

Enhance system protection and reduce equipment damage

SurgeLogic™

Surge Protective Devices



by Schneider Electric

The high cost of surge damage



Utility industry experts estimate that power quality problems including those **resulting from transient voltage surges cost North American companies a stunning \$80 billion annually**. That figure not only includes the high price of direct damage to electrical distribution systems, electronic equipment, software, and tools, but also the crippling cost of lost productivity. Facility downtime, lost data, lost orders, and the disruption of critical processes can seriously reduce productivity. This means that minimizing the risk of damage from electrical surges is an absolute priority for companies of all types, all across the globe.

Power disturbances

Lightning and fluctuations in utility power (caused by grid switching, for example) are often assumed to be the main sources of power disturbances. However, the overwhelming cause is actually equipment, such as motors and appliances, turning on and off. Even simply switching lights on and off will cause electrical surges. In many cases, 80 percent of all transient voltage surges are generated from inside sources, while only 20 percent come from outside a facility.

Key causes of internal transients

- Motor switching
- X-ray generators
- AC chillers
- Production machinery
- Robotics
- Welders
- Laser printers
- Copiers
- Capacitor bank switching
- Pumps

Location variables that increase the risk of external transients

- Regions of high lightning activity
- At the end of a utility line
- On a transmission line downstream of industrial facilities
- At a higher elevation than surrounding structures
- In an open, rural location

-
- ✓ Internally and externally mounted surge protective devices
 - ✓ Retrofit or new construction
 - ✓ Low let-through levels
 - ✓ High surge ratings

Square D Brand Surgelologic Surge Protective Devices

Unmatched surge suppression. Unequaled experience.

With the Surgelologic line of surge protective devices (SPDs), Square D™ by Schneider Electric™ offers world-class solutions for electrical distribution systems. From simple applications to mission-critical implementations in commercial and industrial environments, the Surgelologic line provides an SPD for every need.

Each Surgelologic SPD is designed, tested, and manufactured in-house, confirming that your solution is:

- Built to the highest standards.
- Features the most advanced technologies.
- Meets the industry's most rigorous testing criteria.
- Backed by the expertise that only 100 years of experience in electrical distribution can bring.
- Made in the United States.

We have the knowledge and resources to help you select the system that's right for your specific needs. This is critical when considering that choosing devices with a higher level of suppression than you need can be unnecessarily costly, while too little suppression can result in serious equipment damage.

Product safety: Industry-leading testing and design

Schneider Electric has an industry recognized laboratory in the U.S. dedicated to testing and evaluating SPD technologies. We test all of our SPDs by installing them into environments that take into account system components and processes to increase product reliability.

Our lightning laboratory is one of the few places in the world where high energy tests can be performed up to 150,000 A. As a result, we can simulate worst-case scenarios and use the data to improve product performance and safety.

Schneider Electric commits tremendous resources to improving containment and end-of-life events to reduce the additional hazards that could result in catastrophic facility problems. Additionally, our product design and development teams constantly evaluate new suppression technologies and regulatory changes to provide products and systems that meet your needs, and the needs of your customers, anywhere in the world.

- ✔ Internal fusing coordinated with distribution system
- ✔ Modular construction for ease of maintenance
- ✔ Thermal fusing
- ✔ 200 kA short circuit current rating

Expertise that drives design for maximum safety.

The Surgelologic family of SPDs incorporates a wealth of electrical distribution and surge suppression expertise that allows you to design with confidence and know that your customers will receive superior surge suppression. We've dedicated extensive resources to advance the power quality industry, including:

- Understanding the effects of transients and lightning on power systems
- Investigating SPD technologies and their coordination with the entire power system
- Defining appropriate product installation practices
- Driving improvements in the NEC®, UL, CSA, and ANSI codes and standards for the benefit of the industry and its customers
- Designing products for improved performance
- Qualifying all Surgelologic SPDs under severe power conditions to improve performance and end-of-life conditions



▲ Schneider Electric lightning generators test Surgelologic SPDs in real-world systems and situations.

A full line: Flexibility across the board

With Square D brand Surgelogic SPDs, you can **choose a surge solution that satisfies the level of suppression you require**. Our systems cover all categories of transient severity as described by the ANSI/IEEE C62.41 standards. These range from transients of the highest level of severity at service entrance switchgear and switchboards (Category C) to distribution panelboards or switchboards (Category B).

