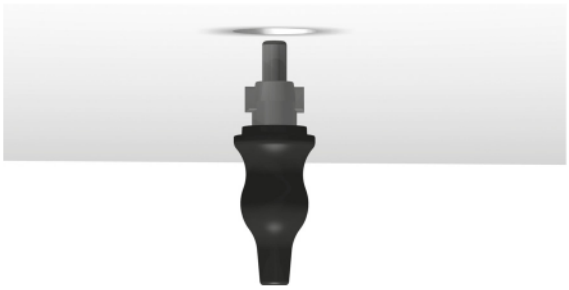
Note: for longer distances, it is also possible to connect two Terminal Hub's with an optional extra DC cable, wired to the terminal located underneath each Terminal Hub.

Installing AnyWhere lights

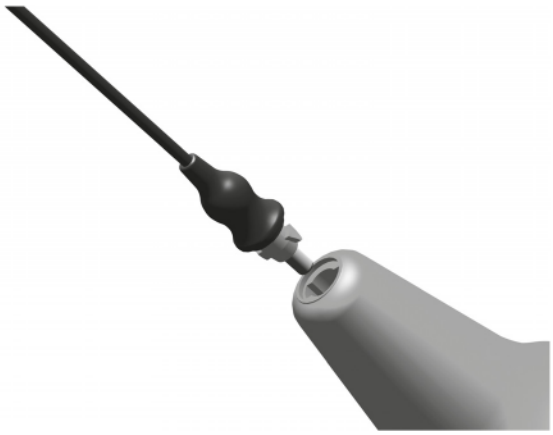
AnyWhere lights are just large enough for the designed to be suspended twist-fit connector to pass from the ceiling and can be through.
fitted in a few simple steps.



1) Once you have located the best position for the **AnyWhere** light, mark and drill a 20mm diameter hole in the ceiling. This will be



2) Take the cable and connect the twist-fit connector to the back of the light in the port provided.



Then feed the other end through the hole in the ceiling that has just been made.

3. Attach the Ceiling Cap onto the cable (through the slit at one side), between the light unit and the ceiling.

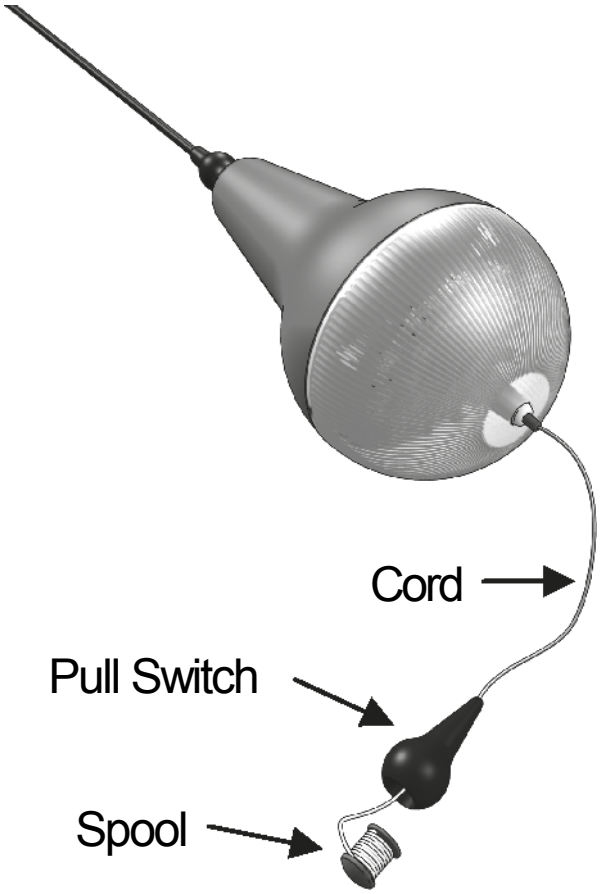
Repeat steps 1-5 as required if 2, 3 or 4 light kits have been purchased.

1. Adjust the level of the **AnyWhere** light to the desired height and then fasten the Ceiling Cap to the ceiling with the screws provided, covering the hole the cable passes through.

