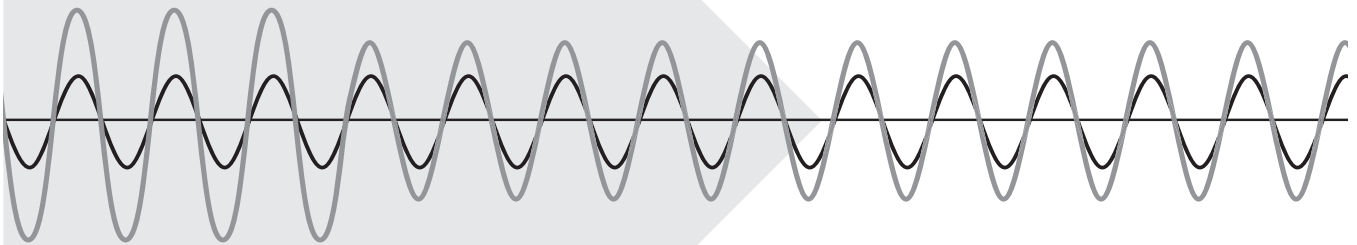


Surgitron ITM
SURGE
PROTECTION

Joslyn

Installation, Operation and Maintenance Manual

PN 750-0111-001 B00



Surge Protective Devices



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Guide to Installation and Assistance

Thank you for choosing the Joslyn® Surgitron I™ Series Surge Protective Device (SPD). We look forward to fulfilling your facilitywide surge protection needs.

Should you have questions about installing the Surgitron I series please call Joslyn® Technical Support at 800.238.5000 or 804.236.3300 Monday through Friday, 8:00 a.m. to 5 p.m. (EST). Or, email us at joslyn@tnbpowersolutions.com.

The Importance of Correct Installation

This manual provides guidelines for the proper installation of the Surgitron I series of devices. Proper product selection and compliance with these guidelines will help your new suppression system provide years of reliable service. If installers are unsure about the facility electrical configuration or have other installation-related questions, it is recommended they consult with a master electrician or other qualified electrical professional.

When shortcuts are taken or installation procedures are not followed, the Surgitron I series may become damaged or may not provide adequate protection. It is extremely important to follow these installation procedures carefully.



△ W A R N I N G !

THE SURGITRON I™ WARRANTY IS VOIDED if the unit is damaged as a result of improper installation or the installer's failure to verify the following conditions prior to installation.

△ W A R N I N G !

HAZARDOUS VOLTAGES PRESENT: Improper installation or misapplication may result in serious personal injury or damage to the electrical system. Read the complete installation instructions before proceeding with installation. Remove all power to the electrical panel before installing or servicing the SPD.

△ W A R N I N G !

IMPORTANT SAFETY INSTRUCTIONS: All work must be performed by licensed and qualified personnel. The electrical system must be properly grounded in accordance with the U.S. National Electrical Code, state and local codes or other applicable codes for this SPD to function properly. This device is suitable for installation where the available short circuit current is 10,000 rms symmetrical amperes up to 480VAC or less. For countries outside of the US follow applicable electrical specifications for the country the unit is being used in.

△ W A R N I N G !

This Statement is only applicable for TNCS grounded systems. Check to ensure that a proper bond is installed between neutral and ground at the transformer upstream from all 3-Phase Wye, 3-Phase High-Leg Delta or split-phase device (See NEC Article 250). If the transformer is not accessible, check the main service disconnect/panel for the N-G bond. Lack of a proper bond will damage and void the warranty.

△ W A R N I N G !

Do not HIPOT the Surgitron I Series units or the electrical system to which the Surgitron I Series unit is connected without disconnecting the Surgitron I series units conductors including phases, neutral and ground.

Before Installation: System Configuration Verification

Confirm that the voltage(s) and service configuration shown on the product label are consistent with the voltage and service configuration of the facility. A model number is on the right side of the unit. Each model number corresponds to the configurations printed in the table below:

