Capabilities overview

Surge protection

Solutions for high energy surges and transient disturbances

Powering Business Worldwide

Lightning

can strike more than once—and surges don't always come from outside.

Surge events—short-term transients in voltage threatening critical downstream equipment—happen for many reasons. The most common source, though, is internal devices powering on and off: motors, transformers, photocopiers, fluorescent lighting ballasts, light dimmers, variable frequency drives and more. They can also be generated externally by events like lightning, grid switching or electrical equipment in adjacent buildings.

While seemingly innocent, surge events can wreak serious havoc on unprotected and inadequately protected facilities. They can disrupt, damage or destroy sensitive microprocessor-based devices (computers, programmable logic controls, etc.), resulting in premature aging of equipment, process interruptions and catastrophic failures.

The best way to prevent downtime due to an electrical surge is to develop and execute a facility-wide cascaded surge protection strategy. This requires understanding the exposure risks across your electrical distribution system per the IEEE® C62.44.1 standard:

- High exposure (Category C) at service entrances
- Medium exposure (Category B) at distribution panels
- Low exposure (Category A) at point-of-use equipment

Installing appropriately rated surge protection at each location throughout your facility provides a layered defense solution—and helps ensure complete protection of critical equipment. That's where we come in.

Eaton has a comprehensive line of surge protective devices to meet your needs, regardless of the risk of exposure. Our innovative, reliable surge protection solutions help reduce costly downtime by protecting sensitive electrical and electronic equipment against the damaging effects of transients. They're also designed and tested in accordance with IEEE and UL® standards[1] and built in an ISO® 9001 facility.

[1] This includes IEEE C62.41.1, IEEE C62.41.2, IEEE C62.43-2005, IEEE C62.45-2002, IEEE C62.48-2005, IEEE C62.62-2010, CSA® C22.2 NO. 269 and the latest editions of UL 1449 and UL 1283.

The 2014 National Electrical Code, Article 700.8, states: "A listed [surge protective device] shall be installed in or on all emergency systems switchboards and panelboards."

This change requires surge protection to be installed on all emergency electrical equipment to improve the reliability of emergency power systems.

Protect your equipment

Our surge devices shunt high energy surges and other transient disturbances away from the equipment being protected. In nanoseconds, the device provides a low impedance surge path through the use of advanced metal oxide varistor (MOV) technology. Eaton surge devices also use self-testing technology to continuously verify the health of the unit.

Meet the family

Eaton's surge protection solutions come in all common voltages and configurations, in surge current capacity ratings up to 800 kA and with a variety of optional features. (For example, LED protection status indicators, surge counters and EMI/RFI filtering are available on many of our surge devices.) The breadth of options and configurations ensures there's a solution that will work for your unique electrical application.

"Thanks to Eaton's expert service and dedicated support, we can now focus our energy on serving our community rather than addressing equipment failures. We have saved at least $15,000 in repairs since installing the surge protection devices." *Reverend Martin Stratton, Jr., Victory Apostolic Church*

We get the highest marks

Eaton surge solutions are independently tested and backed by the largest engineering and technical support team in the industry. They're tested to meet the latest UL and other agency standards and many have a nominal discharge current of 20 kA, the highest achievable rating for this parameter indicating device robustness.

Need help?

The Eaton Technical Resource Center is available to provide high-quality and knowledgeable support concerning your surge protection needs.

1.800.809.2772, option 4, option 2
spd@eaton.com

Eaton SPD Series

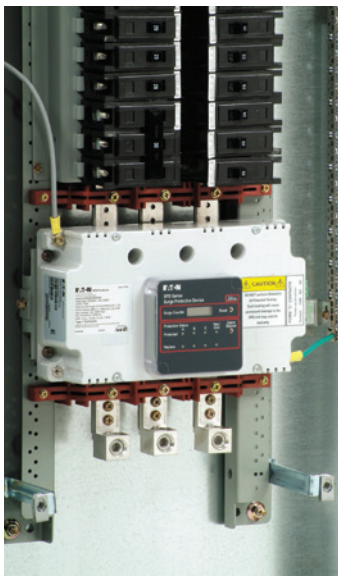
The SPD Series offers the most advanced surge protection with an array of features, options and configurations. It can be installed two ways: direct integration into electrical assemblies or externally side-mounted to equipment.

