



## SPD Series Sidemount Units



SPD Series Sidemount Units

## General Description

Eaton's SPD Series surge protective devices are the latest and most advanced UL® 1449 3rd Edition certified surge protectors. Units are available integrated within Eaton electrical assemblies, including panelboards, switchboards, motor control centers, switchgear, automatic transfer switches and bus plugs.



SPD Series Integrated Units

A complete offering of sidemount units designed for mounting external to electrical distribution equipment is also available. Application of SPD Series units throughout a facility will ensure that equipment is protected with the safest and most reliable surge protective devices available. SPD Series units are available in all common voltages and configurations and also in a variety of surge current capacity ratings from 50 through 400 kA. Three feature package options are also available to choose from, ensuring the proper unit is available for a variety of applications.

## Features, Benefits and Functions

- Uses thermally protected metal oxide varistor (MOV) technology
- Three feature package options
- True protection status indicators report the status of the protection elements, not the status of the applied power
- Available integrated within the following Eaton electrical assemblies: panelboards, switchboards, motor control centers, switchgear, automatic transfer switches and bus plugs
- 10-year warranty

## Safety Features

- All units use thermally protected metal oxide varistor technology (MOV) as their core surge suppression component. Usage of this technology ensures safe operation when the unit is subjected to abnormal conditions such as temporary overvoltage or high fault current conditions. Under such conditions, the thermally protected MOVs are removed from the circuit quickly and safely before a potentially unsafe condition can occur
- SPD Series units contain no replaceable parts such as surge modules, fuses, or surge counter memory backup batteries. This prevents potential arc flash and shock hazards, as the units require no periodic service or user intervention after installation
- Integrated versions of the unit are factory installed and sidemount versions are factory sealed. These important safety measures further enhance user safety

## Three Feature Package Options Available

The SPD Series provides users with the option of selecting between three feature packages. These feature packages are the basic, standard and standard with surge counter. The proper feature package can be selected based on the requirements of the application or specification. A side by side comparison of the individual features found in each package is below.

### Basic Feature Package

The basic feature package is perfect for applications where basic, cost-effective, safe and reliable surge protection is required, but budgets don't allow for extra, additional features. Rather than sacrifice performance or safety due to cost, SPD Series units with the basic feature package provide you with high-performing surge protection without sacrificing safety or reliability. The basic feature package provides the same level of surge protection and safety provided by the standard and standard with surge counter feature packages minus some of the features found in them. The package contains dual-colored protection status LEDs that report the true status of the protection in each phase/mode. All four-wire plus ground units also contain an additional set of dual-colored protection status LEDs that report the status of the protection in the neutral/ground mode.

### Standard Feature Package

The standard feature package includes all of the features found in the basic feature package, plus an audible alarm with silence button, EMI/RFI filtering, and a Form C relay contact that can be used for remote annunciation of the SPD's status. The audible alarm activates and the Form C relay contact changes state when any loss of protection is detected or a fault condition exists with the unit. Should such a condition occur, the audible alarm can be silenced by pressing the silence button. The EMI/RFI filter provides up to 50 dB of noise attenuation over the range of 10 kHz through 100 MHz.

**SPD Series**

**Standard with Surge Counter Feature Package**

The standard with surge counter feature package includes all of the features found in the standard feature package plus a six-digit surge counter with a reset button. The surge counter indicates the ongoing count of the number of surges the unit has been exposed to and stores them in nonvolatile memory. Should power to the SPD Series unit be completely interrupted, the surge counter will recall and display the surge count prior to the interruption when power is restored. Unlike many surge protectors, the SPD Series' surge counter memory feature does not require a backup battery that would require periodic replacement in order to achieve its memory functionality.