MODEL	NOMINAL VOLTAGE	L-N VOLTAGE RANGE	L-L VOLTAGE RANGE	CONFIGURATION
1260-45, -85	120	108-132	N/A	1-Phase, 2-Wire + Ground
1261-45, -85	230	207-253	N/A	1-Phase, 2-Wire + Ground
1265-45, -85, -85-M, -85-MN	120/240	108-132	216-264	1-Phase, 3-Wire + Ground
1266-45, -85	220/440 to 240/480	198-264	396-528	3-Phase, 3-Wire Delta, Corner Grounded
1450-85	220/240	N/A	198-264	3-Phase, 3-Wire Ungrounded Delta
1451-85	440/480	N/A	396-528	3-Phase, 3-Wire Ungrounded Delta
1452-45, -80, -85, -85-M, -85-MN	120/240 High-Leg Delta	108-132 (A, C) 187-229 (B)	216-264	3-Phase, 4-Wire + Ground, High-Leg Delta
1455-45, -80, -85, -85-M, -85-MN	120/208	108-132	166-250	3-Phase, 4-Wire + Ground
1456-45, -80, -85, -85-M, -85-MN	277/480	249-305	432-528	3-Phase, 4-Wire + Ground
1457-45, -80, -85, -85-M, -85-MN	230/400	207-253	360-440	3-Phase, 4-Wire + Ground

Available Options

Surge Counter Add suffix -S

Stainless Steel NEMA 4X enclosure Add suffix -4X

Dry Relay Contacts available on select models

Environmental Condition Verification

Confirm that the environmental conditions are consistent with the following ranges:

- Ambient Temperatures: Between -40° and +158°F (0 to 70° C).
- Relative Humidity: Between 5% and 95% non-condensing.
- Altitude: Less than 13,000 feet (4000m).

