

## GUIDE TO THE SELECTION OF CHARGE CONTROLLERS

This guide is to assist customers to select the correct charge controller from the Steca range.

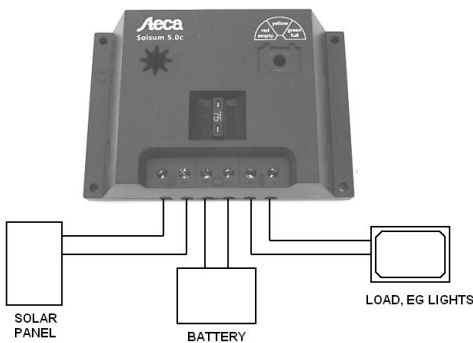
All Steca charge controller have a current rating (Amps). A 5 Amp controller can accept up to 5 amps of current from solar modules, and provide up to 5 Amps of current to the load.

Please read the guide, then decide;

- which system wiring arrangement is to be used
- determine the rating of controller required by;
  - finding the maximum charge current for the solar panel, or panels if more than one is to be used.
  - adding together the currents for loads to be connected to the controller when using Connection Options 2 or 3.
- the controller rating required is the greater of the maximum charge current and the maximum load current.

If you are uncertain please contact Aire and Sun with the information requested above.

### Controller Connection



The standard connection arrangement for Steca controllers is given below. There are three sets of terminals, for;

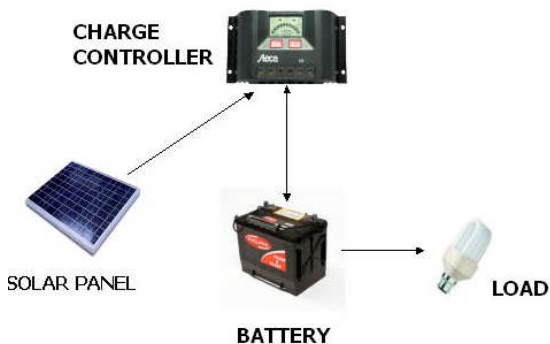
- solar photovoltaic (PV) modules
- battery
- load

### Connection Options

To decide on the controller for an application you need to decide how the controller is to be used from the following options.

#### Option 1

#### Battery Charging Only – No load connection



In this arrangement there is no load connected to the controller. The rating of the controller required is the maximum solar module charge current.

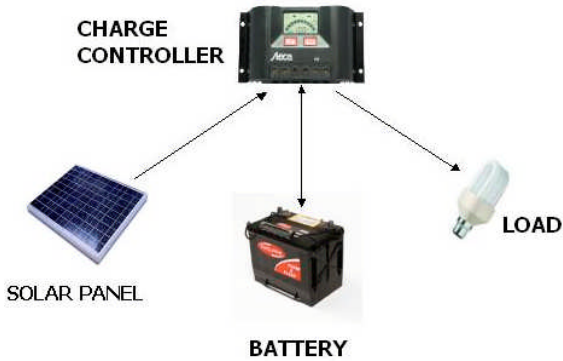
**Advantages:** The rating of the controller is based on the maximum solar module charging current only. Simple wiring.

**Disadvantages:** The Low Voltage Disconnect function will not work as there is no load to switch off. Therefore the battery can be seriously damaged by over discharging if all load is taken directly from the battery.

**Option 2**  
**All system loads connected to the controller**

In this arrangement all of the system loads are connected to the controller. The rating of the controller required is the larger of;

- the maximum solar module charge current, and
- the maximum current that could be supplied to the load, that is with all loads switched on at the same time.



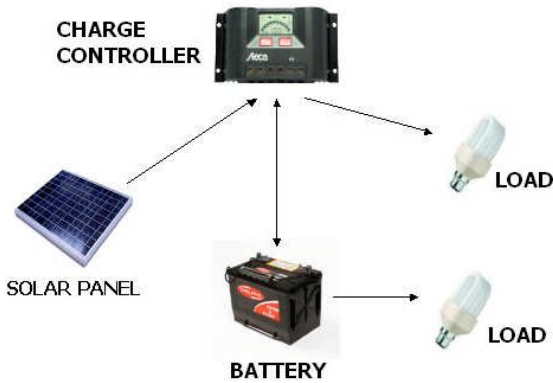
**Advantages:** Low Voltage Disconnect function will work satisfactorily. Peace of mind.

**Disadvantages:** The rating of the controller to meet the load requirements may be significantly greater than the rating to meet the solar module requirements. For instance you may need a 10 Amp controller to meet load requirements, but a 5 amp controller to meet the solar module requirements.

**Option 3**  
**Some system load connected to the controller**

In this arrangement some load is connected to the controller and some directly from the battery. This arrangement is common when using an inverter. The rating of the controller required is the larger of;

- the maximum solar module charge current, **and**
- the maximum current that could be supplied to the load that is connected directly to the controller.



**Advantages:** A lower rated controller can be used to run larger loads as some of the load is connected to the battery.

**Disadvantages:** Only the load connected to the controller will be switched off by the Low Voltage Disconnect function. This does provide some protection as it will be apparent that the function has operated as some load will be switched off.