**Table 34.1-3. Side-By-Side Comparison of the SPD Series' Available Feature Packages**

Feature Package Comparison	Basic	Standard	Standard with Surge Counter
Surge protection using thermally protected MOV technology	■	■	■
Dual-colored protection status indicators for each phase	■	■	■
Dual-colored protection status indicators for the N-G protection mode	■	■	■
Audible alarm with silence button	—	■	■
Form C relay contact	—	■	■
EMI/RFI filtering, providing up to 50 dB of noise attenuation from 10 kHz to 100 MHz	—	■	■
Surge counter with reset button	—	—	■

**Standards and Certifications**







- Integrated versions of the unit are UL 1449 3rd Edition recognized components for the United States and Canada, covered by Underwriters Laboratories certification and follow-up service
- Sidemount versions are UL 1449 3rd Edition listed devices and are also CSA approved

**Technical Data and Specifications**

- 20 kA nominal discharge current ( $I_n$ ) rating (maximum rating assigned by UL)
- 50 through 400 kA surge current capacity ratings
- 200 kA short-circuit current rating (SCCR)

## SPD Series

Table 34.1-4. Integrated Product Applications

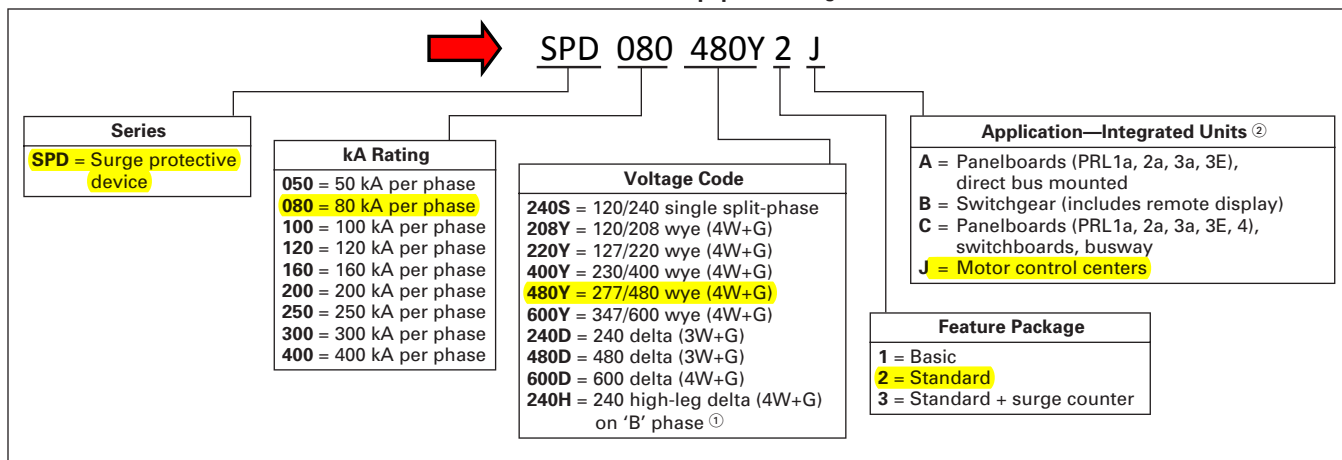
Switchboard	Switchgear	Motor Control Centers
 <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>■ The SPD can be integrated into any switchboard</li> <li>■ Specifiers have the flexibility to install the SPD in any location within the switchboard</li> <li>■ Disconnect switch is a standard feature</li> <li>■ Unique design minimizes installation impedance</li> </ul> <p><b>Safety Standards:</b></p> <ul style="list-style-type: none"> <li>■ UL 891 (Switchboard)</li> <li>■ UL 1449 3rd Edition (Surge Suppressor)</li> <li>■ UL 1283 (EMI/RFI Filter)</li> <li>■ CSA C22.2 Certified (Suppressor)</li> </ul>	 <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>■ Available on all switchgear designs</li> <li>■ Disconnect switch is a standard feature</li> <li>■ Unique design minimizes installation impedance</li> <li>■ SPD250 ideal for critical industrial switchgear applications</li> </ul> <p><b>Safety Standards:</b></p> <ul style="list-style-type: none"> <li>■ UL 1558 (Switchgear)</li> <li>■ UL 1449 3rd Edition (Surge Suppressor)</li> <li>■ UL 1283 (EMI/RFI Filter)</li> <li>■ CSA C22.2 Certified (Suppressor)</li> </ul>	 <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>■ Ideal protection for PLCs, sensors, drives, electronic starters, or other digital equipment</li> <li>■ SPD is designed to fit in Freedom 2100 in a standard (3X) size 18-inch (457.2 mm) compartment</li> <li>■ May be used in new/aftermarket applications</li> <li>■ Ideal for water treatment, petrochemical and other industrial applications</li> </ul> <p><b>Safety Standards:</b></p> <ul style="list-style-type: none"> <li>■ UL 845 (MCC)</li> <li>■ UL 1449 3rd Edition (Surge Suppressor)</li> <li>■ UL 1283 (EMI/RFI Filter)</li> <li>■ CSA C22.2 Certified (Suppressor)</li> </ul>
Panelboards	Busway	Retrofit
 <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>■ The SPD is used extensively on branch panelboards for computer rooms, laboratories, schools, hospitals and industrial applications</li> <li>■ 200% rated neutral is provided for non-linear loads</li> <li>■ Cost-effective branch protection (assumes main panel protection employed)</li> </ul> <p><b>Safety Standards:</b></p> <ul style="list-style-type: none"> <li>■ UL 67 (Panelboards)</li> <li>■ UL 1449 3rd Edition (Surge Suppressor)</li> <li>■ UL 1283 (EMI/RFI Filter)</li> <li>■ CSA C22.2 Certified (Suppressor)</li> </ul>	 <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>■ Ideal for busway fed distribution systems</li> <li>■ Easy to install SPD units fit in standard bus plug assembly</li> <li>■ Isolates critical busway sections from nearby disturbance producing loads</li> <li>■ Designed for new and existing facilities</li> <li>■ Integral disconnect</li> </ul> <p><b>Safety Standards:</b></p> <ul style="list-style-type: none"> <li>■ UL 857 (Busway)</li> <li>■ UL 1449 3rd Edition (Surge Suppressor)</li> <li>■ UL 1283 (EMI/RFI Filter)</li> <li>■ CSA C22.2 Certified (Suppressor)</li> </ul>	 <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>■ SPD units can be externally mounted to existing distribution equipment</li> <li>■ Standard NEMA 1, 4 or 4X enclosures</li> <li>■ Requires field installation</li> <li>■ SPD Retrofit 50–400 kA/phase units</li> <li>■ SPV 50–200 kA/phase units</li> </ul> <p><b>Safety Standards:</b></p> <ul style="list-style-type: none"> <li>■ UL 1449 3rd Edition (Surge Suppressor)</li> <li>■ UL 1283 (EMI/RFI Filter)</li> <li>■ CSA C22.2 Certified (Suppressor)</li> </ul>

