# Square D™ Surgelogic™ Product Overview

Stand-alone enclosed surge protective devices (SPDs)

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# Get global and local expertise from Schneider Electric.

SQUARE D™
Surgelogic™

Schneider Electric - a global leader in industrial technology, brings unparalleled expertise in electrification. The Square D™ Surgelogic™ brand surge protective devices (SPDs), available as a stand-alone or integral panel mount, are top-tier, with industry-leading performance testing that showcases their ability to divert high-energy transient impulses. These SPDs have a proven track record of longevity and performance, safeguarding your facility's power system from the impact of surges.

Schneider Electric™

# Understanding the need

## for a comprehensive surge protection plan for your facility

**Damage due to transients and surges**

Surges, transients, or spikes are terms used to describe momentary bursts of voltage and current lasting only millionths of a second. Typically, the largest surges enter through the main electrical supply and propagate through the distribution system, seeking a path of least resistance to the ground. Standard distribution equipment is not designed to mitigate the impact of surges. Protecting electrical systems from surges is achieved through the application of surge protective devices (SPDs).

Proven protection practices recommended by IEEE and mandated by the National Electrical Code (NEC®) involve installing hard wired SPDs at service entrance, distribution, and branch panel locations.

Service entrances are prone to the largest surges, often caused by lightning strikes on utility services. Distribution panels serving outside loads or connected to step-down transformers are susceptible to surges similar to those at service entrances or surges passing through transformers. Branch panels serving critical loads or essential electrical systems should be protected to eliminate residual surges impacting these panels.

**Develop a plan**

The benefits of installing surge protective devices throughout a facility are clear:

- Reduced downtime
- Improved system and data reliability
- Elimination of damaged equipment due to surges

# Stand-alone enclosed surge protective devices (SPDs)

## Service entrance

**EMD**
300 kA
500 kA
600 kA
per phase

EMI/RFI filter | Counter | Disconnect

**HWC**
300 kA
per phase

EMI/RFI filter | Counter

## Distribution

**EMA**
100 kA
200 kA
per phase

Counter

**EMB**
200 kA
per phase

EMI/RFI filter

## Branch panels

**HWA**
100 kA
per phase

EMI/RFI filter

**HWB**
100 kA
per phase

Basic

## Point of use

**SPDE**
50 kA
per phase

Line - neutral + neutral - ground

**SDSA**
50 kA
per phase

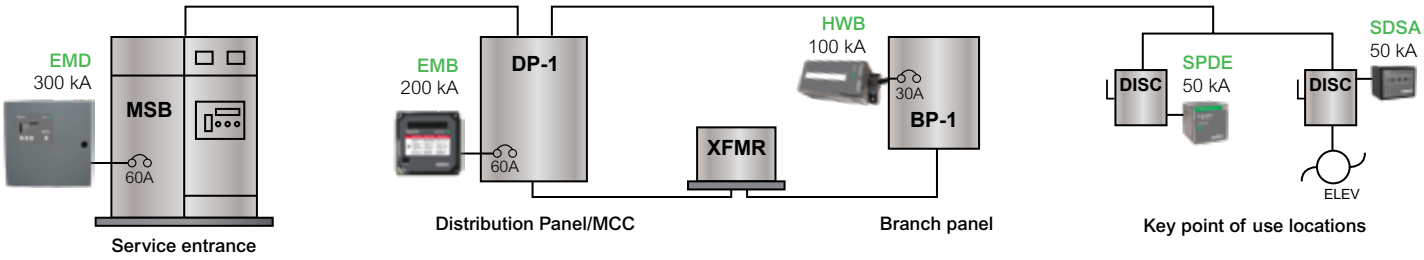
Basic line to neutral only

| National Electrical Code (NEC®) required locations |
|---|
| Service and feeder panels for locations in Articles 230, 215, and 225 |
| All emergency switchboards and panelboards |
| Critical operations power systems and data centers |
| Elevator/escalator disconnects |
| Industrial safety interlocks and safety circuits |
| SCADA system power supplies |
| Life safety branch panels for healthcare facilities |
| **IEEE Emerald Book recommended locations** |
| Service entrance |
| Distribution panels |
| Branch panels |
| **Key point of use locations** |
| Uninterruptible power supplies (UPS) |
| Automatic transfer switches (ATS) |
| HVAC equipment |
| Industrial automation |
| Any copper conductor penetrating the structure |

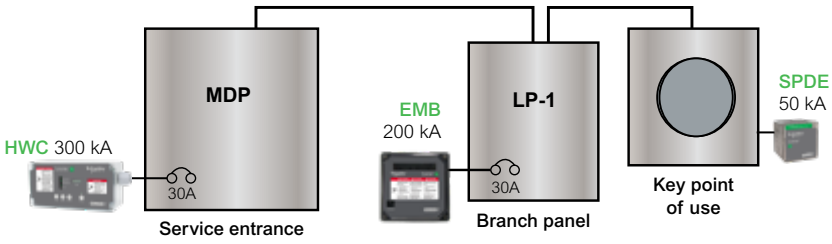
| Recommended sizing practices for typical facilities: the 3, 2, 1 rule of thumb | |
|---|---|
| 300 kA/phase | Service entrance |
| 200 kA/phase | Distribution panels |
| 100 kA/phase | Branch panels |
| 50 kA/phase | Key point of use |

# Recommendations for facility protection

## Large service example

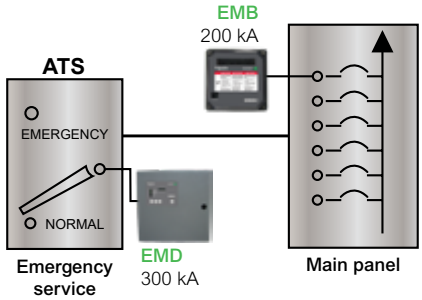



## Medium service example

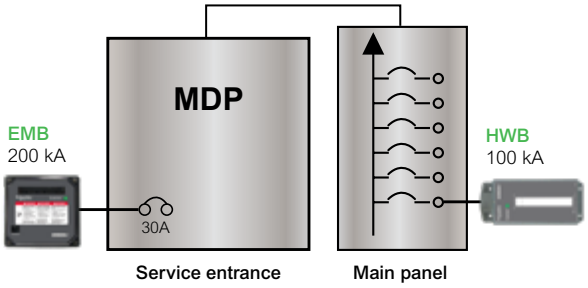



*Square D offers DIN rail devices if a control cabinet is the optimal location.

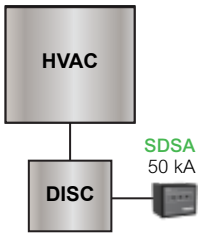
## Emergency service example



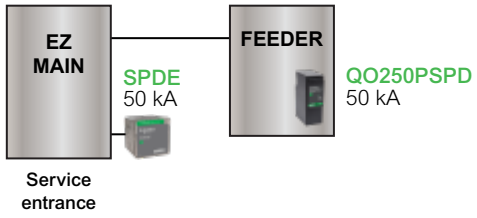

## Small service example




## Key point of use applications




## Residential service




Square D™ Surgelogic™ brand SPDs are available integral mounted within panelboards.
Consult your local Schneider Electric representative for help selecting the right devices for your application.

# Available features and benefits

Square D™ Surgelogic™ surge protective devices (SPDs) incorporate individually fused and thermally protected metal oxide varistors (MOVs). This feature provides superior withstand capability for systems with unstable power, without compromising transient clamping performance. The component level fusing and thermal protection also allows the surge protector to be directly connected to the electrical bus without external overcurrent protection.

When connecting via breaker, which acts as a service disconnect, consult local electrical codes to select the appropriate size based upon the wire gauge to be used. Factory recommendations listed are based upon National Electrical Code (NEC®).

**Warranty**

Square D™ Surgelogic™ SPDs have a standard 10-year limited warranty (except SDSA with two-year limited warranty). Extended warranties are available. Contact your local Schneider Electric representative for additional information.

| Available features | Advantages | Benefits |
|---|---|---|
| Performance testing | Performance testing verifies the specified device works as intended with proven and documented results | The design has been tested and shown to be capable of performing to defined specifications |
| UL/NEMA 4X enclosures | Allows installation in outdoor applications | Provides surge suppression to vulnerable equipment powered from weather-exposed panels |
| Individually fused and thermally protected MOVs | Component level fusing and thermal protection of the metal oxide varistors (MOVs) | Provides premium surge suppression while managing both thermal and overcurrent end-of-life events—can be direct bus connected without external overcurrent protection |
| Internal disconnect switch | Localized removal of voltage | Allows unit to be disconnected from electrical voltage if device service is required |
| Surge event counter | Provides visual indication of surge events | Assurance that installed device is clamping and logging surge events |
| LED status indication | Allows visual indication of the suppressor's status | Provides immediate response if suppressor is damaged |
| Audible alarm dry contacts | Provides audible indication and changed relay state of failed components | Immediate notification through audible alarm, and remote signaling via dry contacts, if reduced suppression occurs |
| Enhanced EMI/RFI noise attenuation | Premium noise attenuation | Improved performance with added UL 1283 filtering components |
| Push to test button | Toggles red service LED, audible alarm and dry contact to verfiy operation | Allows user to verify the operational status of the installed device |

# Why performance testing?

By definition, an SPD is a protective device for limiting transient voltages by diverting or limiting surge current. It also prevents continued flow of follow current and must remain capable of repeating these functions.

