4.0 Specifications

Description	Ratings
Surge current capacity per phase (I_{max})	45kA
Nominal Discharge Current (I_n)	10kA
Short circuit current rating (SCCR)	200kA
SPD type	Type 1 (can also be used in Type 2 applications)
System voltages available (VAC)	
Single-Phase	120/240
Split-phase	240
Three-phase wye	208, 480, 600
Three-phase delta	240, 480
Protection modes	
Single-phase	L-N
Split-phase	L-N
Three-phase wye	L-G, L-L
Three-phase delta	L-G, L-L
Maximum continuous operating voltage (MCOV)	
SP2-120	150V
SP2-240	320V
SP2-240S	150V
SP2-208Y	150V
SP2-480Y	320V
SP2-600Y	420V
SP2-240D	320V
SP2-480D	550V
Input power frequency	50/60Hz
Enclosure rating	NEMA 4X
Operating temperature	-40°C through 65°C (-40°F through 149°F)
Operating humidity	5% through 95%, noncondensing
Operating altitude	Up to 12,000 ft (3658m)
Agency certification and approvals	UL1449 3rd Edition Type 1 Listed device
Warranty	2 years

5.0 Warranty

Eaton warrants these products for a period of 2 years from the date of delivery to the purchaser to be free from defects in both workmanship and materials. Eaton assumes no risk or liability for results of the use of the products purchased from it, including but without limiting the generality of the foregoing: (1) The use in combination with any electrical or electronic components, circuits, systems, assemblies, or any other materials or substances; (2) Unsuitability of any product for use in any circuit or assembly. Purchaser's rights under the warranty shall consist solely of requiring Eaton to repair, or at Eaton's sole discretion, replace, free of charge, F.O.B. factory, and defective items received at said factory within said term determined by Eaton to be defective. The giving of or failure to give any advice or recommendations by Eaton shall not constitute any warranty by or impose any liability upon Eaton.

The foregoing constitutes the sole and exclusive liability of Eaton AND IS IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED, IMPLIED OR STATUTORY AS TO THE MERCHANTABILITY, FITNESS FOR PURPOSE SOLD, DESCRIPTION, QUALITY, PRODUCTIVENESS OR ANY OTHER MATTER. In no event shall Eaton be liable for special or consequential damages or for delay in performance of the warranty. This warranty does not apply if the product has been misused, abused, altered, tampered with, or used in applications other than specified on the nameplate. At the end of the warranty period, Eaton shall be under no further warranty obligation expressed or implied. The product covered by this warranty certificate can only be repaired or replaced by the factory. For help on troubleshooting the SPD, or for warranty information, call 1-800- 809-2772, Option 4, sub-option 2. Repair or replacement units will be returned collect. If Eaton finds the return to be a manufacturer's defect, the product will be returned prepaid.

Eaton
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Moon Township, PA 15108-44312, USA
www.eaton.com/spd
For Technical Support, please call 1-800-809-2772

3A2561REV2

Powering Business Worldwide

SP2 Surge Protective Device
Installation & Operation

Instruction Manual
IB158003EN
Rev. 2

1.0 Introduction

This manual describes how to install a Surge Protective Device (SPD) in parallel (shunt) across the AC supply of the following types of electrical systems:

- Single-Phase
- Split Phase
- Three-Phase Wye
- Three-Phase Delta

The SPD is designed to be installed on service entrance, branch panels, and/or individual equipment disconnects, and functions to protect sensitive electronic equipment from damaging voltage transients. The connecting wires do not carry supply current. Instead, they carry only short-duration currents that are associated with a transient event.

These instructions do not cover all details, variations, or combinations of the equipment, its storage, delivery, installation, checkout, safe operation, or maintenance. If you require further information regarding a particular application or installation that is not covered in this manual, please contact Eaton's Power Quality Technical Support at 1-800-809-2772, option 4, option 2.

1.1 Safety Precautions

A licensed/qualified electrician must complete all instructions described in this manual in accordance with the U.S. National Electrical Code, state and local codes, or other applicable country codes. All electrical codes supersede these instructions.

⚠ WARNING! SHOCK HAZARDS:

Improper installation can cause death, injury and/or equipment damage. Follow all warnings and cautions. Completely read and understand the information in this instruction manual before attempting to install or operate this equipment.

Improper wiring could cause death, injury, and/or equipment damage. Only licensed/qualified electricians who are trained in the installation and service of electrical devices are to install and service this equipment.

Use appropriate safety precautions and equipment for arc flash protection.

During normal operation, hazardous voltages are present inside the SPD.

When servicing the SPD, follow all safe work practices to avoid electrical shock.

⚠ CAUTION

Do not perform a high-pot test with the SPD connected to the electrical system. Failure to disconnect the SPD during a high-pot test will result in damage to the SPD.

Do not install with lead length less than six (6) inches.

1.2 Catalog Numbering System

Series	Voltage Code
SP2-	120 = 120V single-phase
	240 = 240V single-phase
	240S = 240V split-phase
	240D = 240 delta
	480D = 480 delta
	208Y = 120/208 wye
	480Y = 277/480 wye
	600Y = 347/600 wye

2.0 Installation

Refer to Section 1.2 and look at the label on the SPD to verify that the SPD's voltage rating and wiring configuration matches that of the electrical system. Use an AC voltmeter to measure the system's line voltage to ensure that the correct model of SPD is being installed. Damage to the SPD may result if it is connected to an electrical system of a higher voltage or different wiring configuration.

