

WARNINGS

- Safety First – Hazardous Voltage & Shock Hazard
- Only qualified licensed electricians should install or service SPDs
- Hazardous voltages exist within SPDs
- SPDs should never be installed or serviced when energized
- Use appropriate safety precautions including Personal Protection Equipment
- Failure to follow these instructions can result in death, serious injury, and/or equipment damage
- This manual shall be read in its entirety prior to installing

Bonding and Grounding Hazard

Verify that the neutral conductor in the service entrance equipment is bonded to ground in accordance with the National Electric Code (NEC®) and all applicable codes. During installation into an electrical system the panel must not be energized; or the Circuit Breaker de-energized, until the SPD is completely installed, inspected and tested. All conductors must be connected and functional including the neutral (if required).

The voltage rating of the SPD and system must be verified before energizing the SPD. Failure to follow these guidelines can lead to abnormally high voltages at the SPD. This may cause the SPD to fail. The warranty is voided if the SPD is incorrectly installed and/or if the neutral conductor in the service entrance equipment or downstream of separately derived systems is not bonded to ground in accordance with the NEC®

Do Not Hi-Pot Test SPDs

Any factory or on-site testing of power distribution equipment that exceeds normal operating voltage such as high-potential insulation testing, or any other tests where the suppression components will be subjected to higher voltage than their rated Maximum Continuous Operating Voltage (MCOV) must be conducted with the SPD disconnected from the power source. For 4-wire systems, the neutral connection at the SPD must also be disconnected prior to performing high-potential testing. Failure to disconnect SPD and associated components during elevated voltage testing will damage the SPD and will void the warranty.

SPDs on Ungrounded Systems

Caution – Ungrounded systems are inherently unstable and can produce excessively high line-to-ground voltages during certain fault conditions. During these fault conditions, any electrical equipment including an SPD may be subjected to voltages which exceed their designed ratings. An SPD designed specifically for Ungrounded systems should be used.

Unpacking and Preliminary Inspection

Inspect all packages in each shipment for damage or signs of mishandling. Remove the packing materials and continue with inspection for damage. If any damage is found and is a result of shipping or handling, immediately file a claim with the shipping company and forward a copy to Omega Power.

Storage Environment

This SPD should be stored in a clean, dry environment. Storage temperature range is -40C (-40F) to +60C (+140F)

INSTALLATION PLANNING

Operating Environment

This SPD should be operated in an ambient temperature range of -25C (-13F) to +85C (+185F) with relative humidity below 95%. Excessive temperature may inadvertently operate internal thermal over temperature protectors.

Type 2 Installation

This SPD is tested and Listed as a Type 2 SPD per UL1449 5th Edition. This SPD MUST be installed on the load side of dedicated over-current protection as a Type 2 SPD.

Lead Length and Maximizing SPD Performance

SPDs should be located as close as possible to the load(s) to be protected. Excessive lead length increases 'let-thru-voltage'. Use the shortest and straightest possible leads. Pre-plan installations to minimize wire lead length to the nearest breaker. Avoid bends and sharp turns in the wires. Tie wrap leads together if necessary.

Voltage Rating

Before installing the SPD, verify that it has the same voltage rating as the power distribution system. Compare the SPDs side label/model number to ensure the SPD is configured for the intended power source.

Circuit Breaker

We suggest using a 20A circuit breaker that will serve as the disconnect switch and provides short circuit protection to the SPD. The SF Series has internal overload protection elements within the product tested to 200kAIC SCCR (Short Circuit Current Rating).

System Grounding

An equipment grounding conductor must be used on all electrical circuits connected to the SPD. Use a single point grounding system where the service entrance grounding electrode system is connected to and bonded to all other available electrodes, building steel, metal water pipes, driven rods, etc. (see IEEE Std 142-2007). For sensitive electronics and computer systems, we recommend ground impedance measurement as low as possible. When metallic raceway is used as a grounding conductor, and insulated grounding conductor should be run inside the raceway and sized per the NEC. Adequate electrical continuity must be maintained at all raceway connections. Do not use isolating bushings to interrupt a metallic raceway run. A separate isolated ground for the SPD is NOT recommended. Proper equipment connections to grounding system and ground grid, continuity should be verified via inspections and testing on a regular basis as part of a comprehensive electrical maintenance program. On 4-Wire Power System Service Entrance panels, neutral to ground bonding must be installed per the NEC. Failure to do so will damage the SPDs.