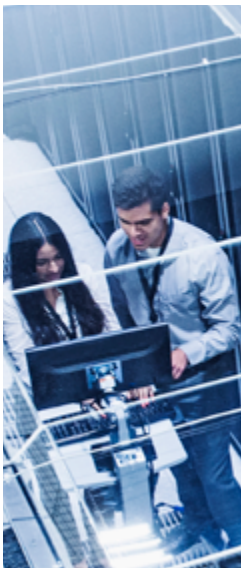
**The best way to verify performance is through rigorous testing which will demonstrate the following:**

- Unit can perform as designed
- Verify device will function at it's stated surge current rating
- Demonstrate it's ability to repeat these functions
- Show noise attenuation per MIL-STD 220C methodology
- Verify clamping voltage at various waveform events
- Prove device will remain in service and operational over time

**Performance testing standards:**

- Single impulse (maximum surge current)
  - Per *NEMA SPD 1.1.2019 section 3.3.8*
- Repetitive impulse (endurance testing)
- Insertion loss (EMI/RFI noise attenuation)
- IEEE waveform let through voltage (clamping voltage)
  - Category A3 ringwave
  - Category B3 ringwave
  - Category B3 combination wave
  - Category B3 high/C1 low combination wave
  - Category C3 high combination wave

# Quick Reference Guide



## Schneider Electric has a comprehensive offering of surge protective devices (SPDs) for full facility protection.

### Square D™ Surgelogic™ standards and performance

- UL1449 5th Edition listed
- Enhanced EMI/RFI noise attenuation with UL 1283 filter components (where noted)
- ANSI/IEEE C62.41.1-2002, C62.41.2-2002, C62.45-2002, C62.62-2010, C62.72-2016, IEEE SA 1100-2005
- NEMA SPD 1.1-2019 Section 3.3.8 Performance Testing for most models
- NEC® Articles 242, 620.51(E), 645.18, 670.6, 695.15, 700.8 and 708 requiring SPDs
- Devices available to meet NFPA 780 Lightning Protection Systems requirements for UL 96A Master Label.

Discrete line to line SPD offer: Page 28

Stainless steel SPD offer: Page 29

| | Surge arrester | | Hard-wired | | | External mount | | |
|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |
| | SDSA | SPDE | HWA | HWB | HWC | EMA | EMB | EMD |
| Previous series | | 420 | | 425 | 440 | | XDSE | 460 / 480 |
| Enclosure type | UL/NEMA 4X polycarb | UL/NEMA 4X polycarb | UL/NEMA 4X polycarb | UL/NEMA 4X polycarb | UL/NEMA 4X polycarb | UL/NEMA 1 steel | UL/NEMA 4X polycarb | UL/NEMA 4 steel |
| Per phase minimum | 36 kA (1Ø) | 50 kA | 100 kA | 100 kA | 300 kA | 100 kA | 200 kA | 300 kA |
| Per phase maximum | 50 kA (3Ø) | 50 kA | 100 kA | 100 kA | 300 kA | 200 kA | 200 kA | 600 kA |
| Modes of protection | 3 | 4 | All | All | All | All | All | All |
| LED status indicators | ✓ | 1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Alarm and dry contacts | | Optional | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Flush mount kit option | | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| EMI/RFI noise attenuation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Enhanced EMI/RFI noise attenuation | | | ✓ | | ✓ | | ✓ | ✓ |
| Surge event counter | | | | | ✓ | ✓ | | ✓ |
| Integral disconnect | | | | | | | | ✓ |
| Performance testing | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Replaceable module(s) | | | | | | ✓ | | ✓ |

## SDSA catalog numbers

| Voltage | SDSA |
|---|---|
| 120 V 1Ø, 3W+G | SDSA1175T (36kA) |
| 120/240 V 1Ø, 3W+G | SDSA1175 (36kA) |
| 208 Y/120 V Wye | SDSA2040 |
| 240 V Delta, 3Ø 3W+G | SDSA2040D |
| 240/120 V Delta High Leg, 3Ø 4W+G | SDSA2040D |
| 480 Y/277 V 3Ø 4W+G | SDSA4040 |
| 480 V Delta, 3Ø 3W+G | SDSA4040D |
| 600 Y/347 V 3Ø 4W+G | SDSA3650 |
| 600 V Delta, 3Ø 3W+G | SDSA3650D |
| Dimensions | 3.0 x 3.4 x 2.6 in. (76 x 86 x 67 mm.) |
| Weight | 1.6 lbs. (0.74 kg.) |
| Wire Size | 14 AWG, 24 in. (0.61 m.) |

## SPDE catalog numbers

| Voltage | SPDE | SPDE with audible alarm and dry contacts |
|---|---|---|
| 120 V 1Ø, 3W+G | SPDE0 | SPDE0A |
| 120/240 V 1Ø, 3W+G | SPDE1 | SPDE1A |
| 208 Y/120 V Wye | SPDE2 | SPDE2A |
| 240 V Delta, 3Ø 3W+G | - | SPDE6A |
| 240/120 V Delta High Leg, 3Ø 4W+G | - | SPDE3A |
| 480 Y/277 V 3Ø 4W+G | SPDE4 | SPDE4A |
| 480 V Delta, 3Ø 3W+G | - | SPDE5A |
| 600 Y/347 V 3Ø 4W+G | - | SPDE8A |
| 600 V Delta, 3Ø 3W+G | - | SPDE9A |
| Dimensions | 3.3 x 3.3 x 3.4 in.(84 x 84 x 86 mm.) | |
| Weight | 1.6 lbs. (0.74 kg.) | |
| Wire Size | 10 AWG 36 in. (0.91 m.) | 18 AWG 36 in. (0.91 m.) relay wires |

| Connection | Monitoring | kA rating per phase | Catalog number | Enclosure dimensions | Weight |
|---|---|---|---|---|---|
| **HWA** | | | | | |
| Wire leads (10 AWG) | LEDs, alarm, dry contact, NEMA 4X polycarbonate | 100 kA | HWA☐1 | 8.62 x 4.8 x 2.92 in. (219 x 122 x 74 mm.) | 5 lbs. (2.3 kg.) |
| **HWB** | | | | | |
| Wire leads (10 AWG) | LEDs, alarm, dry contacts NEMA 4X polycarbonate | 100 kA | HWB☐1 | 8.3 x 3.6 x 3.0 in. (211 x 91 x77 mm.) | 3 lbs. (1.4 kg.) |
| **HWC** | | | | | |
| Wire leads (10 AWG) | Counter, LEDs, alarm, dry contacts NEMA 4X polycarbonate | 300 kA | HWC☐3 | 9.6 x 4.9 x 4.0 in. (244 x 124 x 102 mm.) | 4.5 lbs. (2.1 kg.) |
| **EMA** | | | | | |
| Lugs (10–2 AWG) | Counter, LEDs, alarm, dry contacts NEMA 1 metal | 100 kA<br>200 kA | EMA☐1<br>EMA☐2 | 11.0 x 12.0 x 5.4 in. (280 x 305 x 135 mm.) | 23 lbs. (10.4 kg.) |
| **EMB** | | | | | |
| Lugs (14–8 AWG) | LEDs, alarm, dry contacts NEMA 4X polycarbonate | 200 kA | EMB☐2 (Type 1)<br>EMB☐2F (Type 2) | 6.0 x 6.0 x 4.0 in. (152 x 152 x 102 mm.) | 5 lbs. (2.3 kg.) |
| **EMD** | | | | | |
| Internal disconnect (8 AWG–1/0) | Counter, LEDs, alarm, dry contacts (two sets)<br>NEMA 4 metal | 300 kA | EMD☐3 (Type 1)<br>EMD☐3F (Type 2) | 12 x 12 x 7 in. (305 x 305 x 178 mm.) | 23 lbs. (10.4 kg.) |
| | | 500 kA | EMD25<br>EMD45<br>EMD55 | 16 x 14 x 7 in. (406 x 406 x 178 mm.) | 32 lbs. (14.5 kg.) |
| | | 600 kA | EMD26<br>EMD46 | 20 x 20 x 7.5 in. (508 x 508 x 190 mm.) | 52 lbs. (23.6 kg.) |

## Voltage Codes

| | |
|---|---|
| 120/240 V Split Phase, 1Ø, 3W + ground | 1 |
| 208 Y/120 V & 220Y/127 Wye, 3Ø 4W + ground | 2 |
| 240/120 V Delta High Leg, 3Ø 4W + ground | 3 |
| 480 Y/277 V, 380 Y/220 V, 400 Y/230 V & 415 Y/240 V, 3Ø 4W + ground | 4 |
| 480 V Delta & HRG, 3Ø 3W + ground | 5 |
| 240 V Delta, 3Ø 3W + ground | 6 |
| 600 Y/347 V Wye, 3Ø 4W + ground | 8 |
| 600 V Delta & HRG, 3Ø 3W + ground | 9 |

## Flush Mount Kits

| | |
|---|---|
| HWA | HWAFM |
| HWB | HWBFM |
| HWC | HWCFM |
| EMA | EMAFM |
| EMB | EMBFM |

## Remote Monitor

TVS12RMU

- *Not all voltage and kA rating combinations may be available.*
- *"F" suffix for EMB and EMD models includes UL 1283 enhanced EMI/RFI noise attenuation.*

# Square D™ Surgelogic™ Surge Arrester

# SDSA

Square D™ Surgelogic™ SDSA Series Surge Protective Devices (SPDs) provide robust surge suppression in a rugged UL/NEMA 4X rated enclosure suitable for installing indoor, outdoor or other harsh environments.

