



surgeassure™ Residential  
Surge Protective Device  
S50A User's Manual



## Introduction

Thank you for choosing the surgeassure™ S50A Residential Surge Protective Device.

Save this manual! It includes instructions for obtaining warranty service and for returning a defective device.

Please read and understand all information in this manual prior to installation. The procedures contained herein are not intended to supersede local or national electrical codes. Check all applicable electrical codes to ensure compliance. In all instances, local and national electrical code requirements are to be followed.

This manual provides instructions for installing the S50A Surge Protective Device (SPD). The S50A SPD (Figure 1) can be mounted three ways. The preferred way is to mount the SPD directly to the outside of the electrical panel equipment using the pipe nipple on the body of the SPD. Other options include standard 35mm DIN-rail (not included) or via the attached L-bracket for standard flat mounting surface. Some of these methods require the use of additional conduit and hardware (not provided). See Figure 4 for further information on mounting methods.

The S50A provides protection from damaging transient voltage surges and spikes. Proper installation is imperative to maximize the effectiveness and overall performance of this device. This device must be installed by a licensed electrician. The electrician should follow the steps outlined in this manual to insure proper installation.

**Note:** surgeassure™ products are extensively tested to industry standards as set by ANSI/IEEE C62.41.1-2002, C62.41.2-2002, and C62.45-2002. The S50A is listed to the most recent edition of UL 1449 Third Edition (Sept 2009).

During installation into an electrical system, the S50A must NOT be energized until the electrical system is installed, inspected and tested. All conductors must be connected and functional, including neutral (if required).

Failure to follow the guidelines in this manual can lead to abnormally high voltage being applied to the SPD. This may cause the S50A unit to become inoperative. The warranty does not cover an incorrectly installed device.

Do not high potential test the electrical system with the SPD connected. Failure to disconnect the SPD during elevated voltage testing will result in damage to the suppression components and/or other electronic components (see Safety Information).

## Specifications

|   |   |
|---|---|
| Temperature Operating                               | -40°C (-40°F) to 60°C (+140°F)                      |
| Temperature Storage                                 | -55°C (-67°F) to 65°C (+149°F)                      |
| Wire Size & Installation Torque                     | 10 AWG; 18 inch-pounds                              |
| Appropriate Circuit Breaker based on conductor size | 30A (SPD includes internal OCP)                     |
| NEMA 250 Enclosure Rating                           | Type 4X with appropriate sealing & sealing conduits |

## Parts List and Inspection

Items included in the package consist of the following:

- 1 - S50A Surge Protective Device including 3' (~1m) conductors
- 1 - ¾" conduit nut
- 1 - Data Sheet
- 1 - User's Manual (this document)

Carefully inspect each item in the package for signs of damage. If damage is found, please contact surgeassure™ Technical Support: 1-800-727-0669. For more information about this product or other surgeassure™ products, visit [www.surgeassure.com](http://www.surgeassure.com).

## Safety Information

This section provides pertinent safety information that must be considered before installing the SPD.

- Do not install this device during a lightning storm.
- This device is rated NEMA 4X. Suitable for indoor and outdoor applications. The customer must seal the conduit nipple against the panel using watertight fittings (not supplied) to ensure a watertight connection.
- Do not install the surge protector in an excessively hot or moist location.
- Other safety considerations are listed on the following page.



## CAUTION

BONDING BETWEEN CONDUIT CONNECTIONS IS NOT AUTOMATIC AND MUST BE PROVIDED AS PART OF THE INSTALLATION.

CONDUCTING DIELECTRIC AND/OR HIGH POTENTIAL TESTING WILL CAUSE INTERNAL DAMAGE TO THE SPD UNIT. DO NOT PERFORM DIELECTRIC OR HIGH POTENTIAL TESTS WITH THE PHASE OR NEUTRAL SPD WIRES CONNECTED



# WARNING

VERIFY ALL POWER CIRCUITS ARE DE-ENERGIZED BEFORE MAKING CONNECTIONS

The voltage rating of the device and system must always be verified before energizing the SPD. All electrical connections should be performed by a qualified (licensed) electrician. All wiring must comply with the National Electrical Code (NEC) and applicable local codes.

- Maintenance of this Surge Protective Device should be performed by qualified electrical personnel only.
- During normal operation, hazardous voltages are present inside the unit.
- When servicing this unit, be sure to follow all electrical safety precautions.
- All power sources to this unit should be locked off before servicing. This will prevent the risk of receiving an electrical shock.

