Technical Bulletin #100206

Issued: 03/23/01
Revised: 10/30/03

Affected Products: All Solar Boost™ charge controllers

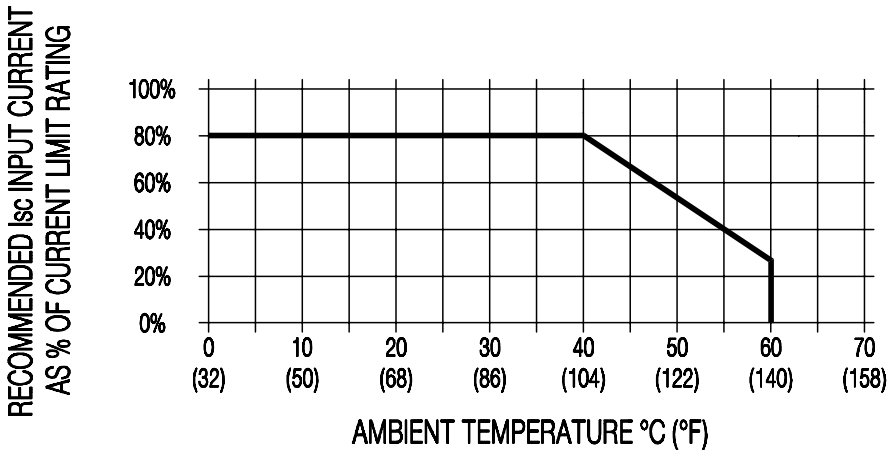
Purpose: Current derating guidelines for high temperature operation

Blue Sky Energy makes every effort to produce high quality high reliability products. Yet a characteristic common to all power electronics is that increases in operating temperature and temperature cycling can lead to a decrease in reliability. Solar Boost charge controllers are specified for operation in an ambient temperature of up to 40°C (104°F). This technical bulletin provides solar module current derating guidelines for operation in ambient temperatures above 40°C.

The maximum 25°C solar module short circuit current (I_{SC}) recommended for Solar Boost charge controllers operated in an ambient temperature below 40°C is the unit's output current limit rating ÷ 1.25. This translates to a recommended maximum I_{SC} for the Solar Boost 50, 3048, and 2000E, of 40A, 24A and 20A respectively. The 25% margin complies with the NEC 1.25 derating factor and provides headroom for MPPT to increase output current. Reliable operation above 40°C is possible if the recommended maximum I_{SC} applied to the controller is reduced as shown below. Note that operating ambient temperature should never exceed 60°C.

For example, the recommended 25°C I_{SC} applied to a Solar Boost 3048 operated in an ambient temperature of up to 40°C is 30A x 80% or 24A. If this same controller is operated where the maximum ambient temperature is expected to reach 50°C (122°F), the recommended 25°C I_{SC} applied should be reduced to 30A x 55% or 16.5A. Keep in mind that this applies to relatively long term steady state operation. If transient conditions occasionally exceed these guidelines and internal temperatures exceed design limits, over temperature protection will temporarily shut down the unit to protect it from damage.

Recommended 25°C I_{SC} Derating For High Ambient Temperature Operation



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