The compact design of the SDSA allows surge suppression to be externally installed adjacent to electrical panels or disconnects, and internal to industrial control panels or other critical equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ SDSA Series SPDs utilize a high-energy parallel design that provides direct line to neutral suppression at 50 kA of surge current rating per phase for three phase devices and 36 kA for single phase devices. They contain a suppression circuit that provides robust, cost-effective transient protection.



| Voltage | Surge current rating | Catalog numbers | UL 1449 test data | | | |
|---|---|---|---|---|---|---|
| | | | Voltage protection ratings (VPR) | | SCCR withstand | MCOV |
| | | | L-N | L-L | | |
| 120V, 1Ø, 2W+G, Single pole [1][8] | 36 kA | SDSA1175T | 700 | - | 25,000 A | 150 |
| 120/240V, 1Ø, 3W+G, Split [2][8] | 36 kA | SDSA1175 | 700 | 1,200 | 25,000 A | 150 |
| 208Y/120V, 3Ø, 4W+G, Wye [3][8] | 50 kA | SDSA2040 | 700 | 1,200 | 200,000 A | 180 |
| 240V, 3Ø, 3W+G, Delta [4] | 50 kA | SDSA2040D | - | 1,200 | 200,000 A | 360 |
| 480Y/277V, 3Ø, 4W+G, Wye [5][8] | 50 kA | SDSA4040 | 1,500 | 2,500 | 200,000 A | 420 |
| 480V, 3Ø, 3W+G, Delta [6] | 50 kA | SDSA4040D | - | 2,500 | 200,000 A | 840 |
| 600Y/347V, 3Ø, 4W+G, Wye [8] | 50 kA | SDSA3650 | 1,800 | 3,000 | 200,000 A | 510 |
| 600V, 3Ø, 3W+G, Delta [7] | 50 kA | SDSA3650D | - | 3,000 | 200,000 A | 1,020 |

[1] 120V series also applies to the following voltage 127V
[2] 120/240V series also applies to the following voltage 127/254V
[3] 208Y/120V series also applies to the following voltage 220Y/127V
[4] 240V Delta series also applies to the following voltage 240/120V High-Leg Delta
[5] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V
[6] 480V Delta series also applies to the following voltage 480Y/277V HRG
[7] 600V Delta series also applies to the following voltage 600Y/347V HRG
[8] Do not use on ungrounded systems. Systems must be solidly grounded.

# Specifications

| SDSA Series SPDs | | |
|---|---|---|
| **Performance** | **1Ø** | **3Ø** |
| Surge current rating per phase | 36 kA | 50 kA |
| Nominal discharge current ($I_n$) | 10 kA | |
| Short circuit current rating withstand | 25,000 A | 200,000 A |
| Modes of protection | Line to neutral<br>Line to line (delta systems) | |
| Suppression technology | Individually fused MOVs | |
| Thermal and overcurrent Protection | Yes | |
| Operating frequency | 50/60 Hz | |
| **Mechanical description** | **1Ø** | **3Ø** |
| Enclosure | Non-metallic | |
| NEMA ratings | NEMA 4X | |
| Mounting methods | 1/2 in. nipple mount | |
| Circuit type | Parallel | |
| Lead wires | 14 AWG, 2 feet (0.61 meters) | |
| Operating altitude | Sea level—12,000' (3,658 m) | |
| Storage temperature | -31° F (-35° C) to 176° F (80° C) | |
| Operating temperature | -31° F (-35° C) to 176° F (80° C) | |
| Operating humidity | 0 to 95% non-condensing | |
| Dimensions | 2.25 x 2.25 x 2.0 in.<br>(57 x 57 x 51 mm.) | 3.0 x 3.6 x 3.4 in.<br>(76 x 91.5 x 86 mm.) |
| Weight | 0.72 lbs.<br>(0.33 kg.) | 1.63 lbs.<br>(0.74 kg.) |

## Flexible installation

SDSA SPDs are hard wired into the panel via the included wire leads. This allows easy mounting for direct bus connection or into a nearby circuit breaker for minimum lead length which maximizes device performance.

## Listings and performance

- Type 1: UL/cUL 1449 5th Edition, Rev: 2022-12-15, (Suitable for Type 2 applications)

# Square D™ Surgelogic™ Surge Arrester

# SPDE

Square D™ Surgelogic™ SPDE Series Surge Protective Devices (SPDs) provide robust surge suppression in a rugged UL/NEMA 4X rated enclosure suitable for installing indoors, outdoors or in other harsh environments.

The compact design of the SPDE allows surge suppression to be externally installed adjacent to electrical panels or disconnects, and internally to industrial control panels, MP Meter-Pak Meter Centers, EZ Mains, or other critical equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ SPDE Series SPDs utilize a high-energy parallel design that provides direct line to neutral plus neutral to ground suppression at 50 kA of surge current rating per phase. They contain a suppression circuit that provides robust, cost effective, transient protection.


| Voltage | Surge current rating | Catalog numbers | | UL 1449 test data | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Voltage protection ratings (VPR) | | | | SCCR withstand | MCOV |
| | | Standard | Audible alarm and dry contacts | L-N | L-G | N-G | L-L | | |
| 120V, 1Ø, 2W+G, Single Pole [1][8] | 50 kA | SPDE0 | SPDE0A | 700 | 1,200 | 600 | - | 100,000 A | 150 |
| 120/240V, 1Ø, 3W+G, Split [2][8] | 50 kA | SPDE1 | SPDE1A | 700 | 1,200 | 600 | 1,200 | 100,000 A | 150 |
| 208Y/120V, 3Ø, 4W+G, Wye [3][8] | 50 kA | SPDE2 | SPDE2A | 700 | 1,200 | 600 | 1,200 | 200,000 A | 150 |
| 240/120V, 3Ø 4W+G, High Leg Delta | 50 kA | - | SPDE3A | 700/ 1,200 | 1,200/ 1,500 | 600 | 1,200/ 1,500 | 200,000 A | 150/ 320 |
| 480Y/277 V, 3Ø, 4W+G, Wye [4][8] | 50 kA | SPDE4 | SPDE4A | 1,200 | 1,800 | 1,000 | 2,000 | 200,000 A | 320 |
| 480V, 3Ø, 3W+G, Delta [5] | 50 kA | - | SPDE5A | - | 1,800 | - | 3,000 | 200,000 A | 552 |
| 240V, 3Ø, 3W+G, Delta | 50 kA | - | SPDE6A | - | 1,200 | - | 1,500 | 200,000 A | 320 |
| 600Y/347V, 3Ø, 4W+G, Wye [8] | 50 kA | - | SPDE8A | 1,500 | 2,500 | 1,200 | 2,500 | 200,000 A | 420 |
| 600V, 3Ø, 3W+G, Delta [6] | 50 kA | - | SPDE9A | - | 2,500 | - | 2,500 | 200,000 A | 690 |

[1] 120V series also applies to the following voltage 127V
[2] 120/240V series also applies to the following voltage 127/254V
[3] 208Y/120V series also applies to the following voltage 220Y/127V
[4] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V
[5] 480V Delta series also applies to the following voltage 480Y/277V HRG
[6] 600V Delta series also applies to the following voltage 600Y/347V HRG
[7] 240/480V series also applies to the following voltage 277/480V
[8] Do not use on ungrounded systems. Systems must be solidly grounded.