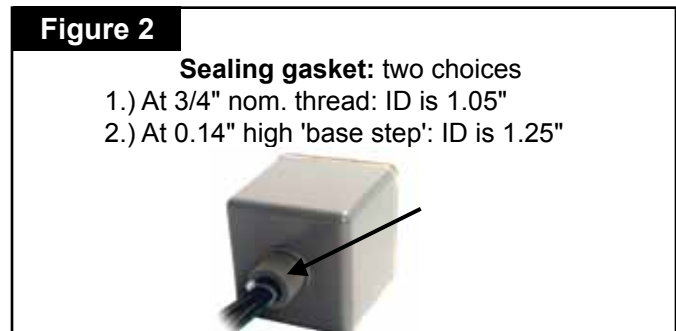
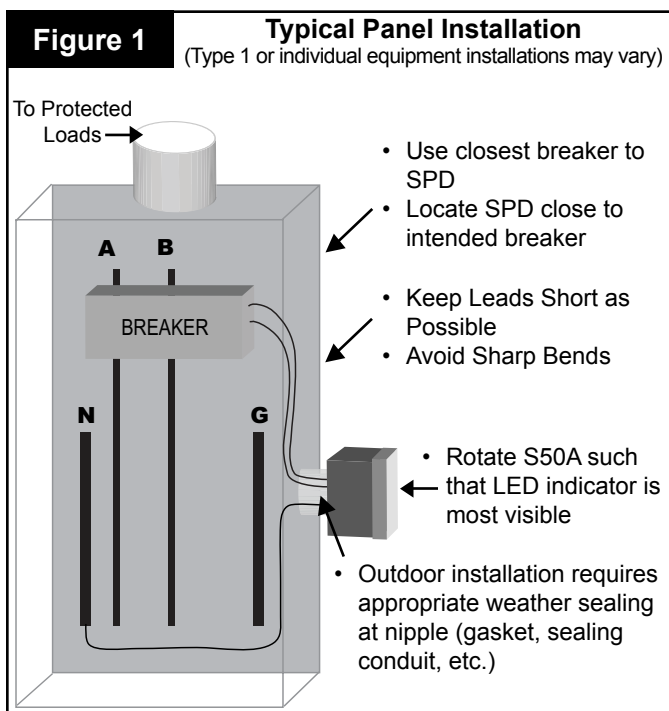
S50A is a Type 1 SPD. S50A is suitable for use almost anywhere (not as a plug-in SPD). Type 1 SPDs are evaluated more rigorously by UL 1449 for 2008 NEC® Article 285 compliance. Type 1 SPDs and their connecting leads have been evaluated for line side applications without need for supplemental overcurrent protection. Type 1 SPDs include internal overcurrent protection. As a generalization, there are practical maintenance reasons for installing on the load side of the main overcurrent device (i.e. Type 2 installation). When connected on load side of main disconnect, we recommend connecting via a 30A circuit breaker due to 10 AWG conductors. The circuit breaker serves as a disconnect switch and provides NEC® imposed short circuit protection to the conductors in Type 2 or 4 applications. (cUL units are Type 2 due to different cUL criteria.)

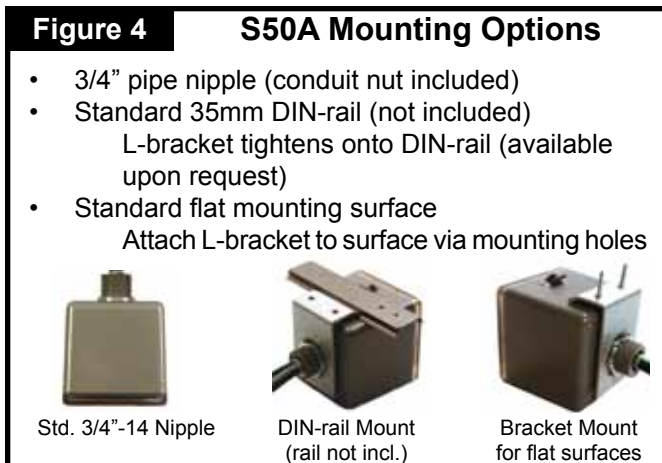
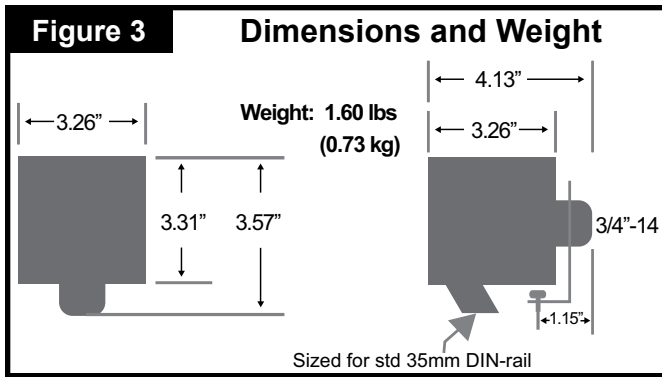
## Installation

