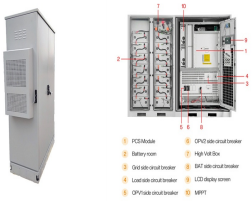
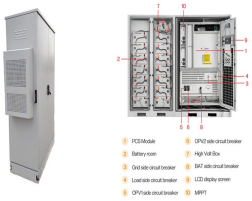
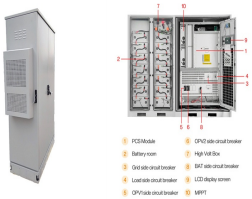
WHAT LIGHTNING PROTECTION SHOULD BE INSTALLED ON PHOTOVOLTAIC PANELS



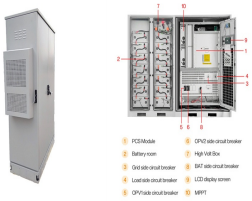
Do PV systems need lightning protection? With all the barriers discussed in Section 3.3,the need for lightning protection on PV systems must be evaluatedon the basis of the risk analysis and protection costs. Table 10 presents the recommended standards related to PV systems including PV installations,lightning protection systems and electrical installations. Table 10.



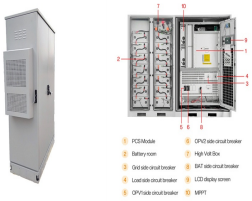
How do I protect my PV system from lightning strikes? To protect your PV system from direct lightning strikes,steps should be taken to ensure that the system is incorporated into the protective zone of the existing air termination system*. Additionally,*the correct surge and lightning equipotential bonding SPD???s should be installed where required on incoming services. In order to avoid this,the PV system should be protected.



Do residential solar panels need a lightning protection system? The operation of residential solar panels depends on sensitive electronic equipment which can be strongly affected by voltage surges causing degradation or deterioration of their components. They are therefore high-risk installations from a lightning protection point of view and must be provided with a suitable protection system.

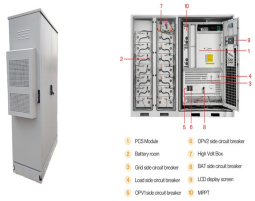


Why do photovoltaic panels need an external lightning protection system? The installation of an external lightning protection system has the mission of avoiding direct impacts on the structure,and therefore in this case on the photovoltaic panels installed on its roof.

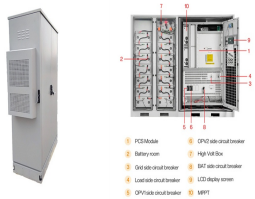


Are PV systems vulnerable to lightning? Similar to other power systems [,,,,],PV systems are vulnerable to lightningbecause they are always installed in unsheltered open areas. Recent studies on lightning protection of PV systems have drawn much attentions [9].

WHAT LIGHTNING PROTECTION SHOULD BE INSTALLED ON PHOTOVOLTAIC PANELS



How do I protect my solar power system from lightning? In this article, you will learn how to protect your solar power system from lightning. Drawing from decades of installer experience, we???ll explore the most cost-effective techniques generally accepted by power system installers. Grounding is the most fundamental technique for protection against lightning damage.



Bury many copper-coated steel grounding rods at least 6 to 8 feet apart around the solar panel installation. Bury the rods at least 8 feet underground. To ensure a stable ground connection, the rods should extend into permanently wet ground. Regular Maintenance Checks for Solar Panel Lightning Protection System.

PV System Without Lightning Protection. PV systems without lightning protection systems are at extremely high risk, easily suffering damage from lightning strikes and voltage surges. Potential Risks: (1)Lightning Damage: PV systems, usually installed on roofs or high places, are prone to lightning strikes, causing severe damage.

potential rises. It should be noted that transient electrical disturbances similar to lightning may be caused by power switching operations, including stand-by generators and power line faults. Figure 2, Sources of lightning damage 4. Protection Options This application note follows the recommendations for lightning and surge protection set out

As the scale of solar solar panel and the scope of applications continue to expand, solar panel lightning protection and grounding protection measures are increasingly valued in large and small solar panel systems. Especially in seasons with frequent thunderstorms, photovoltaic power stations are prone to lightning strikes, causing equipment damage and ???

WHAT LIGHTNING PROTECTION SHOULD BE INSTALLED ON PHOTOVOLTAIC PANELS

So lightning protection is a two part process. First make sure there is a lightning arresting system completely separate from the PV system designed to attract lightning strikes and shunt them to ground. This is where the short, fat, and ???

In many countries, solar photovoltaic (PV) systems are regarded as one of the best renewable energy (RE) sources in terms of cost of installation, return of investment (ROI), incentive and benefit

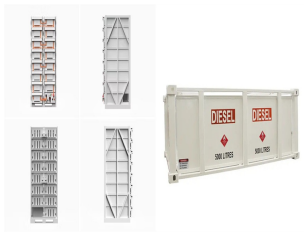
Background. Residential PV systems are generally installed on the rooftop of residential buildings, with a large metal surface area, higher distance from the ground and an exposed location.

??? internal lightning protection for lightning equipotential bonding and surge protection The German national supplement 5 of DIN EN 62305-3 describes protective measures for external and internal lightning protection when using PV power supply systems. Implementation of the protective measures described there

The lightning protection of photovoltaic installations is of great importance, in order to warrant the uninterrupted operation of the system and avoid faults and damages of the equipment. Atmospheric discharges influence the proper operation of the photovoltaic generators and their installation, involving also sensitive electronic equipment. The determination of the ???