# Specifications

| SPDE Series SPDs | |
|---|---|
| **Performance** | |
| Surge current rating per phase | 50 kA |
| Nominal discharge current ($I_n$) | 20 kA |
| Short circuit current rating withstand | 100,000 A (1Ø models)<br>200,000 A (3Ø models) |
| Modes of protection | Line to neutral + neutral to ground<br>Line to line (delta systems) |
| Suppression technology | Individually fused MOVs |
| Thermal and overcurrent protection | Yes |
| Operating frequency | 50/60 Hz |
| Repetitive impulse | 5,000 |
| **Mechanical description** | |
| Enclosure | UL/NEMA 4X polycarbonate |
| Mounting methods | 3/4" NPT |
| | DIN rail |
| | Bracket mount |
| Circuit type | Parallel |
| Lead wires | #10 AWG, 3 feet (0.91 meters) |
| Dry contact wires (when equipped) | #18 AWG, 3 feet (0.91 meters) |
| Operating altitude | Sea Level-12,000' (3,658 m) |
| Storage temperature | -40˚ F (-40˚ C) to 140˚ F (60˚ C) |
| Operating temperature | -25° C (-13° F) to +85° C (185° F) |
| Operating humidity | 0 to 95% non-condensing |
| Dimensions | 3.25 x 3.30 x 3.39 in.<br>(82.59 x 83.82 x 85.99 mm.) |
| Weight | 1.60 lbs. (0.73 kg.) |

## Flexible installation

SPDE SPDs are hard wired into the panel via the included 10 AWG wire leads. This allows easy mounting for direct bus connection or into a nearby circuit breaker for minimum lead length which maximizes device performance.

## Tri-mount installation

Tri-mount enclosure design provides maximum flexibility for installations.

Std. 0.75 in. – 14 nipple

DIN rail mount (rail not incl.)

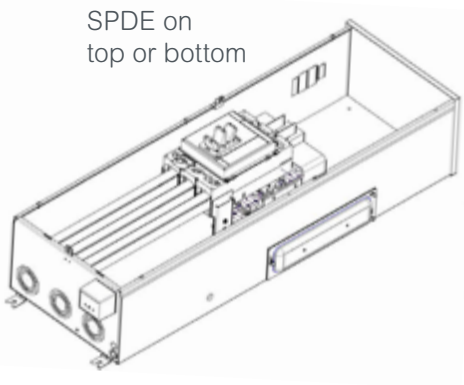
Bracket mount for flat surfaces

## Listings and performance

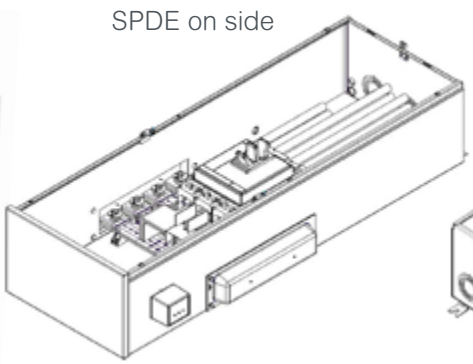
- Type 1: UL/cUL 1449 5th Edition, Rev: 2022-12-15, (Suitable for Type 2 applications)
- UL listed for installation in Meter-Pak and EZ Main (5 ea. 10–12 AWG ring terminals and 5 ea. 1/4–20 machine screws required, customer supplied)
- Performance testing documents available
  - TR-80800 SPDE Performance Testing Summary

## EZ Meter-Pak™ recommended installation

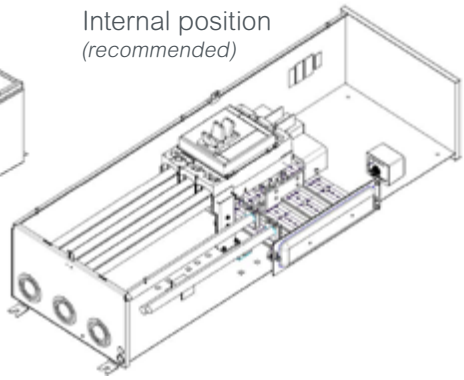
SPDE on top or bottom



SPDE on side



Internal position *(recommended)*



# Square D™ Surgelogic™ Hard Wired

# HWA

Square D™ Surgelogic™ HWA Surge Protective Devices (SPDs) are surge suppressors with EMI/RFI noise attenuation in a UL/NEMA 4X rated enclosure suitable for installing indoors, outdoors, or in other harsh environments.

The robust design of the HWA allows surge suppression to be externally installed adjacent to electrical distribution equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ HWA SPDs utilize a high-energy parallel design that provides all modes of suppression at 100 kA surge current rating per phase. They contain a suppression circuit that not only provides transient suppression but also enhanced EMI/RFI noise attenuation.


| Voltage | Surge current rating | Catalog numbers | UL 1449 test data | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Voltage protection ratings (VPR) | | | | SCCR withstand | MCOV |
| | | | L-N | L-G | N-G | L-L | | |
| 120/240V, 1Ø, 3W+G, Split [1][6] | 100 kA | HWA11 | 900 | 1,200 | 700 | 1,500 | 200,000 A | 150 |
| 208Y/120V, 3Ø, 4W+G, Wye [2][6] | 100 kA | HWA21 | 900 | 1,200 | 700 | 1,500 | 200,000 A | 150 |
| 240/120V, 3Ø, 4W+G, HLD [6] | 100 kA | HWA31 | 1,000/ 1,200 | 1,200/ 1,500 | 700 | 1,500/ 1,800 | 200,000 A | 150/ 270 |
| 480Y/277V, 3Ø, 4W+G, Wye [3][6] | 100 kA | HWA41 | 1,200 | 2,000 | 1,000 | 2500 | 200,000 A | 320 |
| 480V, 3Ø, 3W+G, Delta [4] | 100 kA | HWA51 | - | 2,500 | - | 2,500 | 200,000 A | 640 |
| 240V, 3Ø, 3W+G, Delta | 100 kA | HWA61 | - | 1,500 | - | 1,500 | 200,000 A | 300 |
| 600Y/347V, 3Ø, 4W+G, Wye [6] | 100 kA | HWA81 | 1,500 | 2,500 | 1,500 | 3,000 | 200,000 A | 420 |
| 600V, 3Ø, 3W+G, Delta [5] | 100 kA | HWA91 | - | 3,000 | - | 3,000 | 200,000 A | 840 |

[1] 120/240V series also applies to the following voltage 127/254V.
[2] 208Y/120V series also applies to the following voltage 220Y/127V.
[3] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V.
[4] 480V Delta series also applies to the following voltage 480Y/277V HRG.
[5] 600V Delta series also applies to the following voltage 600Y/347V HRG.
[6] Do not use on ungrounded systems. Systems must be solidly grounded.

# Specifications

| HWA SPDs | |
|---|---|
| **Performance** | |
| Surge current rating per phase | 100 kA |
| Nominal discharge current ($I_n$) | 20 kA |
| Short circuit current rating withstand | 200,000 A |
| Modes of protection | All |
| Suppression technology | Individually fused MOVs |
| Thermal and overcurrent protection | Yes |
| Enhanced EMI/RFI noise attenuation | -54 dB |
| Operating frequency | 50/60 Hz |
| Repetitive impulse | 10,000 |
| **Mechanical description** | |
| Enclosure | UL/NEMA 4X polycarbonate |
| Lead wires | 10 AWG, 2 feet (0.61 meters) |
| Dry Contact wires | 22 AWG, 2 feet (0.61 meters) |
| Mounting method/circuit type | External/parallel |
| Operating altitude | Sea level—12,000' (3,658 m) |
| Storage temperature | -40˚ F (-40˚ C) to 149˚ F (65˚ C) |
| Operating temperature | -15˚ F (-25˚ C) to 149˚ F (65˚ C) |
| Operating humidity | 0 to 95% non-condensing |
| Dimensions | 8.62 x 4.80 x 2.92 in. (218.9 x 121.9 x 74.2 mm.) |
| Weight | 5 lbs. (2.3 kg.) |
| **Accessories (order separately)** | |
| Remote monitor | TVS12RMU |
| Flush mount kit | HWAFM |

## Flexible installation

HWA SPDs are hard wired into the panel via the included 10 AWG wire leads. This allows easy mounting for direct bus connection or into a nearby circuit breaker for minimum lead length which maximizes device performance.

Devices can be surface mounted or flush mounted with optional HWAFM flush mount kit.

## Standards and performance

- Type 2: UL 1449 5th Edition, Rev: 2022-12-15, CSA 22.2, No. 269.2-17, 2017-02, UL 1283 7th Edition
- Performance testing documents available
  - TR-80600 HWA Performance Testing Summary

# Square D™ Surgelogic™ Hard Wired

# HWB

Square D™ Surgelogic™ HWB Surge Protective Devices (SPDs) are robust surge suppression in a UL/NEMA 4X polycarbonate enclosure suitable for installing indoors, outdoors, or in other harsh environments.