Pre-Plan your installation. You need to accomplish the following:

- **Meet all National and Local codes** (NEC® Article 285 and UL 1449 address SPDs)
- **Confirm System voltage to SPD voltage** (120V SPD will fail instantly on 240V, 277V, etc.)
- **Mount SPD as close to panel or equipment as possible to keep leads short** (long leads hurt performance substantially)
- **Ensure leads are as short and straight as possible, including neutral. If using a breaker, use a breaker position that is close to the SPD and the panel's neutral**
- **If using a breaker, recommended breaker size is 30A due to 10 AWG conductor**
- **Make sure system is grounded per NEC® and clear of faults before energizing SPD** (inadvertent system problem may fail SPD).
- **Never Hi-Pot test Any SPD** (will prematurely fail SPD)

1. Use voltmeter to check voltages and ensure correct SPD. See Data Sheet for specs & wire-outs
2. Determine Mounting method (See Figure 2) – weather resistant equipment may be required
3. Remove power from panel/source. Confirm panel/source is deenergized.
4. Identify breaker location and SPD location. Position SPD such that LED is best visible.
5. Mount SPD – weather resistant applications require additional sealing, o-rings, etc. (not included)
  - Remove an appropriately sized knockout from panel.
  - Connect conductors as appropriate – short and straight as possible
6. Label or mark conductors as appropriate (neutral: white, energized: black)
7. 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: #1 cause of SPD failures)
8. Energize and confirm proper operation of green LED indicator and/or options.





**Normal Operation**

**Green LED Indicator**

The LED indicator illuminates when the SPD is energized and operating correctly. Indicator operation: Every suppression element is connected via logic to the green LED. Should any suppression element fail, the green LED will extinguish.

**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. We want to take care of any problems.

Quality SPDs withstand severe duty and attempt to protect their load until failure. There are electrical anomalies that SPDs cannot protect against. These are generally Sustained Overvoltages also known as Temporary Overvoltages (TOVs). In this context, Sustained Overvoltages may be only a few cycles. Failed SPDs tend to be symptoms, not root causes. We suggest treating a failed SPD as a 'canary in the coalmine' as there may be larger issues at play. As a generalization, the single largest 'killer' of SPDs is reference to ground issues. If the SPD

shows problems on startup, there is reasonable chance of bonding/grounding/misapplication issue. This permanently damages the unit. If not corrected, it will happen again.

**Limited Warranty**

surgeassure™ warrants it's AC electrical distribution equipment protection products against defective workmanship and materials for 10 years. Liability is limited to the replacement of the defective product. A Return Material Authorization number (RMA #) must be given by the company prior to the return of any product. Returned products must be sent to the factory with the transportation charges prepaid.

The company specifically disclaims all other warranties, expressed or implied. Additionally, the company will not be responsible for incidental or consequential damages resulting from any defect in any product or component thereof.

**Technical Support and Customer Service**

1.800.727.0669 · info@surgeassure.com

This manual as well as information about the entire surgeassure™ product line are available on the Internet at: [www.surgeassure.com](http://www.surgeassure.com).

Prior to calling surgeassure™ for technical support, please have the following information available:

Model Number of unit: \_\_\_\_\_

Manufacture Date: \_\_\_\_\_

Purchase Date: \_\_\_\_\_

Your Order Number: \_\_\_\_\_

Return Shipment Address:

surgeassure™  
14550 58th Street North  
Clearwater, FL 33760

Attn: RMA# \_\_\_\_\_



surgeassure™  
14550 58th Street North Clearwater, Florida 33760  
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