WHAT LIGHTNING PROTECTION SHOULD BE INSTALLED ON PHOTOVOLTAIC PANELS

PV systems are at high risk of lightning strikes due to their installation in exposed locations and must therefore be protected against surges in accordance with EN 61643-32. To avoid system ???



LPL III and thus a lightning protection system accord-ing to class of LPS III be installed for rooftop PV systems (> 10 kW p) and that surge protection measures be taken. As a general rule, rooftop photovoltaic systems must not interfere with the existing lightning pro-tection measures. Necessity of surge protection for PV systems

PV systems with external lightning protection Type II surge protection can be used, provided the sepa-ration distance is maintained (usually > 0.7 m to 1 m). and alternating current (AC) sides. The surge protection unit should be installed as close as possible to the device to be protected. Depending on the application, there are different

On such buildings where an external lightning protection system has already been installed to BSEN 62305, care must be taken to ensure that the retro fit installation of a PV system does not render the existing lightning protection system non- compliant. A PV system installed above the protective zone offered by the existing lightning protection

IEA PVPS Task 3 ??? Common practices for protection against the effects of lightning on stand-alone photovoltaic systems 6 1 Introduction Stand alone photovoltaic installations are equally ???

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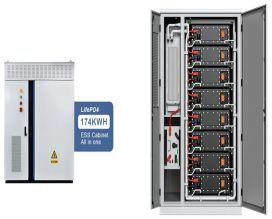


Although the installation of PV systems, especially rooftop PV systems have been increasing in demand and volume of installation, very few contractors are concerned about the lightning protection system that should form part of the PV rooftop installation. The new SANS10142-3 standard being developed; is aimed at providing some guidance with

Also, the damage inflicted by lightning-induced surges can have lasting effects on the overall efficiency and safety of solar panel installations, highlighting the importance of surge protection. Implementing surge protection devices can help mitigate the risks associated with indirect lightning strikes, safeguarding the system components and ensuring the smooth ???

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

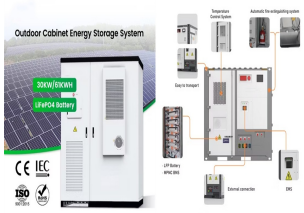
For most systems to get the best protection, you should have a DC surge arrestor on the INPUT to the charge controller. It should be as near the charge controller as possible. On the AC side (and this applies to BOTH the inverter AC input and AC output (for generator and/or grid tie systems) you should have both an AC surge arrestor and a surge capacitor.

??? Photovoltaic Panels ??? v5 Lightning: ??? Provide lightning protection (air-termination rods and conductors) for any roof-mounted PV plant if required by assessment or recognised international or local codes (e.g. IEC 62305 risk assessment tool and application of part 4). ??? Separate PV systems by at least 1m from lightning protection.

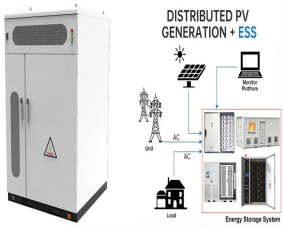
WHAT LIGHTNING PROTECTION SHOULD BE INSTALLED ON PHOTOVOLTAIC PANELS

Therefore, an adequate lightning protection system (LPS) must be installed to protect the PV panels. In addition, the transient performance of PV panels during lightning strikes must be analyzed well.

PV systems with external lightning protection Type II surge protection can be used, provided the separation distance is maintained (usually > 0.7 m to 1 m). and alternating current (AC) sides. The surge protection unit should be installed as close as possible to the device to be protected. There are different installation locations



To prevent surge damage, a lightning protection system according to VDE 0185- 305-3 (IEC/ EN 62305-3) is recommended for PV on-roof systems. A risk analysis according to VDE 0185-305-2 helps to determine the necessity of a lightning protection system, as well as the required lightning protection class.



Solar photovoltaic (PV) system is one of the promising renewable energy options for substituting the conventional energy. PV systems are subject to lightning damage as they are often installed in

The PV system and lightning protection system can be installed at the same time without any problems. If a photovoltaic system is subsequently placed on a roof area where a lightning protection system is already installed, there are several aspects that need to be considered.

WHAT LIGHTNING PROTECTION SHOULD BE INSTALLED ON PHOTOVOLTAIC PANELS


equipment and personnel, developed potential in case of a lightning strike. 2. Protection of PV Systems against Lightning Overvoltages As it is described in [4,19], PV modules are more vulnerable to direct lightning strikes than conventional low-voltage power distribution systems, due to installation on roofs,


??? A lightning protection system to be installed must be designed in such a way that it fulfils its function even without a PV system. ??? Equipotential bonding must always be added to PV systems in accordance with VDE 0100. This applies to all conductive and exposed components. Equipotential bonding Earthing. 5


In many countries, solar photovoltaic (PV) systems are regarded as one of the best renewable energy (RE) sources in terms of cost of installation, return of investment (ROI), incentive and benefit to the end users. PV systems are always installed on the rooftop or outdoor locations, which give high possibility of getting struck by the lightning. . Consequently, this ???


solar panel assemblies [1]???[3]. Hence, many such rods would be installed in a solar farm. These lightning rods can be installed either as isolated systems or as non-isolated systems from the solar panel assemblies [3], [4]. Each isolated system consists of a free-standing mast (connected to a Franklin rod at the top) that is erected some


related to protect photovoltaic systems against lightning damages. Thus, the method proposed has estimated the induced voltages and currents by lightning strikes in PV systems installed in buildings, with or without lightning protection system [29]. In addition, to complete the analysis the methodology has quantified the