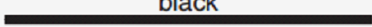

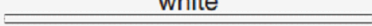
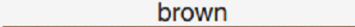
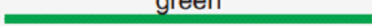
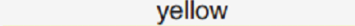
Retro-fit SPD into existing panel with no available breakers

CAUTION: this SPD must be installed in conformance with all governing codes. Consider consolidating loads to free up breakers. A ten foot tap rule in NEC 240.21(B)(1) allows you to tap the bus as long as the tap conductors are rated at least 10% of the ampacity of the panel. In the case where the ampacity of the panel is larger than the wires of the SPD, consider tapping the bus per NEC 240.21(B)(1) and running appropriate size conductors to a safety switch fused to 20A. Mount the SPD directly adjacent to the safety switch.

INSTALLATION

Pre-Plan your installation

- Meet all National and Local codes. (NEC® Article 285 addresses SPDs)
- Mount SPD as close to panel or equipment as possible to keep leads short
- Ensure leads are as short and straight as possible, including neutral and ground.
- Consider a breaker position that is closest to the SPD and the panel's neutral & ground
- Suggested breaker size is 20A.
- Make sure system is grounded per NEC® and clear of faults before energizing SPD.

Connect to Mains		Connect to Alarming	
	Line(s)		NO (Normally Open)
	Neutral		NC (Normally Closed)
	Ground		Common

1. Use a voltmeter to check all voltages to ensure correct SPD.
2. If utilizing Dry Contacts, pre-plan their installation.
3. Remove power for panel. Confirm panel is deenergized.
4. Identify connection/breaker location and SPD location.
5. Make sure leads are short.
6. Remove an appropriately sized knockout from panel.
7. Mount SPD. Connect to equipment using an approved wiring method, including seals appropriate for the enclosure rating.
8. Connect conductors as appropriate – short and straight as possible.
9. Label or mark conductors as appropriate
 - Energized: black
 - Neutral: white
 - Ground: green
10. Make sure system is bonded per NEC® and is clear of hazards or faults before energizing (N-G bonding not per NEC® will fail SPDs (only at Service Entrance)).

Green LED Status Lights

Each SPD contains one green LED light per phase/line shown in the appropriate voltage configuration. When the LEDs are green, protection is functioning properly. Component failure will cause the corresponding phase status indication light to go out.

Audible Alarm

The audible alarm will sound upon suppression component failure. The audible alarm may be silenced by removing power to the SPD.

WARNING: Omega Power products shall be installed and used only as indicated in the product instruction sheets and training materials. Instruction sheets are available at www.omegaps.com and from your Omega Power representative. Omega Power products must never be used for a purpose other than the purpose for which they were designed or in a manner that exceeds specified load ratings.

SF160, SF320 SURGE FILTER INSTALLATION INSTRUCTIONS

Dry Contact

Three 18", 22 AWG wires are included through the nipple as the Form C Dry Contacts. The Contacts change state during inoperative conditions, including loss of power. Any status change can be monitored elsewhere via the Relay Contacts.

- Please note: Dry Contacts are designed for low voltage or control signals only
- Maximum switching current is 2A
- Maximum switching voltage is 240Vac
- Higher energy applications require additional relay implementation outside the SPD
- Yellow is Common, Black is Normally Open and Brown is Normally Closed. If the Dry Contacts are not utilized, insulate lead ends, coil and secure.

MAINTENANCE

SPDs require minimal maintenance. We recommend periodic inspection of diagnostic indicators to ensure proper operation. We also recommend keeping the SPD clean as appropriate.

Troubleshooting & Service

Please contact us for any service related issues.

All instructions must be completely followed to ensure proper and safe installation and performance.

Improper installation, misuse, misapplication or other failure to completely follow nVent's instructions and warnings may cause product malfunction, property damage, serious bodily injury and/or death, and void your warranty.

SAFETY INSTRUCTIONS:

All governing codes and regulations and those required by the job site must be observed. Always use appropriate safety equipment such as eye protection, hard hat, and gloves as appropriate to the application.

Omega Power reserves the right to change specifications without prior notice.

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