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TPS3 Design Guide

Solar Farm

Surge Protection Solutions

usa.siemens.com/surge

In today's electronic world, electrical systems for the home or business just aren't complete unless they incorporate surge protection. The most effective way to defend and safeguard this environment against damaging surges is by hardwiring surge protective devices (SPDs) throughout the electrical distribution system.

Ideally, every electrical panel should be surge protected, however, this may not be practical or feasible. Proven surge protection practices do not have to be complicated or costly. All that is required to effectively surge protect your facility is to answer the following questions:

1. Where should hard wired SPDs be installed on the electrical system?
2. What size and type SPD should be used?

Government studies suggest that the most efficient way to surge protect an electrical system is by applying hardwired surge protective devices at the main incoming electrical and communications services. Additional hardwired suppressors were recommended to prevent backfed surges that could bypass the primary electrical service SPD. Also, localized equipment SPDs are recommended to protect against residual and internally generated surges.

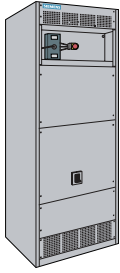
Following these practices, five common SPD electrical systems installation points can be identified. Applying surge protection at these points will maximize a facility's surge immunity. These locations can easily be remembered by using the following acronym, "The best surge protection installation is a S.O.L.I.D. one." Where S.O.L.I.D. stands for the following:

- S** Service Entrance
- O** Outside Loads Powered From Distribution Panels
- L** Lower Voltage Distribution Panels
- I** Individual Critical Equipment
- D** Data, Telephone and Coaxial Cables

The following example applies S.O.L.I.D. SPD protection to a Solar Farm's electrical system. Listed on the back are SPDs with appropriately sized redundancies that we have found over the years to provide years of uninterrupted protection.

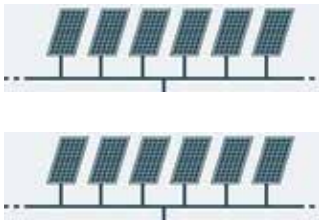
TPS3 Design Guide

Surge Protecting a Solar Farm



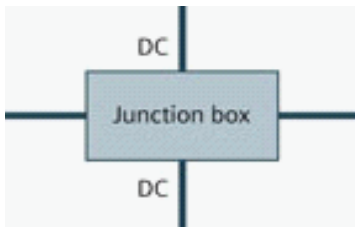
Service Entrance

Applying surge protection at the incoming electrical service “Stops Surges Before They Get In.” These types of surges contain the largest surge energy warranting 300 kA or more of surge current redundancy.



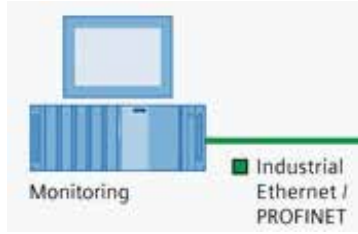
Outside Loads

SPDs should be installed at distribution panels feeding remote hangers, security shelters, parking lot lights, etc. to prevent back feeding surges entering the main terminal.



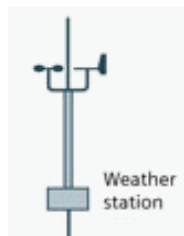
Lower Voltage Panels

If the terminal is supplied with a higher system voltage (i.e. a 277/480V service), 120V panels need SPDs to condition residual surges leaving the service entrance SPD as well as any internally generated surges. Examples include panels powering security systems, flight status terminals, point of sale equipment or any other panels powering sensitive electronic-rich loads.



Individual Equipment

Even if surge protection is applied at the previously listed locations, redundant protection may be warranted for sensitive, costly equipment. This may include baggage scanning equipment, chillers, and drives.



Data Lines

Security, fire alarm, and telephone systems using copper communications lines need protection especially for communication circuits running to and from separate buildings as well as runway signal controls.

Siemens TPS3 SOLID Solutions

Service Entrance

Internal SPD	External SPD
TPS30630	TPS31230
Increased Redundancy	
TPS3L630	TPS3L1230

Outside Loads

External SPD	
TPS30910	TPS30350DC

Lower Voltage Panels

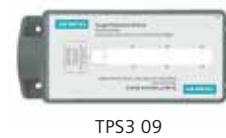
External SPD	
TPS30910	TPS30350

Individual Equipment

External SPD	
TPS30910	TPS30350

Data Lines

External SPD	
TPS30350	



Siemens Industry, Inc.
 5400 Triangle Parkway
 Norcross, GA 30092
 888-333-3545
info.us@siemens.com

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