Internal SPDs		
Switchboards QED-2 and QED-6 	Switchgear Power-Zone™ 4 	
Panelboards		
NQ 	NF 	I-Line 
Busway I-Line II 	OEM Internal Kit IMA SPD 	
Motor Control Centers Model 6 		

Surgelogic internal SPDs: Built-in performance

No question, the best way to ensure cost-effective power quality (especially important for critical power facilities) is to use SPDs that are built directly into end-use equipment. That's why Surgelogic internal SPDs are the perfect choice. They are specifically designed for integration with Square D brand equipment, built-in at the factory for maximum reliability, and fully tested and certified as specified by UL 1449 Third Edition, UL 1283/CSA C22.2 No. 8, UL 67/CSA C22.2 No. 29, UL 891/CSA C22.2 No. 244, UL 1558/CSA C22.2 No. 31, UL 845/CSA C22.2 No. 254, and UL 857/CSA C22.2 No. 27 as applicable.

Surgelogic internal SPD systems use leading-edge technologies to address specific equipment powered by switchgear and switchboards, distribution panelboards, motor control centers, and Busway, as well as a variety of other applications.

Surgelogic retrofit: Internal and external SPDs

Retrofitting SPD units into I-Line™, QMB, MCC, and Busway applications is simple. The QMB fusible switch, 6" MCC Bucket, I-Line, and Busway plug-on units come with the SPD already installed. These units can be easily added to existing equipment to provide the performance of a fully integrated SPD.

Schneider Electric also offers a full range of externally mountable SPDs. These units are typically used to address a single piece of equipment or for retrofit applications and can include an internal disconnect and remote monitor as available options. Surgelogic external SPDs are designed to be used alone or in conjunction with internal devices to provide superior surge suppression. Surgelogic external SPDs are also fully tested and certified as specified by UL 1449 Third Edition and UL 1283/CSA C22.2 No. 8.

Diagnostics at a glance

All Square D brand Surgelogic SPD systems feature LED-based diagnostics as standard equipment. These monitor the SPD, so you always know its status. You can verify the operational integrity of MOVs, overcurrent, and thermal protection at a glance. Loss of suppression indication and power loss detection are also standard. Switchable audible alarm with test functions, dry contacts, and surge counter come standard on all internal, EMA, and EBA products. A remote monitor is an available option as well.



Modular makes it easy

All internal and EMA external Surgelogic systems feature a modular design for a flexible, cost-effective way to achieve superior surge suppression at every level of the electrical distribution system. Modularity means lower life cycle costs and fast, easy field service or replacement.

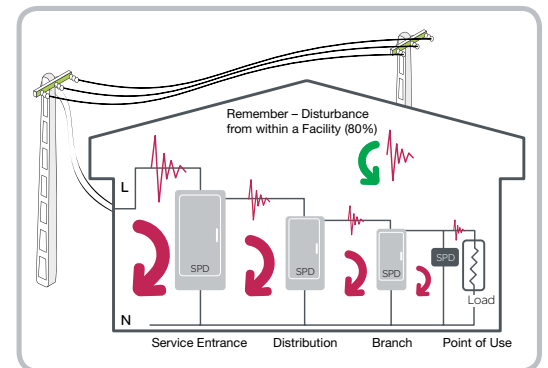
All Surgelogic modular devices share a common architecture, so the same type of module fits NQ or NF panels, I-Line or QMB installations, Busway, MCC, or EMA surge suppressors. Each module includes its own internal diagnostics for a redundant system. If there's ever a problem, any module can be quickly replaced to restore the device.

External SPD		
EMA 	EBA 	HWA
Retrofit SPD		
I-Line 	MCC 	QMB

Maximizing the effectiveness of your SPDs

Multi-point suppression

Protecting all the equipment within a facility typically requires more than a single SPD located at the service entrance. Strategically locating SPDs throughout your electrical distribution system, commonly referred to as cascading, will provide maximum surge suppression. A cascaded approach to your surge suppression provides suppression of not only the surge events coming in from the utility, but also those surges generated inside the facility.



Lead lengths

Internal/integral SPDs don't require the extra several feet of conductor used by externally mounted devices. That's key because every foot of conductor can increase potentially damaging let-through voltage by more than 100 volts per foot.

The elimination of cables and their impedance in the SPD connection results in the lowest possible let-through voltage, thereby providing maximum suppression to your systems.



◀ The Surgelogic SPD diagnostic panel provides quick and clear status indication for the SPD.

Square D Surgelologic SPDs

All the right reasons...