The compact design of the HWB allows surge suppression to be externally installed adjacent to electrical distribution equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ HWB SPDs utilize a high-energy parallel design that provides all modes of suppression at 100 kA surge current rating per phase. They contain a suppression circuit that provides high quality, cost-effective, transient protection.

| Voltage | Surge current rating | Catalog numbers | UL 1449 test data | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Voltage protection ratings (VPR) | | | | SCCR withstand | MCOV |
| | | | L-N | L-G | N-G | L-L | | |
| 120V, 1Ø, 2W+G, Single [1] | 100kA | HWB01 | 700 | 600 | 600 | - | 100,000 A | 150 |
| 120/240V, 1Ø, 3W+G, Split [2][7] | 100kA | HWB11 | 600 | 700 | 600 | 1,000 | 100,000 A | 150 |
| 208Y/120V, 3Ø, 4W+G, Wye [3][7] | 100kA | HWB21 | 600 | 700 | 600 | 1,000 | 200,000 A | 150 |
| 240/120V, 3Ø, 4W+G, HLD [7] | 100kA | HWB31 | 600/ 1,200 | 700/ 1,200 | 600 | 1,000 | 200,000 A | 150/ 320 |
| 480Y/277V, 3Ø, 4W+G, Wye [5][7] | 100kA | HWB41 | 1,200 | 1,200 | 1,000 | 1,800 | 200,000 A | 320 |
| 480V, 3Ø, 3W+G, Delta [6] | 100kA | HWB51 | - | 1,200 | - | 1,200 | 200,000 A | 552 |
| 240V, 3Ø, 3W+G, Delta | 100kA | HWB61 | - | 1,800 | - | 1,800 | 200,000 A | 320 |
| 600Y/347V, 3Ø, 4W+G, Wye [7] | 100kA | HWB81 | 1,500 | 1,500 | 1,500 | 2,500 | 200,000 A | 420 |
| 600 V 3Ø, 3W+G, Delta | 100kA | HWB91 | - | 2,500 | - | 2,500 | 200,000 A | 690 |

[1] 120V series also applies to the following voltage 127V.
[2] 120/240V series also applies to the following voltage 127/254V.
[3] 208Y/120V series also applies to the following voltage 220Y/127V.
[4] 240V series also applies to the following voltage 277V.
[5] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V.
[6] 480V Delta series also applies to the following voltage 480Y/277V HRG.
[7] Do not use on ungrounded systems. Systems must be solidly grounded.

# Specifications

| HWB SPDs | | |
|---|---|---|
| **Performance** | | |
| Surge current rating per phase | 100 kA | |
| Nominal discharge current ($I_n$) | 20 kA | |
| Short circuit current rating withstand | 100,000 A (1Ø models)<br>200,000 A (3Ø models) | |
| Modes of protection | All | |
| Suppression technology | Individually fused MOVs | |
| Thermal and overcurrent protection | Yes | |
| EMI/RFI noise attenuation | -25 dB | |
| Operating frequency | 50/60 Hz | |
| Repetitive impulse | 5,000 | |
| **Mechanical description** | | |
| Enclosure | UL/NEMA 4X polycarbonate | |
| Conduit fitting | 3/4" NPT threaded hub | |
| Connection method | 10 AWG, 3 ft. (0.91 m.) wire leads | |
| Dry contact wires | 18 AWG, 3 ft. (0.91 m.) | |
| Mounting method/circuit type | External/parallel | |
| Operating altitude | Sea level—12,000' (3,658 m) | |
| Storage temperature | -40˚ F (-40˚ C) to 140˚ F (60˚ C) | |
| Operating temperature | -25° C (-13° F) to +85° C (185° F) | |
| Operating humidity | 0 to 95% non-condensing | |
| Dimensions | 8.3 x 3.6 x 3.0 in. (211 x 91 x 77 mm.) | |
| Weight | 3 lbs. (1.4 kg.) | |
| **Accessories (order separately)** | | |
| Remote monitor | TVS12RMU | |
| Flush mount kit | HWBFM | |

## Flexible installation

HWB SPDs are hard wired into the panel via the included 10 AWG wire leads. The compact design allows for easy mounting for direct bus connection or into a nearby circuit breaker for minimum lead length which maximizes device performance.

Devices can be surface mounted or flush mounted with optional HWBFM flush mount kit.

## Standards and performance

- Type 1: UL/cUL 1449 5th Edition, Rev: 2022-12-15, (Suitable for Type 2 applications)
- Meets NFPA 780 Lightning Protection Systems requirements for UL 96A Master Label.
- Performance testing documents available
  - TR-80700 HWB Performance Testing Summary

# Square D™ Surgelogic™ Hard Wired

# HWC

Square D™ Surgelogic™ HWC Surge Protective Devices (SPDs) are surge suppressors with EMI/RFI noise attenuation in a UL/NEMA 4X rated enclosure suitable for installing indoors, outdoors, or in other harsh environments.

The robust design of the HWC allows surge suppression to be externally installed adjacent to electrical distribution equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ HWC SPDs utilize a high-energy parallel design that provides all modes of suppression at 300 kA of surge current rating per phase. They contain a suppression circuit that provides not only transient suppression, but also enhanced EMI/RFI noise attenuation.


| Voltage | Catalog numbers | Surge current rating | UL 1449 test data | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Type | Voltage Protection Ratings (VPR) | | | | SCCR withstand | MCOV |
| | | | | L-N | L-G | N-G | L-L | | |
| 120/240V, 1Ø, 3W+G, Split [1][5] | HWC13 | 300 kA | 2 | 800 | 800 | 800 | 1,200 | 200,000 A | 180 |
| 208Y/120V, 3Ø, 4W+G, Wye [2][5] | HWC23 | 300 kA | 2 | 800 | 800 | 800 | 1,200 | 200,000 A | 180 |
| 240/120V, 3Ø, 4W+G, HLD [5] | HWC33 | 300 kA | 2 | 800/ 1,200 | 800/ 1,200 | 800 | 1,200/ 1,200 | 200,000 A | 150/360 |
| 480Y/277V, 3Ø, 4W+G, Wye [3][5] | HWC43 | 300 kA | 2 | 1,200 | 1,200 | 1,200 | 2,000 | 200,000 A | 320 |
| 480V, 3Ø, 3W+G, Delta [4] | HWC53 | 300 kA | 2 | - | 1,800 | - | 2,000 | 200,000 A | 550 |
| 240V, 3Ø, 3W+G, Delta | HWC63 | 300 kA | 2 | - | 1,200 | - | 2,000 | 200,000 A | 320 |
| 600Y/347V, 3Ø, 4W+G, Wye [5] | HWC83 | 300 kA | 2 | 1,500 | 1,500 | 1,500 | 2,500 | 200,000 A | 420 |

[1] 120/240V series also applies to the following voltage 127/254V.
[2] 208Y/120V series also applies to the following voltage 220Y/127V.
[3] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V.
[4] 480V Delta series also applies to the following voltage 480Y/277V HRG.
[5] Do not use on ungrounded systems. Systems must be solidly grounded.

# Specifications

| HWC SPDs | |
|---|---|
| **Performance** | |
| Surge current rating per phase | 300 kA |
| Nominal discharge current ($I_n$) | 20 kA |
| Short circuit current rating withstand | 200,000 A |
| Modes of protection | All |
| Suppression technology | Individually Fused MOVs |
| Thermal and overcurrent protection | Yes |
| Enhanced EMI/RFI filtering | -53 dB |
| Operating frequency | 50/60 Hz |
| Repetitive impulse | 10,000 |
| **Mechanical description** | |
| Enclosure | NEMA 4X polycarbonate |
| Connection method | 10 AWG, 2 ft. (0.61 m.) wire leads |
| Dry contact terminals | 14 AWG to 22 AWG |
| Mounting method/circuit type | External/parallel |
| Operating altitude | Sea level—12,000' (3,658 m.) |
| Storage temperature | -40˚ F (-40˚ C) to 140˚ F (60˚ C) |
| Operating temperature | -35° C (-31° F) to +85° C (185° F) |
| Operating humidity | 0 to 95% non-condensing |
| Dimensions | 9.6 x 4.9 x 4 in. (244 x 124 x 102 mm.) |
| Weight | 4.5 lbs. (2.1 kg.) |
| **Options** | |
| Remote monitor | TVS12RMU |
| Flush mount kit | HWCFM |

## Flexible installation

HWC SPDs are hard wired into the panel via the included 10 AWG wire leads. This allows easy mounting for direct bus connection or into a nearby circuit breaker for minimum lead length which maximizes device performance.

Devices can be surface mounted or flush mounted with optional HWCFM flush mount kit.

## Listings and performance

- Type 2: UL 1449 5th Edition, Rev: 2022-12-15, CSA 22.2, No. 269.2-17, 2017-02, UL 1283 7th Edition
- ANSI/IEEE Std. C62-72-2016 (Clause 13:2) NEMA SPD 1.1-2019 Section 3.3.8 Testing levels passed
- Performance testing documents available
  - TR-80300 HWC-HWL Performance Testing Summary

# Square D™ Surgelogic™ External Mount

# EMA

Square D™ Surgelogic™ EMA Surge Protective Devices (SPDs) deliver specification-grade performance for service entrance or critical branch panel applications. This multi-phase surge suppression system provides transient suppression and EMI/RFI noise attenuation in a durable UL/ NEMA 1 steel enclosure.