2.1 Mounting

The SPD is to be mounted directly to the electrical panel.

IMPORTANT!

- Choose a mounting location for the SPD that provides the shortest and straightest possible wiring (but not less than six inches lead length) from the SPD to the electrical system connections. Excessive lead length and sharp bends will degrade SPD performance.
- If the electrical system uses an **isolated ground**, the SPD must be isolated from ground using insulated conduit fittings.
- When using conduit, avoid using 90° elbows and keep the conduit run as short and straight as possible.

Mount the SPD directly to the electrical panel using a ¾" locknut as shown in Figure 2-1.

To maintain the enclosure's NEMA 4X rating, install an appropriate gasket (not included) between the SPD and the Enclosure's wall.

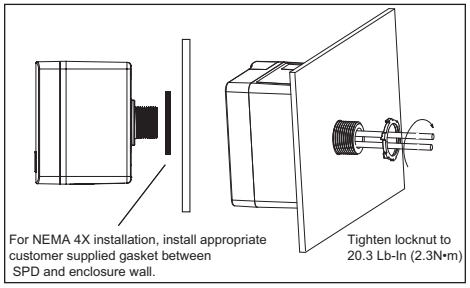


Figure 2-1. Panel Installation

2.1.1 Conduit Installation

When mounting the SPD outdoors, use weatherproof conduit and fittings to maintain the enclosure's NEMA 4X rating. See Figure 2-2.

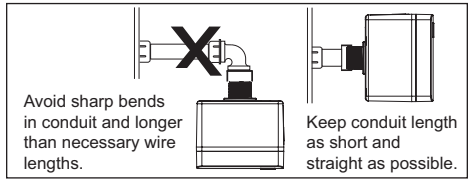


Figure 2-2. Conduit Installation

2.2 Wiring

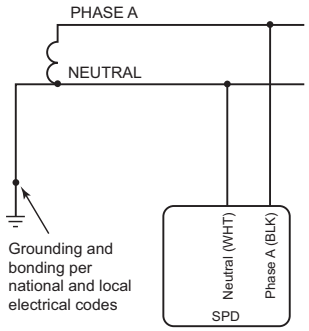
IMPORTANT!

- Be sure to follow all national, state, and local electrical codes when making wiring connections.
- When connecting the wires from the SPD to the electrical system, cut the wires as necessary to keep them as short as possible, but not less than six inches.
- To maximize the SPD's performance, twist and bind the wires together to reduce the impedance of the wire (one twist/inch).
- If the system utilizes an isolated ground, the SPD's ground wire must be connected to the system's isolated ground bus.

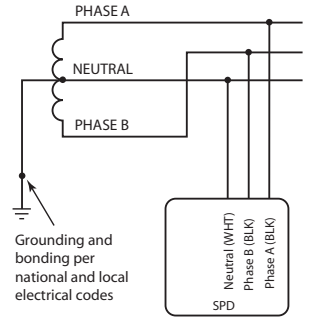
1. Locate the electrical system's applicable wiring diagram in Section 2.3. Reference this wiring diagram as necessary in Steps 2, 3, and 4.
2. Connect the SPD's ground wire (green) to the system's ground connection. Delta and Wye only.
3. Connect the SPD's neutral wire (white) to the system's neutral connection (not required for 3-phase Delta and Wye systems).
4. Connect the SPD's phase A, B, and C wires (black) to the system's corresponding phase A, B, and C connections according to applicable national, state, and local electrical codes.

2.3 SPD Wiring Diagrams

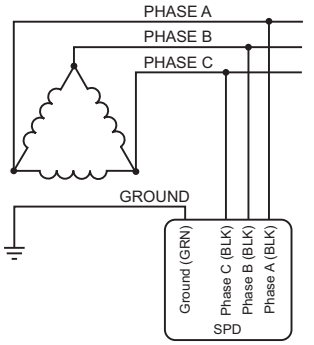
Single-Phase (120, 240)



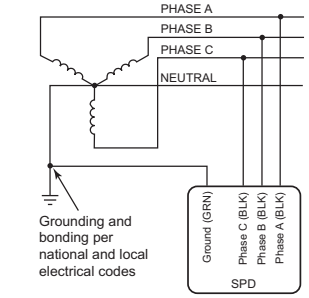
Split Phase (240S)



3-Phase Delta (240D, 480D)



3-Phase Wye + Ground (208Y, 480Y, 600Y)



3.0 Operation

3.1 Power Up and System Checkout

Apply system power. The Green LED should light. If the connected LED does not light, remove power, check connections, and test again. If the LED still does not light, contact your supplier.

3.2 Routine Operation

After system power has been applied, the SPD automatically begins to protect down-stream electrical devices from damaging voltage transients.

With all phase voltages present, the LED indicator reports the status of the protection elements and is active when all of them are intact and providing protection. Any loss of protection is signaled when the LED turns from Green to Red.

The device is **not repairable** and contains no user serviceable parts. If the unit fails, as evidenced by the LED turning Red, the unit must be replaced. Please contact your distributor as the SPD may be under warranty.

WARNING! SHOCK HAZARDS:

DO NOT use the Suppression Circuit Status LEDs as an indication of the presence or absence of system phase voltages.