**Note:** The SPD Surge components can be integrated into safety switches, automatic transfer switches (ATS) and other assemblies. Contact your local Eaton sales office.

**SPD Series**

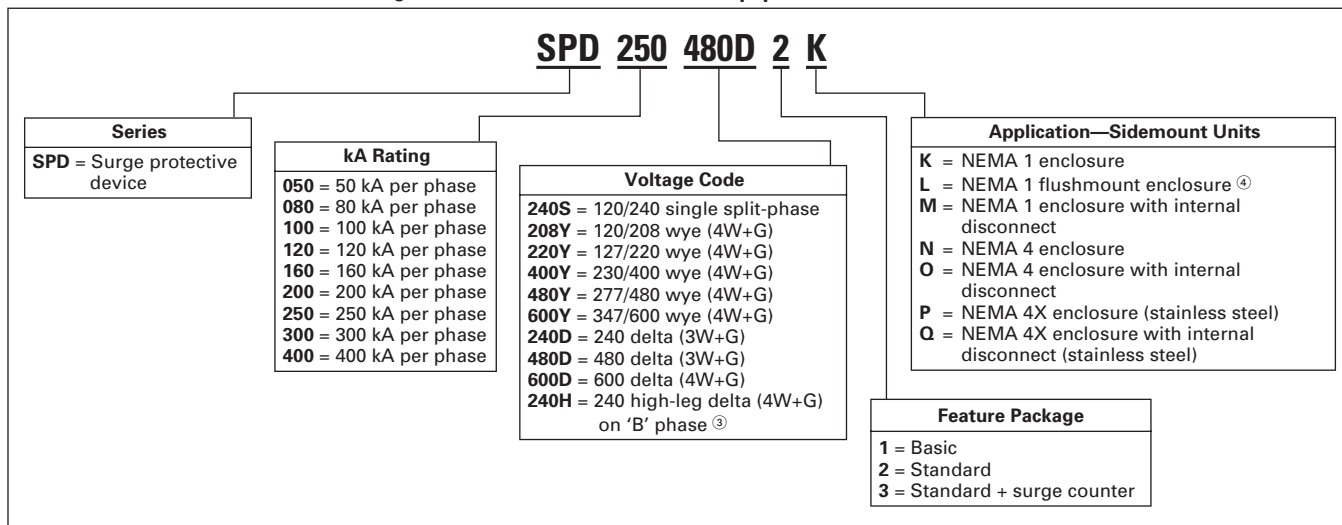
**Catalog Numbering System**

**Table 34.1-5. SPD Series Units Mounted Internal to Electrical Distribution Equipment (Integrated Units)**



① Please consult the factory for 240 high-leg delta (4W+G) applications with high leg on 'C' phase.  
 ② Units used in PRL1a, 2a, 3a and 3E panelboard applications are available in 50–200 kA ratings only. Use the 'C' option for PRL1a, 2a, 3a and 3E panelboard applications when unit is connected through a circuit breaker.  
 Example: SPD250480D2J = SPD Series, 250 kA per phase, 480D voltage, standard feature package, motor control center application.

**Table 34.1-6. SPD Series Units for Mounting External to Electrical Distribution Equipment (Sidemount Units)**



③ Please consult the factory for 240 high-leg delta (4W+G) applications with high leg on 'C' phase.  
 ④ NEMA 1 flushmount units are available in 50–200 kA ratings only.  
 Example: SPD250480D2K = SPD Series, 250 kA per phase, 480D voltage, standard feature package, housed in NEMA 1 enclosure.

SPD Series

Dimensions in Inches (mm)