1. Connect the cable from the light to any available port on the Terminal Hub using the other twist-fit connector.

Operating AnyWhere lights

AnyWhere lights provide bright results day after day year after year using electricity generated by the sun.



To turn the light on, gently pull down on the Pull Switch once. The light will shine at its brightest setting, which is 240 Lumens.

By gently pulling on the Pull Switch again, the light will dim by 50%, giving a brightness of 120 Lumens.

Pulling once more will dim the light to its lowest setting, which is 25 Lumens. One more pull on the Pull Switch will turn the light off.

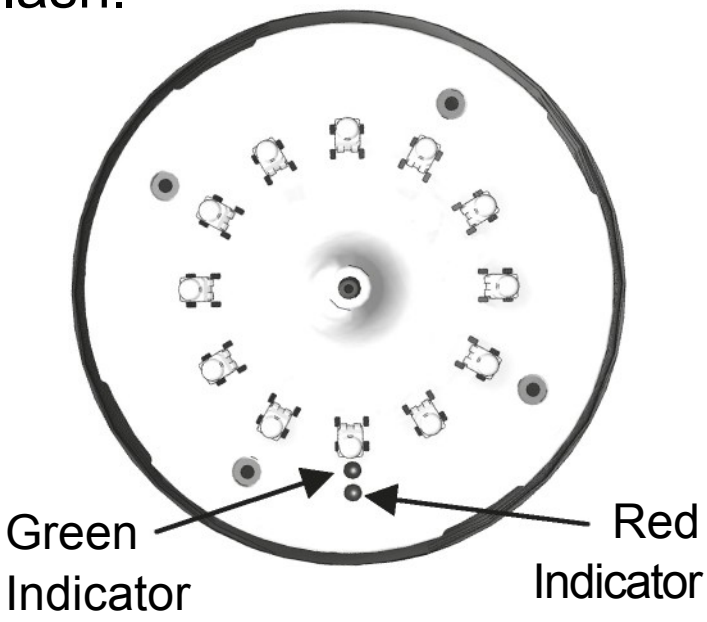
In addition, the light can be gradually dimmed in 32 steps from its brightest setting. This is achieved by pulling and holding the Pull Switch. After a second or two it will become apparent that the light is dimming in stages. Releasing the Pull Switch at any time during the dimming process will leave the light illuminated at the selected level.

To accommodate for different height requirements, the cord length for the Pull Switch can be changed using the spool found in the pull Switch.

Remove, adjust and replace as shown in the diagram on Page 12.

This indicates that the battery in the light requires charging.

When the **AnyWhere** light is being charged by the Solar Panel, the Green indicator light located inside the light lens will start to flash.



Once the internal battery is fully charged, the green indicator light will stop flashing.

Alternatively, if the charge level of the battery becomes low, the red indicator light will glow continuously.

If the light unit is still used and not recharged by the Solar Panel once the red indicator light is glowing, the internal battery will eventually become fully discharged and the light will stop working.

In this situation, ensure that the Solar Panel is correctly positioned (see earlier chapters) and allow time during daylight hours for electricity to be collected, to charge the internal battery.

To prolong the light life between charges, it is recommended to turn the **AnyWhere** light off when it is not needed. Using the light partially dimmed will also extend the battery life.

Troubleshooting

In the unlikely event that the **AnyWhere** light does not function when installed correctly, please consider the following trouble-shooting steps:

1. If the Green indicator is flashing during daylight hours, give the lamp some time to store enough energy before using again in the evening.

1. Try unplugging the twist-fit plug on the **AnyWhere** light and plugging it back in, before attempting to switch on the light again. This action will reset the protection circuits.

1. Check that all cabling is connected in the correct manner and that the twist-fit plugs are inserted and locked in place. Replace any damaged cable or plugs as required.

Energy FAQ's

All SEC products are rated in Joules for energy input, storage and consumption, and Lumens for light output.

It is important to think of lighting in terms of Joules and Lumens rather than other commonly used units.

Joules

A Joule is a unit of Energy (all forms of energy can be measured in Joules). The higher the Joule number the higher the amount of energy.