- Specifically designed for distribution systems and the transient environment.
- A comprehensive selection of internal and external devices.
- Internal surge suppression systems expressly engineered for Square D brand electrical distribution systems.
- Modular systems for flexibility and long-term value.
- Duty-cycle tested – IMA/EMA/EBA: 20,000 impulses, HWA: 10,000 impulses, ANSI C62.41, 10 kA, 20 kV.
- cULus Listed designs (in accordance with UL 1449, UL 1283/CSA C22.2 No. 8, and UL 67/CSA C22.2 No. 29, UL 891/CSA C22.2 No. 244, UL 1558/CSA C22.2 No. 31, UL 845/CSA C22.2 No. 254, UL 857/CSA C22.2 No. 27 as applicable).
- Superior UL 1449 voltage protection rating (VPR).
- 200 kA short circuit current ratings.
- Ten-year warranty.
- Unmatched level of safety testing.
- Highest UL-defined nominal discharge (In) rating.
- Made in the United States.



◀ The heart of the Square D brand Surgelologic surge suppression solution.

Application guidelines

Exposure Level	Surge Rating	Environment	Internal Mount	External Mount
Extreme	480 kA 320 kA	<ul style="list-style-type: none"> • Larger ampacity service entrance • Extreme lightning area • Other large industries in area • Large facility in rural locations 	<ul style="list-style-type: none"> • Switchboard • Switchgear 	<ul style="list-style-type: none"> • Modular (EMA)
High to medium	240 kA 160 kA	<ul style="list-style-type: none"> • High lightning areas • High to medium ampacity service entrance • Service entrance switchboards • Service entrance panelboards 	<ul style="list-style-type: none"> • Switchboard • Switchgear • MCC • I-Line/QMB Panel 	<ul style="list-style-type: none"> • Modular (EMA) • Brick (EBA)
Medium	160 kA	<ul style="list-style-type: none"> • Distribution switchboards • Branch circuits not protected by a SPD at service entrance • Panels feeding heavy industrial motors • Branch circuits feeding loads outside the facility 	<ul style="list-style-type: none"> • Switchboard • MCC • I-Line/QMB Panel • NQ/NF Panel • Busway 	<ul style="list-style-type: none"> • Modular (EMA) • Brick (EBA)
Medium to low	160 kA 120 kA	<ul style="list-style-type: none"> • Computer equipment loads • Branch circuits with no upstream surge suppression 	<ul style="list-style-type: none"> • Switchboard • MCC • I-Line/QMB Panel • NQ/NF Panel • Busway 	<ul style="list-style-type: none"> • Modular (EMA) • Brick (EBA)
Low	120 kA 100 kA 80 kA 50 kA	<ul style="list-style-type: none"> • Branch circuits well inside the facility • Branch circuits with very sensitive loads and upstream surge suppression 	<ul style="list-style-type: none"> • NQ/NF Panel 	<ul style="list-style-type: none"> • Modular (EMA) • Brick (EBA) • Nipple Mount (HWA)