The robust design of the EMA allows surge suppression to be externally installed adjacent to electrical distribution equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ EMA SPDs utilize a high-energy parallel design that provides all modes of suppression at 100 kA or 200 kA surge current rating per phase. They contain a suppression circuit that provides not only transient suppression, but also EMI/RFI noise attenuation.

| Voltage | Surge current rating | Catalog numbers | UL 1449 test data | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Voltage protection ratings (VPR) | | | | SCCR withstand | MCOV |
| | | | L-N | L-G | N-G | L-L | | |
| 120/240V, 1Ø, 3W+G, Split [1][5][6] | 100 kA | EMA11 | 700 | 700 | 600 | 1,000 | 200,000 A | 150 |
| | 200 kA | EMA12 | | | | | | |
| 208Y/120V, 3Ø, 4W+G, Wye [2][5][6] | 100 kA | EMA21 | 700 | 700 | 600 | 1,000 | 200,000 A | 150 |
| | 200 kA | EMA22 | | | | | | |
| 240/120V, 3Ø, 4W+G, HLD [5] | 100 kA | EMA31 | 700/ 1,200 | 700/ 1,000 | 600 | 1,200 | 200,000 A | 150/ 270 |
| | 200 kA | EMA32 | | | | | | |
| 480Y/277V, 3Ø, 4W+G, Wye [3][5][6] | 100kA | EMA41 | 1,200 | 1,200 | 1,000 | 2,000 | 200,000 A | 320 |
| | 200 kA | EMA42 | | | | | | |
| 480V, 3Ø, 3W+G, Delta | 100 kA | EMA51 | - | 1,800 | - | 2,000 | 200,000 A | 550 |
| | 200 kA | EMA52 | | | | | | |
| 240V, 3Ø, 3W+G, Delta | 100 kA | EMA61 | - | 1,200 | - | 1,200 | 200,000 A | 320 |
| | 200 kA | EMA62 | | | | | | |
| 600Y/347V, 3Ø, 4W+G, Wye [5][6] | 100 kA | EMA81 | 1500 | 1,500 | 1,200 | 2,500 | 200,000 A | 420 |
| | 200 kA | EMA82 | | | | | | |
| 600V, 3Ø, 3W+G, Delta | 100 kA | EMA91 | - | 2,500 | - | 2,500 | 200,000 A | 840 |
| | 200 kA | EMA92 | | | | | | |

[1] 120/240V series also applies to the following voltage 127/254V.
[2] 208Y/120V series also applies to the following voltage 220Y/127V.
[3] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V.
[4] 480V Delta series also applies to the following voltage 480Y/277V HRG.
[5] Do not use on ungrounded systems. Systems must be solidly grounded.
[6] Can be used on 3-wire grounded wye systems without neutral. Jumper the neutral and ground lugs using 10 AWG wire.

# Specifications

| EMA SPDs | |
|---|---|
| **Performance** | |
| Surge current rating per phase | 100 kA and 200 kA |
| Nominal discharge current ($I_n$) | 20 kA |
| Short circuit current rating withstand | 200,000 A |
| Modes of protection | All |
| Suppression technology | Individually fused MOVs |
| Thermal and overcurrent protection | Yes |
| EMI/RFI noise attenuation | -42 dB |
| Operating frequency | 50/60 Hz |
| Repetitive impulse | 20,000 |
| **Mechanical description** | |
| Enclosure | UL/NEMA 1 steel |
| Connection terminals | 2 AWG to 10 AWG |
| Dry contact terminals | 14 AWG to 22 AWG |
| Mounting method/circuit type | External/parallel |
| Operating altitude | Sea Level—12,000' (3,658 m.) |
| Storage temperature | -40˚ F (-40˚ C) to 149˚ F (65˚ C) |
| Operating temperature | -4˚ F (-20˚ C) to 149˚ F (65˚ C) |
| Operating humidity | 0 to 95% non-condensing |
| Dimensions | 11 x 12 x 5.5 in. (208 x 290 x 135 mm.) |
| Weight | 23 lbs. (10.4 kg.) |
| **Accessories (order separately)** | |
| Remote monitor | TVS12RMU |
| Flush mount kit | EMAFM |

## Flexible installation

EMA SPDs are wired into the panel through a lug connection inside the UL/NEMA type 1 steel enclosure. This allows easy mounting for direct bus connection or into a nearby circuit breaker for minimum lead length which maximizes device performance.

Devices can be surface mounted or flush mounted with optional EMAFM flush mount kit.

## Standards and performance

- Type 1: UL 1449 5th Edition, Rev: 2022-12-15, (Suitable for Type 2 applications)
- Type 2: cUL 1449 5th Edition, Rev: 2022-12-15, CSA 22.2, No. 269.2-17, 2017-02, UL 1283 7th Edition
- ANSI/IEEE Std. C62-72-2016 (Clause 13:2) NEMA SPD 1.1-2019 Section 3.3.8 testing levels passed
- Performance testing documents available
  - TR-80400 EMA-IMA Performance Testing Summary

# Square D™ Surgelogic™ External Mount

# EMB

Square D™ Surgelogic™ EMB Surge Protective Devices (SPDs) are surge suppressors with in a UL/NEMA 4X rated polycarbonate enclosure suitable for installing indoor, outdoor, or in other harsh environments.

The robust design of the EMB allows surge suppression to be externally installed adjacent to electrical distribution equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ EMB SPDs utilize a high-energy parallel design that provides all modes of suppression at each surge current rating per phase. They contain a suppression circuit that provides not only transient suppression, but also EMI/RFI noise attenuation.

| Voltage | Surge current rating | Catalog numbers | UL 1449 test data | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Type | Voltage protection ratings (VPR) | | | | SCCR withstand | MCOV |
| | | | | L-N | L-G | N-G | L-L | | |
| 120V, 1Ø, 2W+G, Single [1] [6] | 200 kA | EMB02F | 2 | 700 | 700 | 700 | 1,200 | 200,000 A | 150 |
| 120/240V, 1Ø, 3W+G, Split [1][6][7] | 200 kA | EMB12 | 1 | 700 | 700 | 700 | 1,200 | 200,000 A | 150 |
| | | EMB12F | 2 | | | | | | |
| 208Y/120V, 3Ø, 4W+G, Wye [2][6][8] | 200 kA | EMB22 | 1 | 700 | 700 | 700 | 1,200 | 200,000 A | 150 |
| | | EMB22F | 2 | | | | | | |
| 240/120V, 3Ø, 4W+G, HLD [6] | 200 kA | EMB32 | 1 | 700/ 1,200 | 700/ 1,200 | 700 | 1,200/ 2,000 | 200,000 A | 150/ 320 |
| 480Y/277V, 3Ø, 4W+G, Wye [3][6][8] | 200 kA | EMB42 | 1 | 1,200 | 1,200 | 1,200 | 2,000 | 200,000 A | 320 |
| | | EMB42F | 2 | | | | | | |
| 480V, 3Ø, 3W+G, Delta [4] | 200 kA | EMB52 | 1 | - | 1,800 | - | 2,000 | 200,000 A | 552 |
| 240V, 3Ø, 3W+G, Delta | 200 kA | EMB62 | 1 | - | 1,200 | - | 2,000 | 200,000 A | 320 |
| 240V, 1Ø, 2W+G, Single [6] | 200 kA | EMB72F | 2 | 1,200 | 1,200 | 1,200 | 2,000 | 200,000 A | 320 |
| 600Y/347V, 3Ø, 4W+G, Wye [6][8] | 200 kA | EMB82F | 2 | 1,500 | 1,500 | 1,500 | 2,500 | 200,000 A | 420 |
| 600V, 3Ø, 3W+G, Delta [5] | 100 kA | EMB91 | 1 | - | 2,500 | - | 2,500 | 200,000 A | 690 |
| 240/480V, 1Ø, 3W+G, Split [6] | 200 kA | EMBA2F | 2 | 1,200 | 1,200 | 1,200 | 2,000 | 200,000 A | 320 |

[1] 120/240V series also applies to the following voltage 127/254V.
[2] 208Y/120V series also applies to the following voltage 220Y/127V.
[3] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V.
[4] 480V Delta series also applies to the following voltage 480Y/277V HRG.
[5] 600V Delta series also applies to the following voltage 600Y/347V HRG.
[6] Do not use on ungrounded systems. Systems must be solidly grounded.
[7] 120/240S series also applies to the following voltage 120V 1Ø, 2W+G. Connect phase A, jumper phase A to C.
[8] Can be used on 3-wire grounded wye systems without neutral. Jumper the neutral and ground lugs using 10 AWG wire.