Standard Dimensions —Integrated Units

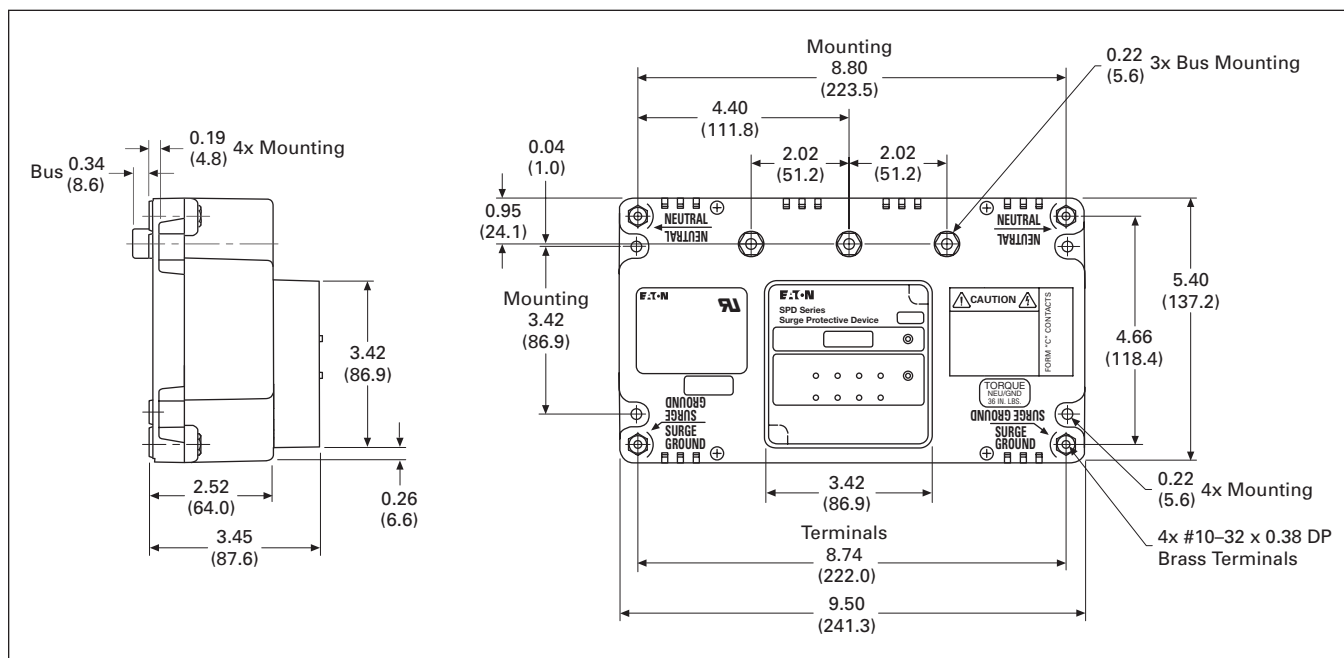


Figure 34.1-5. 50–200 kA Integrated Units

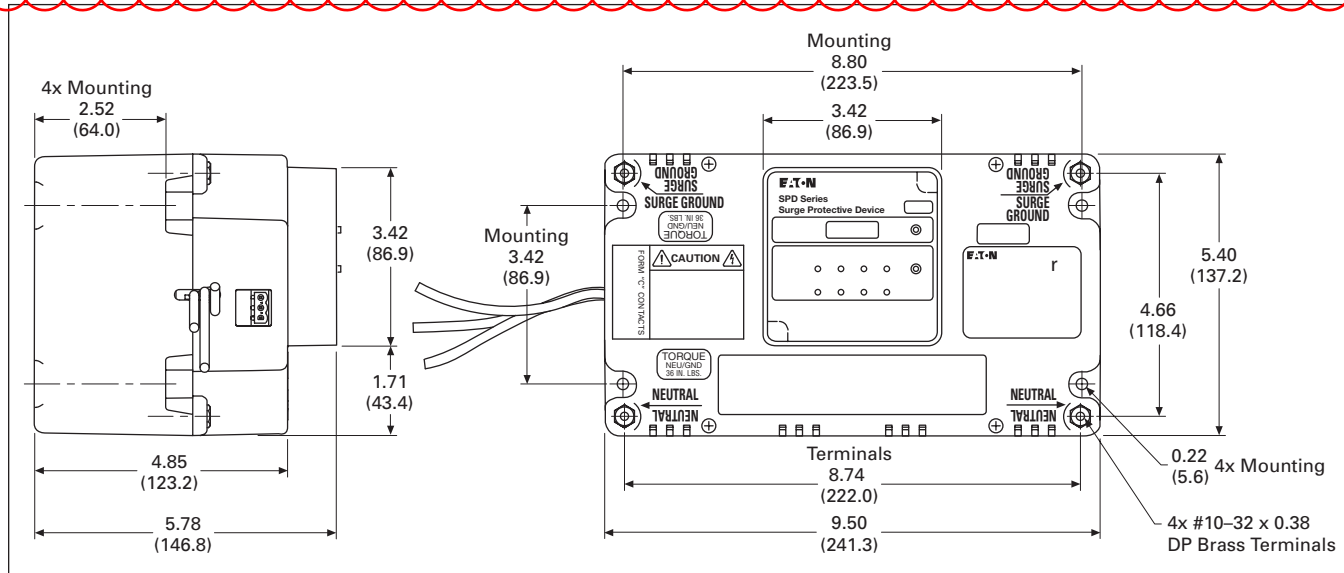


Figure 34.1-6. 250–400 kA Integrated Units

Weights

- 50–200 kA units approximately 3.5 lbs (1.6 kg)
- 250–400 kA units approximately 7.0 lbs (3.2 kg)

