

Application of Photovoltaic System Security Module

Article Overview

Photovoltaic system security modules protect PV installations from physical damage, theft, lightning, and cyber threats, ensuring operational continuity and grid reliability.

Physical Protection and Anti-Theft Applications

PV security modules often include anti-theft systems that safeguard individual panels using plastic optical fiber sensors. For example, the LiteSUN/LiteSUN Plus system attaches a fiber cable to each panel, detecting cutting or bending, and triggers alarms only when tampering occurs, avoiding false alarms from vibrations or weather conditions. These systems are modular, scalable, and suitable for both small rooftop installations and large solar parks, allowing flexible deployment and easy maintenance. Additionally, lightning and surge protection is critical for PV systems. Direct or indirect lightning strikes can damage electrical components through galvanic or conductive coupling. Security modules integrate surge protection devices and grounding systems to mitigate these risks, ensuring compliance with standards like IEC 60364-7-71 and maintaining system reliability.

Cybersecurity Applications

Modern PV systems increasingly rely on digital controls, sensors, and networked infrastructure, making them vulnerable to cyberattacks. Security modules implement cybersecurity measures such as anomaly detection, secure communication protocols, and real-time monitoring to prevent operational disruptions, financial losses, and po...

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