Wiring Connection Diagrams

Figure 1
Single-Phase, 2-Wire
Models: 1260, 1261

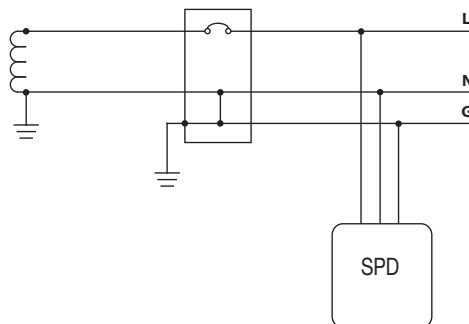


Figure 2
Split-Phase, 3-Wire
Model: 1265

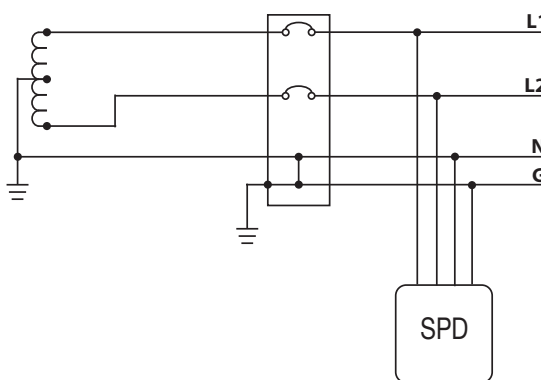


Figure 3
3-Phase, 4-Wire Wye
Models: 1455, 1456, 1457

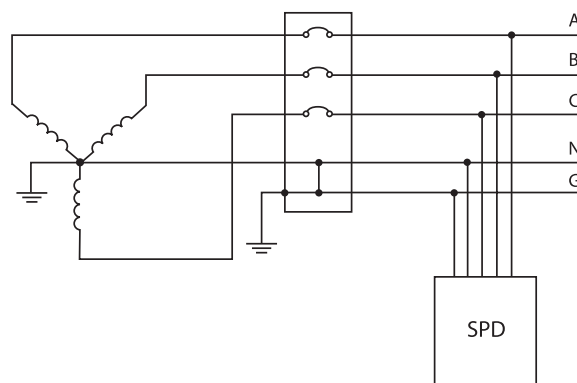


Figure 4
3-Phase, 3-Wire Delta

Models: 1450, 1451

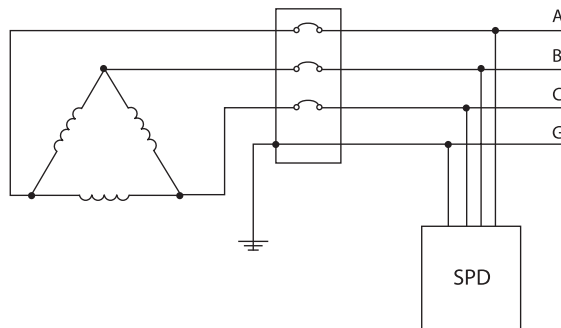


Figure 5
3-Phase, 4-Wire High-Leg Delta

Model: 1452

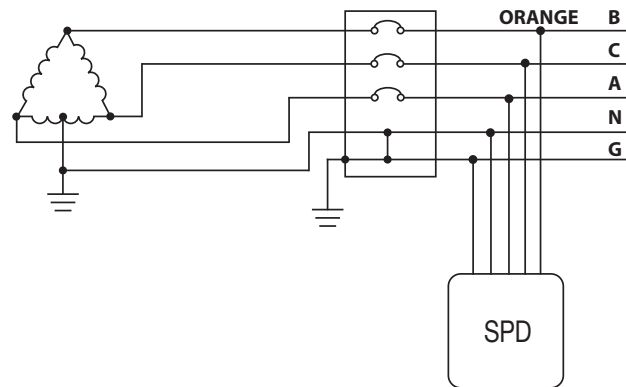
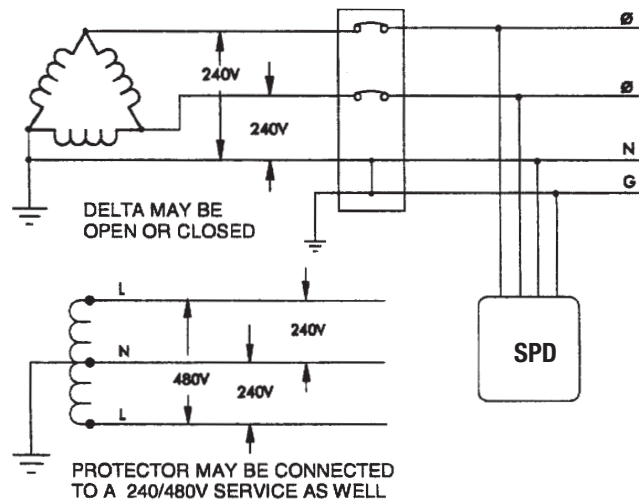


Figure 6
3-Phase, 3-Wire Delta
Corner Grounded

Model: 1266



Conductor Routing

⚠ CAUTION!

The Surgitron™ I's performance will be limited severely if the conductors are (a) too long, (b) are of too small a wire gauge, (c) have too many bends or (d) have sharp bends. For optimum performance never exceed 10'.

The factors listed above should be addressed during the design of an installation to reserve a suitable place for the product next to its point of connection to the electrical system. The selected mounting location should allow for the shortest possible conductor runs and a direct route with a minimum of bends. If bends are required, they should be *sweeping* bends (12" radius). Do not make sharp 90° bends for appearance purposes because they will severely decrease the effectiveness of the unit.

Binding or twisting conductors together using tie-wraps or electrical tape increases the protection performance of the device.

Upstream Overcurrent Protection Device

The Surgitron I has been listed to UL1449 as a Type 1 SPD. Type 1 SPDs can be used in Type 1 or Type 2 SPD applications, which means that the Surgitron I does not need to be connected behind an upstream Overcurrent protection device and can be connected on either the line or load side of the main service disconnect. The Surgitron I must be connected in parallel with the electrical system. All units come standard with component-level over-current fusing rated at 10,000 rms symmetrical amperes at up to 480VAC and can be connected directly to the electrical distribution system bus without an upstream over-current protection device (OCPD). If installing as a Type 2 SPD the use of an external OCPD is recommended.

If the SPD is connected to a dedicated OCPD, a 60A breaker is recommended. The advantage of using a dedicated over-current device for the SPD (even if the upstream breaker is 200A or less) is that it allows the SPD to be de-energized during service without disturbing the electrical service to the rest of the facility.

Electrical Connections

△ CAUTION !

Prior to installation ensure the system configuration and voltage is equivalent to the unit being installed.

Following all applicable National Electrical Code standards as well as state and local codes, connect phase, neutral* and ground. Each phase conductor is labeled (Phase A, B or C). The units come with compression box lugs. The installer must provide the appropriate conductors. Ensure that the conductor lengths are kept as short and straight as possible. On all high-leg delta systems, the high-leg (208V L-N) must be connected to the Phase B of the SPD. (color-coded orange according to NEC).

** The 3-Wire plus ground Delta SPD does not have a neutral conductor.*

Conductor Sizing

Series Connecting: If the service conductors are AWG 2/0 or smaller than 70 mm², the protector can be series connected and brought directly through the protector enclosure (the terminals are double lugged). This type of connection is the better as there is no Ldi/dt voltage drop (additive to the protector's suppression voltage), as is associated with the shunt connection method of installation. That is to say, the protection levels to connected equipment will be better with this type of installation.