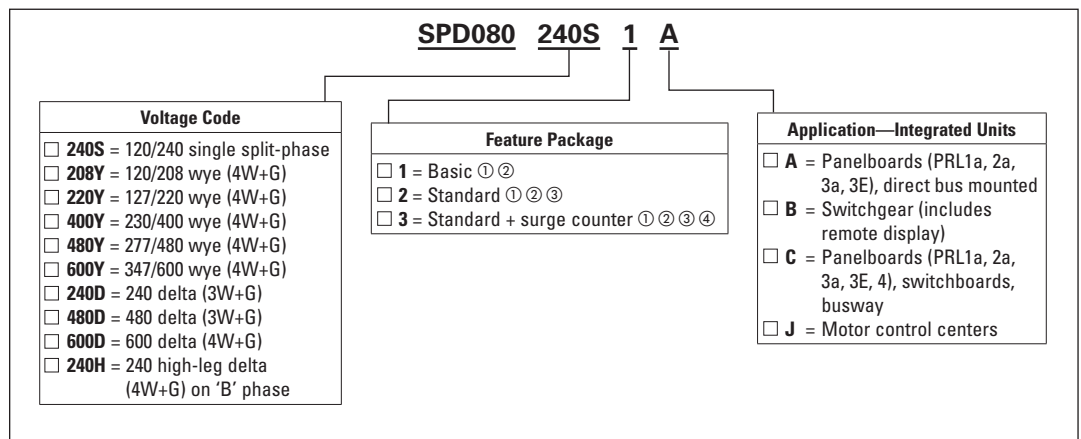
# Submittal specification for 80 kA SPD Series integrated versions

Eaton's SPD Series Surge Protective Devices (SPD) are used to protect equipment from damage caused by surge events. This submittal specification represents integrated versions of the SPD Series units with a catalog number beginning with "SPD080." These versions are integrated within Eaton electrical assemblies, including panelboards, switchboards, motor control centers, switchgear, bus plugs, and automatic transfer switches.

**Table 1. Surge Current Capacity**

Configuration	Per Phase	L-N Mode	L-G Mode	N-G Mode	L-L Mode
Single split phase (3W+G)	80	40	40	40	—
Three-phase wye (4W+G)	80	40	40	40	—
Three-phase delta (3W+G)	80	—	40	—	40
Three-phase high-leg delta (4W+G)	80	40	40	40	—

**Table 2. Catalog Numbering System**



- ① Dual-colored LED per phase to indicate protection status.
- ② Dual-colored LED to indicate protection status of the N-G mode on units with a neutral wire.
- ③ Audible alarm with silence button, Form C relay contact, EMI/RFI filtering providing up to 50 dB of noise attenuation from 10 kHz to 100 MHz.
- ④ Surge counter with Reset button.

## Performance Specifications and Features

- A. ANSI/UL® 1449 3rd Edition Voltage Protection Rating (VPR)
  - a. VPR for panelboard units mounted directly to the electrical bus (catalog number ends with A)

**Table 3. Voltage Code and VPR**

Voltage Code	VPR for Each Protection Mode			
	L-N	L-G	N-G	L-L
240S	500	600	500	900
208Y and 220Y	500	600	500	900
400Y and 480Y	1000	1200	1000	1800
600Y	1200	1500	1200	2500
240D	—	1000	—	900
480D	—	1800	—	1800
600D	—	2500	—	2500
240H	500	600	500	900



Powering Business Worldwide

- b. VPR for units interfaced via a circuit breaker (catalog number ends in B, C, or J)

**Table 4. Voltage Code and VPR**

Voltage Code	VPR for Each Protection Mode			
	L-N	L-G	N-G	L-L
240S	700	700	700	1000
208Y and 220Y	700	700	700	1000
400Y and 480Y	1200	1200	1200	1800
600Y	1500	1500	1500	2500
240D	—	1200	—	1200
480D	—	2000	—	2000
600D	—	2500	—	2500
240H	700	700	700	1000

