

Affected Products: All Solar Boost™ & Sun Charger™ PV module charge controllers specified for a maximum operating temperature of 40°C

Purpose: Derating guidelines for high temperature operation

A common characteristic of all power electronics is that component temperatures must be properly managed to promote long term reliability. Most Blue Sky Energy charge controllers are specified for operation in an ambient temperature of up to 40°C (104°F). This technical bulletin provides PV module current and power derating guidelines for operation in ambient temperatures above 40°C.

Maximum recommended PV module short circuit current (I_{SC}) and PV power (P_{MAX}) at Standard Test Conditions (STC) are specified in each charge controller operators manual and in Technical Bulletin 100214. Charge controller products rated for a maximum operating temperature of 40°C may be operated at higher temperatures if I_{SC} and P_{MAX} are reduced so as to maintain internal power converter temperatures within acceptable limits.

For example the maximum recommended PV module current/power input for a SB3024iL charging a 24V battery in an ambient temperature of 40°C is $P_{MAX} = 800W$ and $I_{SC} = 24A$. As shown in the graph below maximum ambient temperature may be increased to 50°C if input current/power are reduced to approximately 75% of the 40°C limit, or 600W and 18A. Note that operating ambient temperature should never exceed 60°C.

Recommended Derating For High Ambient Temperature Operation