Integrating the device into the electrical assembly maximizes flexibility, space and protection—and keeps installation leads as short as possible. It also ensures proper installation from the start.

It's available with these Eaton electrical assemblies:

- Panelboards
- Switchboards
- Motor control centers
- Low voltage switchgear
- Automatic transfer switches
- Bus plugs

Side-mount models are compact in size and allow for installation as close as possible to the protected equipment. This keeps conductor leads short—but not as short as with an integrated assembly.



Mounting a surge device directly to the panelboard's bus bars provides the best possible protection by minimizing the let-through voltage.

SPD Series unit installed in a panelboard, providing optimum surge protection without the need for an additional enclosure.

SPD Series side-mount surge protective device providing superior retrofit surge protection.

Regardless of the way the SPD Series device is installed, three feature packages are available:

Feature	Basic	Standard	Standard with surge counter
Surge protection using thermally protected MOV technology	✓	✓	✓
Dual-colored LED protection status indicators for each phase	✓	✓	✓
Dual-colored LED protection status indicators for neutral-ground 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			✓

Eaton SPC Series

The SPC Series offers robust protection in a compact, flexible design configurable for a wide range of applications. It meets standard industrial specifications and can be configured based on your specific requirements.

SPC Series surge protective devices.

The SPC Series can be easily close-coupled to distribution equipment, keeping the connected lead length short for maximum performance.

Tri-colored protection status indicators show the results of continuous self-diagnostic testing.

Panelboard with side-mount SPC Series surge protective device.

The SPC Series offers maximum flexibility with configurable features:

Feature	Standard	Available option
Surge protection using thermally protected MOV technology	✓	
Tri-colored LED protection status indicators for each phase	✓	
Tri-colored LED protection status indicators for neutral-ground protection mode	✓	
Audible alarm		✓
Form C relay contact		✓
EMI/RFI filtering, providing up to 40 dB of noise attenuation from 10 kHz to 100 MHz		✓

Eaton SPD MAX Series

The SPD MAX Series (SPM Series) offers innovative, side-mount surge protective devices providing maximum safety, flexibility and protection from the dangers of transients. It's ideal for feeder tap rule applications or when a modular design is required.

SPM Series surge protective device with patented display technology.

SPM Series devices include industry exclusive barriers and lockout provisions to mitigate arc flash exposure.

Separate wireways for incoming power cables and surge module wiring allow easy access for installation and flexibility with wire sizes from #10 to 1/0.

Two feature packages are available:

Feature	Basic	Standard with surge counter
Surge protection using thermally protected MOV technology	✓	✓
Dual-colored LED protection status indicators for each phase	✓	✓
Dual-colored LED protection status indicators for neutral-ground protection mode	✓	✓
Industry leading safety barriers and lock-out, tag-out capabilities	✓	✓
Wide range of wiring options with ability to accommodate wire from #10 to 1/0	✓	✓
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		✓

"Through Eaton's innovation and comprehensive surge protection solutions, we are proactively avoiding unnecessary downtime. Further, we expect the Eaton solution will pay for itself in less than two years."

Chad Colby, Utility Manager, Rossville Area Wastewater Department

Eaton CVX Series

The CVX Series is designed for medium and low surge exposure levels and chemically aggressive environments. With its compact design, it's also ideal for point-of-use applications that require cost-effective, high-quality system protection.

Eaton SP1 Series

The SP1 Series provides reliable, cost-effective surge protection in a compact design. The patented LED indicators display the health of the surge protector. With multiple mounting options, it can be installed in a variety of applications.