- B. Internal overcurrent protection
  - a. All units contain thermally protected metal-oxide varistors. Each of these devices is internally fused by a thermal element that safely removes them from the circuit under abnormal conditions, such as temporary overvoltage or high fault current conditions.
- C. Monitoring and features (refer to **Table 2** for a listing of the individual features contained in each feature package)
- D. Panelboard unit features
  - a. Available in PRL1a, 2a, 3a, 3E, and 4 panelboards
  - b. Available direct bus mounted (direct bus mount option available on PRL1a, 2a, 3a, and 3E only) or interfaced via a 30A, thermal-magnetic circuit breaker (available for all panelboards)
- E. Switchboard unit features
  - a. Available in PRLC switchboards
  - b. Interfaced via a 30A, thermal-magnetic circuit breaker
- F. Motor control center unit features
  - a. Available in all Freedom™ and Advantage™ motor control centers
  - b. Unit is mounted in an 18-inch bucket
  - c. Bucket is acceptable for installation in both NEMA® 1 and NEMA 12 environments
  - d. Aftermarket buckets containing SPD Series units available
  - e. Interfaced via a 30A, thermal-magnetic breaker
- G. Switchgear unit features
  - a. Unit is mounted in a standard switchgear cell
  - b. Interfaced via a 30A, thermal-magnetic circuit breaker
  - c. Display is mounted remotely from the SPD Series unit
- H. Bus plug unit features
  - a. Mounted in an 18.6 L x 14.0 W x 5.5 D Pow-R-Way III® bus plug
  - b. Interfaced via a 30A, thermal-magnetic circuit breaker

**Table 5. Specifications**

Description	Specification
Surge capacity ratings available	50, 80, 100, 120, 160, 200, 250, 300, 400 kA per phase
Nominal discharge current (I <sub>n</sub> )	20 kA
Short circuit current rating (SCCR)	200 kA
SPD type	Basic feature package = Type 1 (can also be used in Type 2 applications) Standard and Standard with Surge Counter feature packages = Type 2
Single split phase voltages available	120/240
Three-phase wye system voltages available	120/208, 127/220, 230/400, 277/480, 347/600
Three-phase delta system voltages available	240, 480, 600
Input power frequency	50/60 Hz
Power consumption (basic units)—voltage codes	
208Y, 220Y, 240S, 240D, and 240H	0.5W
400Y, 480Y, and 480D	1.1W
600Y and 600D	1.3W
Power consumption—voltage codes ①	
208Y, 220Y, 240S, 240D, and 240H	0.6W
400Y, 480Y, and 480D basic	1.7W
600Y and 600D	2.1W
Protection modes	Single split phase . . . . . L-N, L-G, N-G, L-L Three-phase wye . . . . . L-N, L-G, N-G, L-L Three-phase delta . . . . . L-G, L-L Three-phase high-leg delta. . . . . L-N, L-G, N-G, L-L
Maximum continuous operating voltage (MCOV)	
240S, 208Y, 220Y, and 240H	150 L-N, 150 L-G, 150 N-G, 300 L-L
400Y and 480Y	320 L-N, 320 L-G, 320 N-G, 640 L-L
600Y	420 L-N, 420 L-G, 420 N-G, 840 L-L
240D	320 L-G, 320 L-L
480D	640 L-G, 640 L-L
600D	840 L-G, 840 L-L
Ports	1
Operating temperature	-20°C–50°C (-4°F–122°F)
Operating humidity	5%–95%, noncondensing
Operating altitude	Up to 16,000 ft (5000m)
Seismic withstand capability	Meets or exceeds the requirements specified in IBC® 2006, CBC 2007, and UBC® Zone 4
Weight	50–200 kA units approximately 3.5 lbs (1.6 kg) 250–400 kA units approximately 7.0 lbs (3.2 kg)
Form C relay contact ratings	150 Vdc or 125 Vac, 1A maximum
Form C relay contact logic	Power ON, normal state—NO contact = open, NC contact = closed Power OFF or fault state—NO contact = closed, NC contact = open
EMI/RFI filtering attenuation	Up to 50 dB from 10 kHz–100 MHz
Agency certifications and approvals	UL 1449 3rd Edition recognized component for the U.S. and Canada; UL 1283 (Type 2 SPDs only)
Warranty	10 years

① Standard and standard with surge counter units.

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