

## Solar Energy South Africa

# Lightning protection and grounding standards for photovoltaic panels



## Overview

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Do PV systems need a lightning protection system?

The necessities of lightning protection on the PV systems and its barrier, the need for different lightning protection system on PV systems as well as its recommended practices are also discussed in this paper.

Are there standards for lightning protection system installation?

No doubt that there are standards govern the lightning protection system installation for building and the solar PV itself which can be obtained from the International Electrotechnical Committee (IEC) and various other national and international standards, respectively.

Are PV systems vulnerable to lightning?

Similar to other power systems [ , , , , ], PV systems are vulnerable to lightning because they are always installed in unsheltered open areas. Recent studies on lightning protection of PV systems have drawn much attentions [ 9 ].

Are photovoltaic systems exposed to lightning?

1. Introduction Photovoltaic systems are inherently exposed to direct and indirect lightning effects. For high- capacity systems, the deployment of solar cell arrays requires a large area with commensurate exposure to direct lightning strikes at the local annual rate of ground strikes per unit area.

What is a solar substation grounding guide?

Abstract: This guide is primarily concerned with the grounding system design for photovoltaic solar power plants that are utility owned and/or utility scale (5 MW or greater). The focus of the guide is on differences in practices from substation grounding as provided in IEEE Std 80.

Can lightning strike a solar PV panel?

This paper considers the possibility that, despite the installation of the lightning protection system (LPS), direct lightning strikes to the solar PV panel frame/structure might still happen , . Hence, lightning current will flow through the PV frame/structure to the ground.

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### Lightning Protection of Photovoltaic Systems: Computation of ...

Keywords: lightning protection; grounding system; photovoltaic power systems 1.  
Introduction Recently, due to the rising crisis of traditional energy sources, new international directives ...

### Common Method of Grounding for Photovoltaic ...

Common Method of Grounding for Photovoltaic Lightning Protection. For the solar panel grounding, general use 40 \* 4mm flat steel or  $\varnothing 10$  or  $\varnothing 12$  round steel, and finally buried depth of 1.5m underground, the grounding resistance of the ...



### Three steps to protect a solar farm from lightning ...

Finally, a well-designed structural lightning protection system can be installed. Below are more details for each tier of the protection pyramid to help establish smart grounding, surge suppression and lightning protection on solar ...

### How to protect your solar power system from ...

Lightning is a common cause of failures in

photovoltaic (PV) and wind-electric systems. A damaging surge can occur from lightning that strikes a long distance from the system or between clouds. (Refer to Code Corner articles on PV ...



## Surge Protection for Photovoltaic Systems - IAEI ...

Lightning's perfect storm for destruction is on the solar field. Solar panels' large--and often exposed and isolated--location make surge protection critical for it to last its lifespan. Lightning is an electrical discharge in the ...

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