# Specifications

| EMB SPDs | |
|---|---|
| **Performance** | |
| Surge current rating per phase | 200 kA (100 kA for EMB91) |
| Nominal discharge current ($I_n$) | 20 kA |
| Short circuit current rating withstand | 200,000 A |
| Modes of protection | All |
| Suppression technology | Individually fused MOVs |
| Thermal and overcurrent protection | Yes |
| EMI/RFI noise attenuation | -25 dB (Type 1) |
| Enhanced EMI/RFI noise attenuation | -50 dB (Type 2) |
| Operating frequency | 50/60 Hz |
| Repetitive impulse | 5,000 |
| **Mechanical description** | |
| Enclosure | UL/NEMA 4X non-metallic |
| Connection terminals | 8 AWG to 14 AWG |
| Dry contact terminals | 14 AWG to 22 AWG |
| Mounting method/circuit type | External/parallel |
| Operating altitude | Sea Level—12,000' (3,658 m.) |
| Storage temperature | -40˚ F (-40˚ C) to 140˚ F (60˚ C) |
| Operating temperature | -15˚ F (-25˚ C) to 140˚ F (60˚ C) |
| Operating humidity | 0 to 95% non-condensing |
| Dimensions | 6 x 6 x 4 in.<br>(152 x 152 x 102 mm.) |
| Weight | 4 lbs. (1.8 kg.) |
| **Accessories (order separately)** | |
| Remote monitor | TVS12RMU |
| Flush mount kit | EMBFM |

## Flexible installation

EMB SPDs are wired into the panel through a lug connection inside the UL/NEMA type 4X enclosure. This allows easy mounting for direct bus connection or into a nearby circuit breaker for minimum lead length which maximizes device performance.

Devices can be surface mounted or flush mounted with optional EMBFM flush mount kit.

## Standards and performance

- Type 1: UL/cUL 1449 5th Edition, Rev: 2022-12-15, (Suitable for Type 2 applications)
- Type 2: UL 1449 5th Edition, Rev: 2022-12-15, CSA 22.2, No. 269.2-17, 2017-02, UL 1283 7th Edition
- ANSI/IEEE Std. C62-72-2016 (Clause 13:2) NEMA SPD 1.1-2019 Section 3.3.8
  Testing levels passed
- Meets NFPA 780 Lightning Protection Systems requirements for UL 96A Master Label
- Performance testing documents available
  - TR-80100 EMB Performance Testing Summary

# Square D™ Surgelogic™ External Mount

# EMD

Square D™ Surgelogic™ EMD Surge Protective Devices (SPDs) are surge suppressors with in a UL/NEMA 4 rated steel enclosure suitable for installing indoors, outdoors, or in other harsh environments.

The robust design of the EMD allows surge suppression to be externally installed adjacent to electrical distribution equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ EMD SPDs utilize a high-energy parallel design that provides all modes of suppression at each surge current rating per phase. They contain a suppression circuit that provides not only transient suppression, but also EMI/RFI noise attenuation.

| Voltage | Surge current rating | Catalog numbers | UL 1449 test data | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Type | Voltage protection ratings (VPR) | | | | SCCR withstand | MCOV |
| | | | | L-N | L-G | N-G | L-L | | |
| 120/240V, 1Ø, 3W+G, Split [1][6] | 300 kA | EMD13 | 1 | 800 | 700 | 700 | 1,200 | 100,000 A | 150 |
| | | EMD13F | 2 | | | | | | |
| 208Y/120V, 3Ø, 4W+G, Wye [2][6][7] | 300 kA | EMD23 | 1 | 900 | 800 | 800 | 1,500 | 200,000 A | 150 |
| | | EMD23F | 2 | | | | | | |
| | 500 kA | EMD25 | 1 | 700 | 700 | 700 | 1,000 | | |
| | 600 kA | EMD26 | 1 | 800 | 800 | 700 | 1,200 | | |
| 240/120V, 3Ø, 4W+G, HLD [6] | 300 kA | EMD33 | 1 | 900/ 1,500 | 800/ 1,200 | 800 | 1,500 | 200,000 A | 150/ 320 |
| 480Y/277V, 3Ø, 4W+G, Wye [3][6][7] | 300 kA | EMD43 | 1 | 1,500 | 1,200 | 1,200 | 2,500 | 200,000 A | 320 |
| | | EMD43F | 2 | | | | | | |
| | 500 kA | EMD45 | 1 | 1,200 | 1,200 | 1,000 | 2,000 | | |
| | 600 kA | EMD46 | 1 | 1,200 | 1,200 | 1,200 | 1,800 | | |
| 480V, 3Ø, 3W+G, Delta [4] | 300 kA | EMD53 | 1 | - | 1,800 | - | 1,800 | 200,000 A | 552 |
| | 500 kA | EMD55 | 1 | | | | 1,500 | | |
| 240V, 3Ø, 3W+G, Delta | 300 kA | EMD63 | 1 | - | 1,200 | - | 1,500 | 200,000 A | 320 |
| 600Y/347V, 3Ø, 4W+G, Wye [6][7] | 300 kA | EMD83F | 2 | 1,500 | 1,500 | 1,500 | 2,500 | 200,000 A | 420 |
| 600V, 3Ø, 3W+G, Delta [5] | 300 kA | EMD93 | 1 | - | 2,500 | - | 2,500 | 200,000 A | 690 |

[1] 120/240V series also applies to the following voltage 127/254V.
[2] 208Y/120V series also applies to the following voltage 220Y/127V.
[3] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V.
[4] 480V Delta series also applies to the following voltage 480Y/277V HRG.
[5] 600V Delta series also applies to the following voltage 600Y/347V HRG.
[6] Do not use on ungrounded systems. Systems must be solidly grounded.
[7] Can be used on 3-wire grounded Wye systems without neutral. Jumper the neutral and ground lugs using 10 AWG wire.

# Specifications

| EMD SPDs | | |
|---|---|---|
| **Performance** | | |
| Surge current rating per phase | | 300 kA, 500 kA and 600 kA |
| Nominal discharge current ($I_n$) | | 20 kA |
| Short circuit current rating withstand | | 200,000 Amps (3Ø only) |
| Modes of protection | | All |
| Suppression technology | | Individually Fused MOVs |
| Thermal and overcurrent protection | | Yes |
| EMI/RFI noise attenuation | | -25 dB (Type 1) |
| Enhanced EMI/RFI noise attenuation | | -50 dB (Type 2) |
| Operating frequency | | 50/60 Hz |
| Repetitive impulse | | 15,000 |
| **Mechanical description** | | |
| Enclosure | | UL/NEMA 4 steel |
| Connection method via internal disconnect | | 6 AWG to 8 AWG |
| Dry contact terminals | | 14 AWG to 22 AWG |
| Mounting method/circuit type | | External/parallel |
| Operating altitude | | Sea Level—12,000' (3,658 m.) |
| Storage temperature | | -40˚ F (-40˚ C) to 140˚ F (60˚ C) |
| Operating temperature | | -15˚ F (-25˚ C) to 140˚ F (60˚ C) |
| Operating humidity | | 0 to 95% non-condensing |
| Dimensions | 300 kA | 12 x 12 x 6.5 in.<br>(305 x 305 x 165 mm.) |
| | 500 kA | 16 x 14 x 7.5 in.<br>(406 x 356 x 190 mm.) |
| | 600 kA | 20 x 20 x 7.5 in.<br>(508 x 508 x 190 mm.) |
| Weight | 300 kA | 23 lbs. (10.4 kg.) |
| | 500 kA | 32 lbs. (14.5 kg.) |
| | 600 kA | 53 lbs. (23.6 kg.) |
| **Accessory (order separately)** | | |
| Remote monitor | | TVS12RMU |

## Flexible installation

EMD SPDs are wired into the panel through a compression lug connection on the disconnect switch inside the UL/NEMA type 4 steel enclosure. This allows easy mounting for direct bus connection or into a nearby circuit breaker for minimum lead length which maximizes device performance.

## Standards and performance

- Type 1: UL/cUL 1449 5th Edition, Rev: 2022-12-15, (Suitable for Type 2 applications)
- Type 2: UL 1449 5th Edition, Rev: 2022-12-15, CSA 22.2, No. 269.2-17, 2017-02, UL 1283 7th Edition
- ANSI/IEEE Std. C62-72-2016 (Clause 13:2) NEMA SPD 1.1-2019 Section 3.3.8
  Testing levels passed
- Meets NFPA 780 Lightning Protection Systems requirements for UL 96A Master Label
- Performance testing documents available
  - TR-80200 EMD-EML-IMB Performance Testing Summary

# Square D™ Surgelogic™ External Mount with Discrete Line-Line Protection

# EML/HWL

Square D™ Surgelogic™ EML/HWL Surge Protective Devices (SPDs) are surge suppressors with discrete line to line protection elements and EMI/RFI noise attenuation suitable for installing indoors, outdoors, or in other harsh environments.