Lumen

A Lumen describes a unit of luminous flux, or in practicable terms, is a measure of the brightness of light emitted by a light. The higher the Lumen number, the more light is being emitted.

Energy Consumption Data

Pull Switch position	Light Output (%)	Light output (Lumen)	Energy used (KiloJoules)	Max. operating hours[1]
1	100	240	8kJ per hour	6 to 8 hrs
2	50	120	4kJ per hour	12 to16 hrs
3	10	25	1kJ per hour	24 hrs+
4	Off	N/a	5kJ per month	12 months[2]

Notes

1. The maximum operating hours shown are from a full battery charge without recharging.

1. The internal battery will self discharge at a rate of +/- 6% per month. Therefore a full recharge is recommended every six months if the light is not to be used.

SEC Solar Panels

The SEC range of high quality Solar PV Panels are available in a variety of sizes, for larger **AnyWhere** light installations or other solar powered systems.

As a general guide, each **AnyWhere** light requires 3 Wp of solar panel Capacity (12 Volts), although this figure may need to be higher in some parts of the world with lower sun levels to ensure reliable operation throughout the year.

When specifying Solar Panel requirements, it is important to consider the local climate as electricity generated will vary in different parts of the world.

As a guide, a predominately cloudy day will give approx. 1-3 average sun-hours of light to a Solar Panel.

A bright, sunny day will however give approx. 4.5 average sun-hours per day, whilst very bright, sunny conditions can give up to 6 average sun-hours per day.

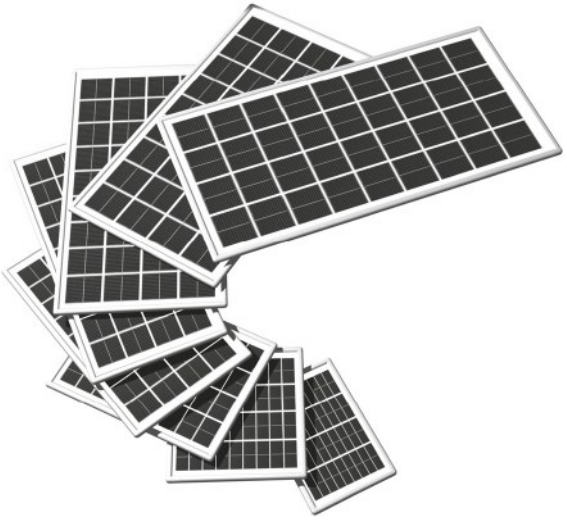
The table on page 18 gives more information about the collection properties of the SEC range under these different light conditions.

SEC Solar Panel Range

Model	Energy Output		
	@3sh/d	@4.5sh/d	@6 sh/d
	(kJ/day	(kJ/day)	(kJ/day)
SEC300-20Wp	216	324	432
SEC450-28Wp	324	486	648
SEC600-40Wp	432	648	864
SEC750-50Wp	540	810	1080
SEC900-60Wp	648	972	1296
SEC1200-80Wp	864	1296	1728
SEC1500-100Wp	1080	1620	2160
SEC2000-125Wp	1350	2025	2700
	Electrical Characteristics		
	Imp	Pm	Isc
	(A)	(J/s)	(A)
SEC300-20Wp	1.21	20	1.31
SEC450-28Wp	1.82	30	1.96
SEC600-40Wp	2.42	40	2.62
SEC750-50Wp	3.03	50	3.27
SEC900-60Wp	3.64	60	3.93
SEC1200-80Wp	4.85	80	5.24
SEC1500-100Wp	6.06	100	6.55
SEC2000-125Wp	7.58	125	8.18

Other products

The **AnyWhere** lights and Solar Panels are just one of an exciting new range of energy efficient Solar powered products from SEC.



As well as the **AnyWhere** lights, there is a mains/grid connected version of this product called the **AnyTime** light, which only requires 10% of the electricity used to provide the same amount of light as a 40 W or 80 W incandescent lamp with up to 10 hours backup light when the mains/utility power fails.

In Future, you also can expect to see several new products that work using Solar energy, such as:

- More new Lights
- Low energy Televisions
- Low energy fans
- Low energy Refrigerators
- New and more efficient lower cost Solar Panels

More information can be found on our website:

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