

<h1>Technical Bulletin</h1>	<h2>PV Module Grounding</h2>	Revision: May 1, 2008
		Approved: D. Buttz 

This document describes the manufacturer approved PV module grounding methods for installation in the USA. The four methods given in this document include clarifications of the two methods described in the installation manual.

 **WARNING**

The grounding method should satisfy both the local code and the National Electrical Code consistent with the specifications of the installed PV system. The module should be grounded properly as appropriate for the conditions at the installation site. Be careful not to damage module backfilm when using drills and sharp objects.

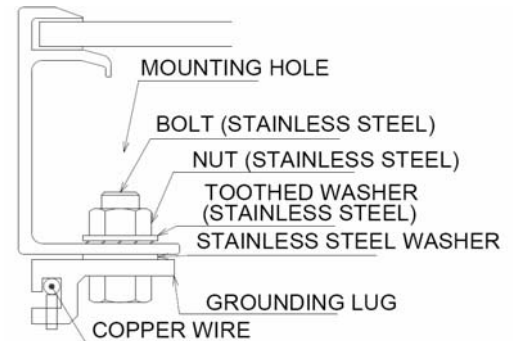
**Method # 1**


- To the grounding hole, secure a self-tapping stainless steel screw of at least 32 threads per inch (e.g. 10-32).
- Stainless steel washers (e.g. flat #10) should be inserted between copper wire and the frame to avoid galvanic corrosion.
- As shown in the figure, wrap copper wire around the screw between the washers and tighten the screw.



**Method # 2a**

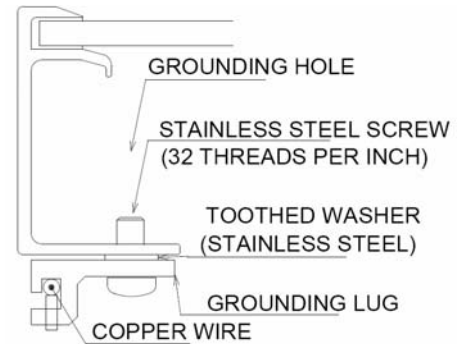
- If the mounting holes are not used to fix the module, one of them can be used for grounding.
- To the mounting hole, secure a grounding lug (e.g. tin-plated copper) with a stainless steel bolt and nut.
- Insert a stainless steel washer (e.g. flat, locking) between the grounding lug and frame.
- A stainless steel toothed washer can be inserted between the nut and the frame to break the anodized layer of frame.
- If needed, sand the anodized layer of frame near the hole and add anti-oxidant compound.
- As shown in the figure, tighten the grounding lug set screw to the copper wire.



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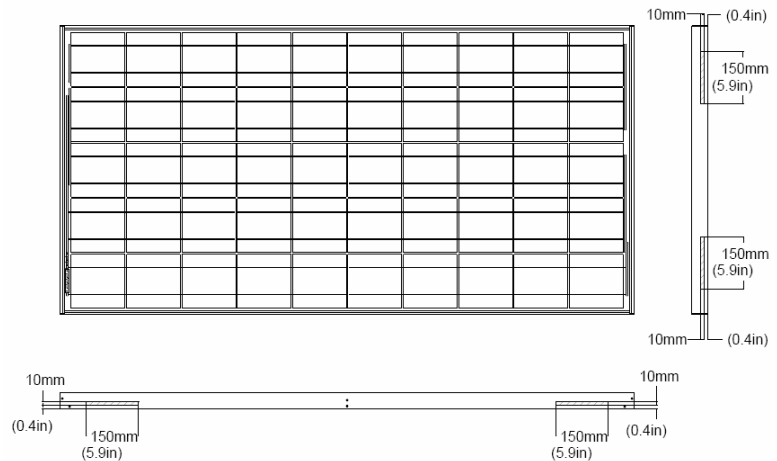
### Method # 2b

- To the grounding hole, secure a grounding lug (e.g. tin-plated copper) using a self-tapping stainless steel screw of at least 32 threads per inch (e.g. 10-32).
- Insert a stainless steel washer (e.g. flat, locking, toothed) between the grounding lug and frame. A stainless steel toothed washer can aid in breaking the anodized layer of the frame.
- If needed, sand the anodized layer of frame near the hole and add anti-oxidant compound.
- As shown in the figure, tighten the grounding lug set screw to the copper wire.



### Method # 3

- If there is not convenient access to locate the grounding device at the grounding hole or mounting hole, a hole may be drilled into the side or bottom of the module frame within the designated drilling zones.
- Make an appropriately-sized hole (less than 5/16" diameter) on the frame suitable for the grounding device.
- Secure grounding device via Method 1 or Method 2.



### Method # 4

- Grounding devices listed to UL467, such as barbed washers, that are designed to be used to bond photovoltaic modules to the mounting structure may be used for grounding as described in National Electric Code sections 250.134 and 250.136.
- Follow instructions of UL467 listed grounding device manufacturer.