Shunt Connecting: The protector is connected in parallel to the service mains. Keep the cables to the protector as short and straight as possible. The cable lugs supplied with the protector will accommodate a cable size range of AWG 4 – 2/0 (20 – 70 mm²); a cable size of AWG 2 is normally used. The shunt connections from the protector can be made directly to the main busses. If no tap is available, the protector may be connected to a 60 Amp (minimum recommended) circuit breaker or switch.

Mounting

Mount the Surgitron I to the building structure using construction methods and hardware appropriate for your site. Install the conduit and pull the conductors as specified above or according to the engineer's design.

Conduit Openings

If desired, punch holes at this time for the conduit or nipple or wait until the Surgitron I is mounted to the building structure. Punch holes only in the designated areas as shown in the following illustration.

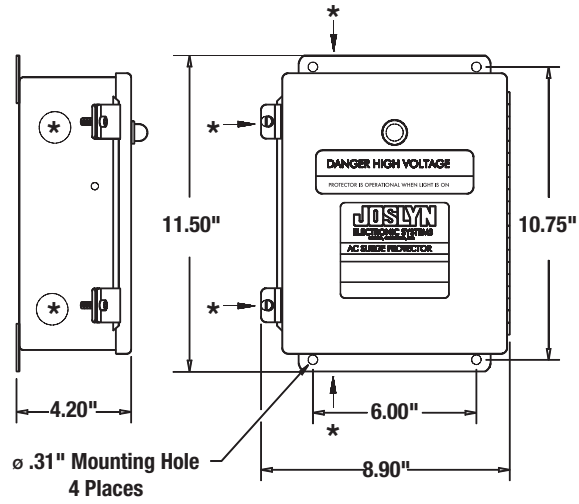
△ CAUTION!

Careful consideration must be made when selecting an area for conduit entry. There are several components inside the enclosure that may interfere with the conduit entry path, therefore, ensure the path is clear of all objects before drilling. Damages caused by installation errors are not covered under the product warranty.

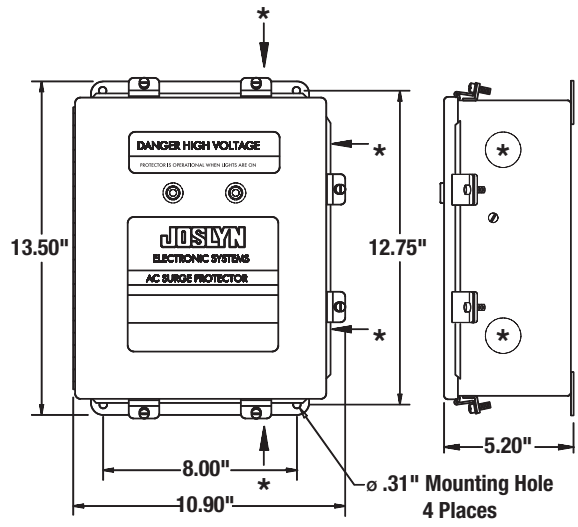
See Figure 7 for conduit openings and enclosure dimensions.

**Figure 7:
Conduit Openings and
Enclosure/Mounting Dimensions**

1260, 1261

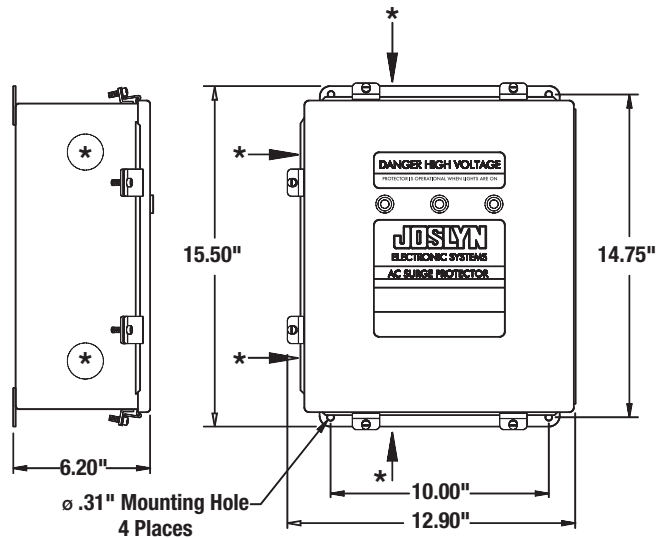


1265



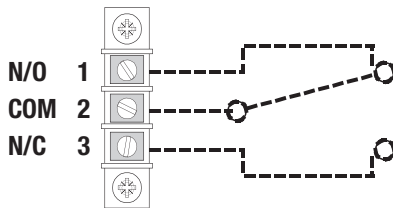
* Possible Locations for Conduit Holes
Metal NEMA 4 (IP66) Enclosure

1266, 1452, 1455, 1456, 1457



* Possible Locations for Conduit Holes
Metal NEMA 4 (IP66) Enclosure

Connecting Form “C” Dry Contacts



When input power is present on all phases, terminals “N/O” (Normally Open) and “COM” are an open circuit and terminals “N/C” (Normally Closed) and “COM” are a closed circuit. The contacts change state when the unit has encountered failure to one or more phases.

