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3,6,9, And 12 Volts Solar Panel with "AA" Battery Charger and 9 Volt Battery Charger
Model No. ES884

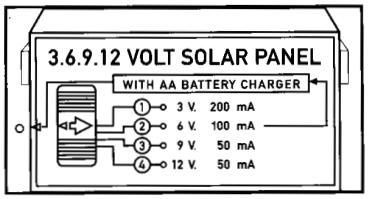
Introduction:
Solar Energy has been advanced to a point where we have learned how to harness and utilize the sun's power.

This solar panel is a unique and advanced design with four different voltages. The solar panel consists of 3v, 6v, 9v, and 12 volt output for different voltage requirement of your appliance.

The solar panel consists of 24 pieces of single crystal silicon cells in series with built-in blocking diode in the circuit to supplv a maximum output of 12 volt (DC) for charging rechargeable battery system up to 9 volt.

How to use:
This panel is easy to use by sliding the switch to the appropriate voltage level:

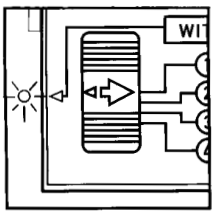
position one ① is 3 volt at 200mA
position two ② is 6 volt at 100mA
position three ③ is 9 volt at 50mA
position four ④ is 12 volt at 50mA



As "AA" size batteries charging:
To charge 2 pcs "AA" size Ni-cd rechargeable batteries in the compartment, switch the panel to position no.② can achieve the best result, as the voltage and current are both high (ie. 6v 100mA), it takes only 4-6 hours to fully charge for 2 pcs "AA' size batteries.

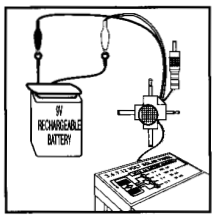
You can also use position no.③or no.④, but the current is reduced to half (50mA), so it will take 12 hours to fully charge the batteries.

A blocking diode is built-in the circuit, so that the current will not flow back to the panel at night time.



The LED indicator is only built-in the circuit of the battery compartment, to confirm that charging process is taking place. When you place 2 pcs "AA" size rechargeable batteries in the battery compartment and expose the solar panel to the sunlight, the LED will be activated to show charging circuit is in function. If the LED indicator is not activated, please make sure that "AA" batteries polarity in the battery compartment is correct and re-position the solar panel to be exposed under direct sunlight.

As"9" Volt battery charger:
To charge1 pc. 9 volt size rechargeable battery, plug in the battery in the supplied 9 volt battery holder, then connect the positive (+) wire (red wire) with the red alligator clip and negative (-) wire with the black alligator clip, as shown in the figure.



Then switch the panel to position No.④ to achieve the best result. If the 9 volt battery is of 150mA, then it takes about 3 hours to fully charge 1 pc. of 9 volt rechargeable battery.

As power supply to your appliance:
To operate your appliance with this solar panel from the sunlight directly, release the batteries from the battery compartment of the solar panel, then select the appropriate voltage of your appliance.

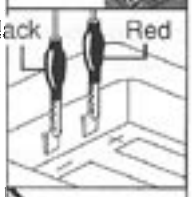
A full set of (omni-plug) connector with cable wire is provided for easy connecting purpose. The omni plug set consists of:

Ø 2.5 mm male plug
Ø 3.5 mm male plug
Ø 5.0 mm x 2.1 mm female plug
Ø 5.5 mm x 2.5 mm female plug
Ø 3.5 mm x 1.35 mm radio / cassette player plug
Red and black alligator clip

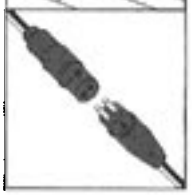
Determinate your appliance voltage (e.g. 2 pieces 1.5v batteries equals to 3 volt, or 6 pieces x 1.5v = 9 volt), then switch to the appropriate position no.③ with 9v 50mA output.

If your portable radio/cassette player can use rechargeable battery, you can charge the batteries while you are listening to the music. Or when you are not using your portable radio/cassette player, you can fully utilize the solar energy for charging the batteries faster. Easy to use, just plug in the cord connector (which is provided) to the external power supply jack/socket of your appliance.

If the external DC power supply jack/socket is not found in your electrical appliance, just open the battery compartment's cover and connect to the positive (+) with the red alligator clip and negative (-) with black alligator clip if possible.



Be sure of correct polarity, red alligator clip is for positive and black alligator clip is for negative. If it does not work, you can change the polarity by switching the connecting plug at the end of the cable wire.



About charging system:

From the experience of charging system and for better results of charging, the voltage of the power supply must be higher than the rechargeable batteries. e.g. to charge a 2. 4 volt rechargeable battery, use switch position no.② 6 volt 100mA to achieve the best result.

A Charging chart is as below:

The following chart is provided for easy reference, for easy calculation, we use AA size battery as example:

	Solar Output	If Rechargeable Batteries are built in your appliance	Charging Time
Position no.①	3v 200mA	1pc x 1.2v = 1.2v AA Battery (600mA)	2-3 hours
Position no.②	6v 100mA	2pcs x 1.2v = 2.4v AA Battery (600mA)	4-6 hours
Position no.③	9v 50mA	4pcs x 1.2v = 4.8v AA Battery (600mA)	10-12 hours
Position no.④	12v 50mA	6pcs x 1.2v = 7.2v AA Battery (600mA)	10-12 hours

Charging times will vary depending upon the following:

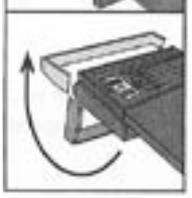
1) Capacity of the battery
2) Strength of the sunlight
3) Level of the batteries are discharged.

Charging Time can be calculated as follows:

$$\text{Time} = \frac{\text{Battery Capacity of 600mA}}{\text{Solar Output (no.②) of 100mA}} = 6 \text{ hours}$$

The solar panel can be used to charge for different types of rechargeable batteries, e.g. D size, C size, AA size, AAA size or lead acid 6V/4 battery, upto 9 volt rechargeble battery, if these batteries are built-in your appliance, like radio/cassette player, torch, lighting, or portable telephone etc.

The solar panel can be used to charge the rechargeable battery of 6V by using the red and black alligator clips. Be sure of the correct polarity, connect the positive (+) with the red alligator and negative (-) with black alligator clip.



Easy to carry with a convenient handle. The handle can be adjusted to let the solar panel face the sunlight directly. Expose the solar panel towards the sun for maximum absorption of solar energy. The more sunlight absorbed the more energy received for charging efficiently.