The robust design allows surge suppression to be externally installed adjacent to electrical distribution equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ SPDs utilize a high-energy parallel design that provides all modes of suppression at each surge current rating per phase. They contain a suppression circuit that provides not only transient suppression, but also EMI/RFI noise attenuation.


| Voltage | Surge current rating | Catalog numbers | UL 1449 test data | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Voltage protection ratings (VPR) | | | | SCCR withstand | MCOV |
| | | | L-N | L-G | N-G | L-L | | |
| 120/240V, 1Ø, 3W+G, Split [1][4] | 300 kA | HWL13 | 800 | 800 | 800 | 1,200 | 100,000 A | 180 |
| 208 Y/120 V, 3Ø, 4W+G, Wye [2][4][5] | 300 kA | EML23 | 700 | 700 | 700 | 1,200 | 200,000 A | 150/180 |
| | | HWL23 | 800 | 800 | 800 | 1,200 | | |
| 480 Y/277 V, 3Ø, 4W+G, Wye [3][4][5] | 300 kA | EML43 | 1,500 | 1,200 | 1,200 | 1,800 | 200,000 A | 320 |
| | | HWL43 | 1,200 | 1,200 | 1,200 | 1,800 | | |

[1] 120/240V series also applies to the following voltage 127/254V.
[2] 208Y/120V series also applies to the following voltage 220Y/127V.
[3] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V.
[4] Do not use on ungrounded systems. Systems must be solidly grounded.
[5] Can be used on 3-wire grounded wye systems without neutral. Jumper the neutral and ground lugs using 10 AWG wire.

## Specifications

| Performance | EML | HWL |
|---|---|---|
| Surge current rating per phase | 300 kA | |
| Nominal discharge current ($I_n$) | 20 kA | |
| Short circuit current rating withstand | 200,000 Amps | |
| Discrete modes of protection | 10 | |
| Suppression technology | Individually fused MOVs | |
| Thermal and overcurrent protection | Yes | |
| EMI/RFI noise attenuation | -27.5 dB | -53 dB |
| Operating frequency | 50/60 Hz | |
| Repetitive impulse | 15,000 | 10,000 |

| Mechanical | EML | HWL |
|---|---|---|
| UL/NEMA enclosure rating | 4 steel | 4X polycarbonate |
| Connection Method | 8 AWG to 6 AWG | 10 AWG wire leads |
| Dry contact terminals | 14 AWG to 22 AWG | |
| Mounting / circuit type | External/parallel | |
| Operating altitude | Sea Level—12,000' (3,658 m) | |
| Storage temperature | -40˚F (-40˚C) to 140˚F (60˚C) | |
| Operating temperature | -15˚F (-25˚C) to 140˚F (60˚C) | -31˚F (-35˚C) to 185˚F (85˚C) |
| Operating humidity | 0 to 95% non-condensing | |
| Dimensions | 12 x 12 x 6.5 in. (305 x 305 x 165 mm.) | 9.6 x 4.9 x 4 in. (244 x 124 x 102 mm.) |
| Weight | 23 lbs. (10.4 kg.) | 4.5 lbs. (2.1 kg.) |

# Square D™ Surgelogic™ External Mount with Stainless Steel Enclosure

# EMA SD

Square D™ Surgelogic™ EMA Surge Protective Devices (SPDs) deliver specification grade performance for service entrance or critical branch panel applications. This multi-phase surge suppression system provides transient suppression and EMI/RFI noise attenuation in a corrosion resistant UL/NEMA 4X 304 stainless steel enclosure.

The robust design of the EMA allows surge suppression to be externally installed adjacent to electrical distribution equipment. These devices are designed to provide high-quality surge suppression for a wide variety of commercial, industrial, or institutional applications.

Square D™ Surgelogic™ EMA SPDs utilize a high-energy parallel design that provides all modes of suppression at each surge current rating per phase. They contain a suppression circuit that provides not only transient suppression, but also EMI/RFI noise attenuation.

| Voltage | Surge current rating | Catalog numbers | UL 1449 test data | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Voltage protection ratings (VPR) | | | | SCCR withstand | MCOV |
| | | | L-N | L-G | N-G | L-L | | |
| 120/240V, 1Ø, 3W+G, Split [1][5] | 240 kA | SSP01EMA24SD | 900 | 900 | 700 | 1,200 | 200,000 A | 150 |
| 208Y/120V, 3Ø, 4W+G, Wye [2][5][6] | 240 kA | SSP02EMA24SD | 900 | 900 | 700 | 1,200 | 200,000 A | 150 |
| | 480 kA | SSP02EMA48SD | 900 | 900 | 800 | 1,500 | | |
| 240/120V, 3Ø, 4W+G, HLD[5] | 240 kA | SSP03EMA24SD | 900 / 1,500 | 900 / 1,200 | 700 | 1,500 | 200,000 A | 150/ 270 |
| 480Y/277V, 3Ø, 4W+G, Wye [3][5][6] | 240 kA | SSP04EMA24SD | 1,200 | 1,200 | 1,200 | 2,500 | 200,000 A | 320 |
| | 480 kA | SSP04EMA48SD | 1,500 | 1,500 | 1,200 | 2,500 | | |
| 480V, 3Ø, 3W+G, Delta [4] | 240 kA | SSP05EMA24SD | - | 1,800 | - | 2,500 | 200,000 A | 550 |

[1] 120/240V series also applies to the following voltage 127/254V.
[2] 208Y/120V series also applies to the following voltage 220Y/127V.
[3] 480Y/277V series also applies to the following voltages 380Y/220V, 400Y/230V and 415Y/240V.
[4] 480V Delta series also applies to the following voltage 480Y/277V HRG.
[5] Do not use on ungrounded systems. Systems must be solidly grounded.
[6] Can be used on 3-wire grounded wye systems without neutral. Jumper the neutral and ground lugs using 10 AWG wire.

## Specifications

### Performance

| | |
|---|---|
| Surge current rating per phase | 240 kA and 480 kA |
| Nominal discharge current ($I_n$) | 20 kA |
| Short circuit current rating withstand | 200,000 A |
| Modes of protection | All |
| Suppression technology | Individually fused MOVs |
| Thermal and overcurrent protection | Yes |
| EMI/RFI filtering | -42 dB |
| Operating frequency | 50/60 Hz |
| Repetitive impulse | 20,000 |

### Mechanical

| | |
|---|---|
| Enclosure | UL/NEMA 4X 304 stainless steel |
| Connection method via internal disconnect | 10 AWG - 3/0 AWG terminals |
| Dry contact terminals | 14 AWG to 22 AWG |
| Mounting method/circuit type | External/parallel |
| Operating altitude | Sea Level—12,000' (3,658 m) |
| Storage temperature | -40˚ F (-40˚ C) to 149˚ F (65˚ C) |
| Operating temperature | -4˚ F (-20˚ C) to 149˚ F (65˚ C) |
| Operating humidity | 0 to 95% non-condensing |
| Dimensions | 11.7 x 22.7 x 9.4 in. (297 x 576 x 239 mm.) |
| Weight | 240 kA 32.2 lbs (14.6 kg) |
| | 480 kA 45.2 lbs (20.5 kg) |

# Service and support

The Square D™ Surgelogic™ team is here to assist you with all of your surge protective device (SPD) needs.

Each territory is covered by highly trained specialist to provide world class service and support.

## Pre-bid support

- Over 1,000 jobs are downloaded per month from the Electronic Plan Rooms, providing us with complete surge protection take-offs, drawings, and specifications.
- Notifications are sent to the National Sales Force and distributor partners, listing the jobs available for bidding.
- We develop project SPD bills of material to be entered into SE Advantage, ensuring the most cost-competitive package that meets the specified requirements.
- Prior approval packages (PAPs) are sent for jobs where Square D™ Surgelogic™ is not approved.
- Consulting engineers who specify in our gear but not our SPDs are targeted for training, with the goal of becoming specified for future projects.
- Our proprietary database contains consultant specification approval practices to help ensure approval.

## Post-bid support

*Project tracking to conclusion*

- After a project is awarded, our team reaches out to the project stakeholders to identify the contractor awarded the electrical portion of the project. National Sales Force and distributor partners who requested notifications are promptly advised once the project winner is identified.

*Job follow-up*

- For consultants requiring additional SPD submittal details, our surge team can provide complete shop drawing submittals that include performance testing as well as other required documentation.
- Technical support provided for questions or rejections from consulting engineers, including compliance, deviation, and exception (CDE) notes on the specification.

## Ongoing support

- In-person product training
- Site cisits with recommendations
- Specification interpretation
- Expert product selection
- Competitor product comparisons
- Technical application group support
- Product forensics on failed units
- World class product handouts

# Circuit breaker and wire ranges

| Model # | Allowable range | | Factory suggested size |
|---|---|---|---|
| | Circuit breaker size | Connection wire size | Circuit breaker size |
| EMA | 30 A–100 A | 10 AWG–2 AWG | 60 A |
| EMB | 15 A–50 A | 14 AWG–8 AWG | 30 A |
| EMD / EML | 30 A–60 A | 8 AWG–6 AWG | 60 A |
| HWA | 15 A–30 A | 10 AWG wire leads provided | 30 A |
| HWB | 15 A–30 A | 10 AWG wire leads provided | 30 A |
| HWC / HWL | 15 A–30 A | 10 AWG wire leads provided | 30 A |
| SDSA | 15 A–20 A | 14 AWG wire leads provided | 20 A |
| SPDE | 15 A–30 A | 10 AWG wire leads provided | 30 A |

**For technical support contact SPDTAG@se.com (800) 577-7353.**

SQUARE D™

# Whole home surge protection

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