

Affected Products: Solar Boost™ PV charge controllers

Purpose: Installing Solar Boost charge controllers with Photovoltaic Ground Fault Protection (PVGFP)

National Electric Code (NEC) specifies that certain photovoltaic (PV) arrays be fitted with Photovoltaic Ground Fault Circuit Protection (PVGFP). The purpose of this protection system is to disconnect the PV array in the event that a system fault causes a current greater than approximately 1.0A to flow between an “isolated negative bus” and an “earth ground bus”. If this ground fault current is detected, the PVGFP disconnects the PV array.

The schematic provided by the manufacturer of the PVGFP device may show PV- and BAT- from the charge controller, and Solar Array negative all connected together at the isolated negative bus. As described in the Solar Boost operators manual, Solar Boost PV- and BAT- must be separate for the charge controllers to operate. If Solar Boost PV- and BAT- are connected together externally, the Solar Boost controller cannot measure input or output current and will not operate properly.

Since Solar Boost PV- and BAT- are connected together inside the controller through very low resistance internal shunts, separating these connections to allow Solar Boost to operate continues to provide proper PVGFP operation as well. Simply connect Solar Boost BAT- to the isolated negative bus, and Solar Boost PV- directly to Solar Array negative. The schematic below shows the basics of how this can be accomplished. Additional solar arrays can connect to additional Solar Boost controllers through a PVGFP with multiple high current switches. Note that this schematic does not show all circuit protection and wiring requirements for a PV / inverter system.