All units with -80, or -85 in the suffix come standard with two sets of Form “C” dry relay contacts for the surge protective device status. These contacts are for connection to a user-provided remote alarm and monitoring circuit. The relay contacts are rated 125VDC/250VAC with maximum switching power of 300WDC/2,500VA AC.

For “Fail-safe” form A monitoring, connect the alarm leads to terminals 2 and 3. Terminals 2 and 3 will be closed during normal (Power ON) operation and the protector is functioning properly. If the protector should fail contacts 2 and 3 will open and contacts 1 and 2 will close.

The installer must provide the appropriate raceway and wiring for the monitoring circuit, observing the restrictions and conduit openings illustrated in an earlier section of this manual. The install must route the monitoring conductors to the terminal blocks on the door-mounted main monitoring board. Route the wire to allow the door to be opened and closed properly. Tighten screws on terminals to 3.5 in-lbs (0.4 Nm). This terminal block will accept wire sizes #28AWG to #16AWG. #18 – #20 AWG is recommended. Terminating wires with fork terminals suitable for #6 screws is also recommended.

Verification and Power Up

⚠ WARNING !

It is recommended that the cover of the unit along with its associated cabling be installed prior to applying power.

Troubleshooting

Your system does not require scheduled maintenance. The unit's heavy-duty construction is designed to provide years of uninterrupted service. The unit contains no serviceable parts.

INDICATION

One or more phase protection status indicating lights are off, service required indicating light is on, or Form "C" alarm contacts have changed state.

PROCEDURE

Verify that the input power feeding the SPD is energized using a voltage tester. If power is present, contact factory for assistance:
800-238-5000.

Technical Assistance

Our staff is ready to support you and answer any questions.

Monday through Friday, 8:00 a.m. to 5:00 p.m. (EST) at 800-238-5000

Returns and Warranty Procedures

Units are warranted for a period of 5 years from date of purchase. In the event that any module or subassembly within the SPD fails to perform as specified during the warranty period, call our Technical Support at 800-238-5000.

A Return Material Authorization (RMA) number must be obtained from T&B's Customer Service department before replacement products can be shipped.

INFORMATION

EXAMPLE

Model Number	1265-85
Serial Number	15478-0105-001
Date of Purchase	January 2, 2005 (1st week)
Description of Failure	LED Out
Desired Action from Joslyn	Replace

Warranty Statement

Thomas & Betts Power Solutions, LLC, A Member of the ABB Group (“Seller”) warrants that your Joslyn surge protective device (the “Product”), shall meet applicable industry standards and specifications and be free from defects in materials and/or workmanship. Should any failure of the Product to conform to this warranty appear within the standard warranty period, Seller shall either repair or replace the defective Product, or part thereof, upon return to Seller’s manufacturing facility in Richmond, Virginia with transportation charges prepaid. The applicable warranty period as outlined herein.

Seller shall have no liability under this warranty for any problems or defects directly or indirectly caused by misuse of the Product, alteration of the Product (including removal of any warning labels), accidents, or improper installation, application, operation, or repair of the Product.

THIS WARRANTY REPRESENTS THE ENTIRE WARRANTY OF SELLER. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ORAL OR WRITTEN, INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

The liability of Seller under this warranty is expressly limited to the replacement or repair of the defective part thereof, at Seller’s sole option.

IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND OR CHARACTER, NOR SHALL SELLER’S LIABILITY EVER EXCEED THE PURCHASE PRICE PAID FOR SUCH DEFECTIVE PRODUCT.

This warranty is not transferable and may only be enforced by the sole purchaser. Claims under this warranty must be submitted to Seller within thirty (30) days of discovery of any of Seller’s product defect.

Model #

Date of Purchase

Date Installed

Installer

Warranty Period

Surgitron I™ Series (AC) 45, 80, 85

(E.g. 1455-85-MN)

5 Year



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