Advanced SPD product specifications

Feature	IMA					EMA/EBA	HWA	
	Switchgear	Switchboard	Panelboards	MCC	Busway	External modular/ external brick	Nipple mount	
Regulatory standards	UL 1558/CSA C22.2 No. 31	UL 891/CSA C22.2 No. 244	UL 67/CSA C22.2 No. 29	UL 845/CSA C22.2 No. 254	UL 857/CSA C22.2 No. 27	UL 1449	UL 1449	
UL 1449 3rd Edition listed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
UL 1283/CSA C22.2 No. 8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Surge current rating per phase	480 kA 320 kA 240 kA 160 kA 120 kA	480 kA 320 kA 240 kA 160 kA 120 kA	240 kA 160 kA 120 kA	240 kA 160 kA 120 kA	240 kA 160 kA 120 kA	480 kA 320 kA 240 kA 160 kA 120 kA	100 kA (HWA only) 80 kA (HWA only) 50 kA (HWA only)	
UL 1449 3rd Ed. SPD Type	Type 1 and 2	Type 1 and 2	Type 1 and 2	Type 1 and 2	Type 1 and 2	Type 1 and 2	Type 2	
Nominal Discharge Current (I _n)	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	
Voltage protection rating (VPR)								
120/240 V, 1Ø, 3W+Ground	700V L-N, L-G, N-G, 1200V L-L						900V L-N, 1200V L-G, 1500V L-L, 700V N-G	
240/120 V, 3Ø, 4W+Ground high leg delta	700V L-N, L-G, N-G, 1000V H-N, H-G, 1200V L-L, 1500V H-L						1000V L-N, 1200 V H-N and L-G, 1500V H-G and L-L, 1800V H-L, 700V N-G	
208Y/120 V, 3Ø, 4W+Ground	700V L-N, L-G, N-G, 1200V L-L						900V L-N, 1200V L-G, 1500V L-L, 700V N-G	
480Y/277 V, 3Ø, 4W+Ground	1200V L-N, L-G, N-G, 2000V L-L						1200V L-N, 2000V L-G, 2500V L-L, 1000V N-G	
600Y/347 V, 3Ø, 4W+Ground	1500V L-N, L-G, N-G, 2500V L-L						1500V L-N and N-G, 2500V L-G, 3000V L-L	
240 V, 3Ø, 3W+Ground Delta	1200V L-L and L-G						1500V L-L and L-G	
480 V, 3Ø, 3W+Ground Delta 480Y/277 V, 3Ø, 3W+Gnd HRG	2000 L-L, 1800V L-G						2500V L-L and L-G	
600 V, 3Ø, 3W+Ground Delta 600Y/347 V HRG, 3Ø, 3W+Gnd HRG	2500V L-L and L-G (10 kA Nominal Discharge Current [I _n])						3000V L-L, L-G	
Duty cycle tested ANSI C62.41, 10 kA, 20 kV	20,000 impulses						10,000 impulses	
Short circuit current rating (SCCR) (NEC Article 285)	200,000 A							
Component level fusing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
LED per phase	Standard	Standard	Standard	Standard	Standard	Standard	Standard	
Full-time online diagnostics	Standard	Standard	Standard	Standard	Standard	Standard	Standard	
Loss of suppression indication	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Audible alarm	Standard	Standard	Standard	Standard	Standard	Standard	Standard	
Dry contacts	Standard	Standard	Standard	Standard	Standard	Standard	Standard	
Surge counter	Standard	Standard	Standard	Standard	Standard	Standard	No	
Remote monitor	Optional	Optional	Optional	Optional	Optional	Optional	Optional	
Internal SPD switch	Yes	Yes	Yes (I-Line and QMB) Optional (all others)	Optional	Yes	Optional	No	
Mounting location	Internal	Internal Plug-in (QMB) Plug-in (I-Line)	Internal Direct Bus Plug-in (QMB) Plug-in (I-Line)	Internal Plug-in	Internal Plug-in	External	External	
Modes of suppression	L-N, L-G, L-L, N-G (Delta and HRG: L-L, L-G)							
Replaceable modules	Yes	Yes	Yes	Yes	Yes	Yes	No	
SPD warranty	10 years	10 years	10 years	10 years	10 years	10 years	10 years	

Meeting the world's needs for quality power

With the rapid growth of the Internet and Web-hosting facilities, and an explosion in the use of sensitive electronic equipment and controls in manufacturing plants, offices, hospitals, and homes, there is universal demand for reliable power. Schneider Electric is the world's leader in power protection. From circuit breakers to surge suppressors, Square D brand Surgelogic products are **dedicated to advancing technology to safely deliver and control electrical power for all of our customers around the world.**



In addition to the featured products, the following products are also instrumental in monitoring your electrical system and creating a cascaded surge suppression network.

Surgelogic XR SPDs

Surge suppression in a compact, hardwired package for 50,000 A and 80,000 A, configurations on single-phase power systems.



SDSA1175 and SDSA3650 Series SPDs

Designed for use against lightning and large surge events in high exposure areas, such as antennas and parking lot lighting systems. These devices may also be used for surge suppression of irrigation pumps, oil pumps, and motors operating below 600 V.



PowerLogic™ Series 4000T circuit monitor

A multifunctional monitor designed to provide detailed electrical and energy system information, including impulse transient detection and capture. Series 4000 circuit monitors help you measure and control energy costs, reduce downtime, and extend the life of your equipment.



★ Visit the Schneider Electric Surgelogic website at www.surgelogic.com

For assistance, contact the Surgelogic Technical Assistance Group at **(800) 577-7353** or spdtag@schneider-electric.com

Schneider Electric USA

1751 South 4800 West
Salt Lake City, UT 84104
Tel: 801-977-9009
Fax: 801-977-0200

Schneider Electric Canada, Inc.

5985 McClaughlin Road
Mississauga, Ontario L5R 1B8
Tel: 1-800-565-6699



©2012 Schneider Electric. All Rights Reserved. Schneider Electric, Square D, Surgelogic, Power-Zone, I-Line, and PowerLogic are trademarks owned by Schneider Electric Industries SAS or its affiliated companies. All other trademarks are property of their respective owners. 998-5542_US