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*Ingenuity for life*

# TPS3 Design Guide

## Single Family Home Surge Protection Solutions

[usa.siemens.com/surge](http://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.

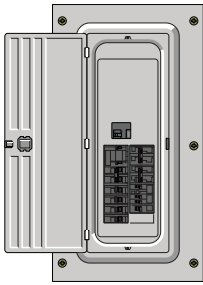
Following these practices, five common SPD electrical systems installation points can be identified. Applying surge protection at these points will maximize a facility's surge immunity. These locations can easily be remembered by using the following acronym, "The best surge protection installation is 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 Single Family Home'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.

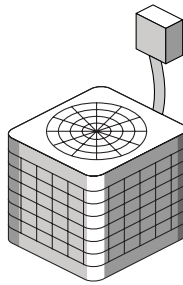
# TPS3 Design Guide

## Surge Protecting a Single Family Home



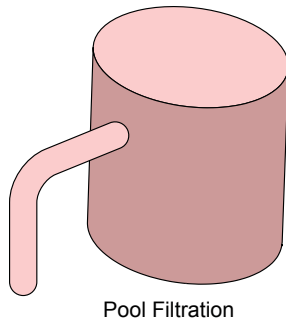
### Service Entrance

Applying surge protection at the incoming electrical service "Stops Surges Before They Get In."

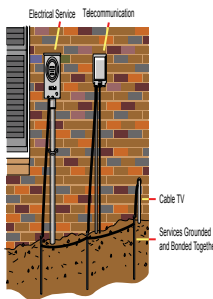


### Individual Equipment

Even if surge protection is applied at the previous locations, redundant protection maybe warranted for sensitive, costly equipment. This may include the use of plug-in surge protectors for audio-visual equipment.



Pool Filtration

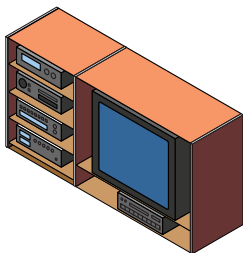


### Data Lines

Security, fire alarm, telephone, and cable systems using copper communications lines need protection especially for incoming cable and telephone services.

### Outside Loads

SPDs should be installed at remote workshops or guest houses, or at panels that supply external loads to prevent back feeding surges entering the main building.



### Lower Voltage Panels

The standard 120V service may supply control panels connected to equipment operating at lower voltages. These control panels need SPDs to condition residual surges leaving the service entrance SPD as well as any internally generated surges. Examples could be lighting control panels, home theater controls, or any other panel powering sensitive electronics.

### Siemens TPS3 SOLID Solutions

#### Service Entrance

Internal SPD	External SPD
QSA2020	FS060 FS100 FS140

#### Outside Loads

External SPD	
TPS30350	FS060 FS100 FS140

#### Lower Voltage Panels

Internal SPD	
Plug-in SPD	

#### Individual Equipment

External SPD	
FS060 FS100 FS140	TPS30350

#### Data Lines

External SPD	
FSPHONE	FSCATV



FS060 FS100 FS140

QSA2020



TPS3 03

Plug-in SPD



FSPHONE

FSCATV

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Order No. PDFL-SPDHM-0417  
Printed in USA  
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