Eaton SP2 Series

The SP2 Series meets equipment surge protection needs in light commercial electrical systems and original equipment manufacturer applications. It's a cost-effective, compact solution that uses a rear-nipple form factor for direct substitution in many OEM applications. It also features an LED indicator for quick, visual confirmation that protection is enabled.

Eaton Aegis Series

The Aegis Series combines superior line filtering and surge protection to help end users and original equipment manufacturers protect critical equipment and power supplies in single phase, series wiring applications.

Why choose Eaton for surge protection?

We have decades of experience helping customers across a variety of industries uncover their exposure risks and put a plan in place to combat equipment failure because of surge events.

We can ultimately help you save time, save money, reduce risk and stay protected. Here's how:

- **Save time.** Our integrated surge protective devices arrive already installed in distribution equipment. This provides the highest level of protection in very little time and eliminates field installation issues.
- **Save money.** Proper surge protection reduces the operating and repair costs associated with electrical and electronic equipment failure. (If you're not sure where to begin, we can help determine what approach is best for your environment.) It also saves you from the costly downtime that can result from equipment failures.
- **Reduce risk.** Combining Eaton surge solutions with other Eaton power distribution equipment decreases the risk of installation errors. This further improves your system performance and reliability by protecting sensitive equipment from damaging surges.
- **On-demand support.** We have resources available when and where you need them. Local experts are available to help you apply the right product, while Eaton application engineers are here to answer your questions.
- **Industry-leading warranty.** You can extend your warranty even further by registering your device at **Eaton.com/spd.**

Which surge solution is right for you?

Use this guide to figure out which series best meets your needs and applications.

Application	Commercial/industrial applications		Light commercial applications		Original equipment manufacturer/control panel applications		
Product category	Main switchgear, switchboard, motor control center, outdoor load		Distribution panelboard, subpanel, loadcenter		Control panel, point of use		
IEEE exposure	Category C		Category B		Category A		
Typical panel current rating	Unlimited	Up to 4000 A	Up to 1000 A	Up to 400 A	Control panel/point of use Up to 200 A		Single phase point of use
Peak kA rating per phase	100–800 kA	50–400 kA	50–200 kA	50–100 kA	50 kA	45 kA	Up to 80 kA
Nominal voltage	120–600 Vac	120–600 Vac	120–600 Vac	120–600 Vac 48, 125 Vdc	120–600 Vac	120–600 Vac	100–240 Vac 24, 48 Vdc
UL 1449/CSA type	1 and 2	1 and 2	1 and 2	1	1	1	2
UL 1283 EMI/RFI filtering (dB)	50 dB	50 dB	40 dB	0 dB	0 dB	0 dB	Up to 75 dB
Enclosure	NEMA® 4 and 4X	NEMA 1, 4 and 4X	NEMA 4X	NEMA 4X	NEMA 4	NEMA 4X	Open
Listing	$_{c}UL_{us}$	$_{c}UL_{us}$/CSA	$_{c}UL_{us}$/CSA	UL/CSA/CE	UL	UL/CSA	$_{c}UR_{us}$/CSA
Warranty	20 years [1]	15 years [1]	10 years [1]	5 years	2 years	2 years	10/15 years [1]
Special features/applications	Feeder tap rule, modular design	Integrated or side-mount applications	Configurable design	Compact design	DIN-rail mounting	Rear-nipple mounting	DIN-rail mounting, series wiring
Options							
Internal disconnect	Yes	Yes	No	No	No	No	No
Audible alarm	Yes	Yes	Yes	No	No	No	No
Form C contacts	Yes	Yes	Yes	No	No	No	Yes [2]
Surge counter	Yes	Yes	No	No	No	No	No
							
Product series	SPM Series	SPD Series	SPC Series	CVX Series	SP1 Series	SP2 Series	AEGIS Series

[1] With online registration
[2] Available on some models

For technical assistance with surge applications, contact the Eaton Technical Resource Center:
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