

# 2.1

## Surge Protection

### Surge Protection Devices and Lightning Arresters

#### Surge Protection Devices

2



#### Product Description

Due to the evolution of electronics and microprocessors in the home, there is a continuous challenge to provide quality (clean) power for electronic loads such as appliances, computers/home office and entertainment systems. Surges caused by lightning, utility grid switching and other sources travel on current carrying conductors throughout the home, which can effect and destroy sensitive electronic loads.

Eaton offers a comprehensive family of surge products for use at service entrance. These products can help protect sensitive electronics against the damaging effects of surges.

#### Application Description

##### Two-Stage Protection

Two stages of surge suppression are recommended to provide the best protection for electronic equipment. Two-stage surge suppression should be provided for all cables entering a home, including power, Internet, coaxial and telephone.

##### Service Entrance Surge Protection

Eaton's service entrance surge protection units provide premier surge protection for AC power at the service entrance. These products provide protection for residential electrical equipment by reducing power surges to an acceptable level for surge strips to handle at the point of use.

##### UL 1449 3rd Edition Type 1 and Type 2 Surge Protection

- **Type 1 Surge Protective Device (SPD)**— Permanently connected Type 1 SPDs are intended for installation between the secondary of the service transformer and the line side of the service equipment overcurrent device, as well as the load side, including watt-hour meter socket enclosures and are intended to be

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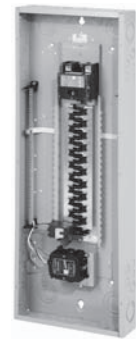
##### Description

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installed without an external overcurrent protective device. Type 1 devices are dual-rated for Type 2 applications as well, providing the highest ratings available for installation at the service entrance

- Eaton's CHSPT1 products provide Type 1 surge protection in accordance with UL® 1449 3rd Edition. These units can be universally mounted outside any manufacturer's primary service equipment
- **Type 2 Surge Protective Device**—Permanently connected Type 2 SPDs are intended for installation on the load side of the service equipment overcurrent device, including SPDs located at the branch panel
  - CHSPT2 products provide Type 2 surge protection in accordance with UL 1449 3rd Edition. These units can be mounted outside of any manufacturer's loadcenter or inside an Eaton Surge/ Surge Ready loadcenter. Eaton also offers accessories to the CHSPT2 line for telephone and cable protection.

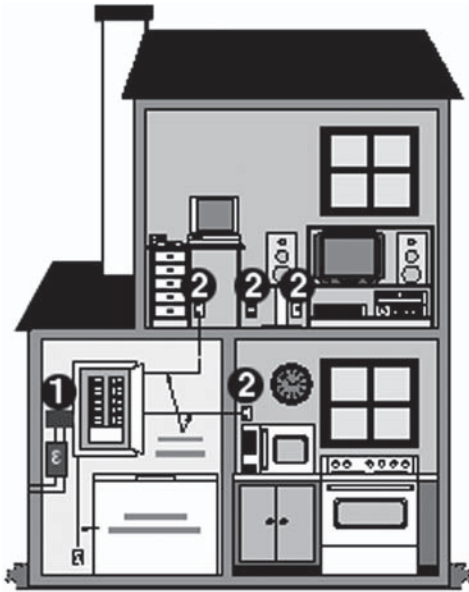
- **Factory-Installed Surge Protection**—Eaton's loadcenters with factory-installed surge protection include a CHSPT2ULTRA and a two-pole 50A circuit breaker. These loadcenters increase the effectiveness of surge protection due to reduced lead length. A modified deadfront allows for easy viewing of indicating lights for status indication



Surge Panel

- **Surge Ready Loadcenter**—The Surge-Ready loadcenter provides a mounting provision for the CHSPT2ULTRA. This loadcenter has a modified deadfront to allow for viewing of indicating lights.

### Two-Stage Protection



① CHSP installed at the service entrance panel.

② SurgeTrap™ surge traps and strips located where sensitive electronics are plugged in.

### Plug-On Surge Protection

- **Type CHSA**—For use on single-phase 120/240 Vac systems. The CHSA easily plugs into a single-phase Type CH loadcenter and occupies two 3/4-inch (19.1 mm) pole spaces, similar to a two-pole Type CH breaker. When installed properly, it provides surge protection for the entire loadcenter. If internal components are damaged, the CHSA LED visual indicators will signal the need for a replacement. This device is suitable for service entry locations when installed in accordance with NEC® guidelines.
- **Type BRSURGE**—For use on single-phase 120/240 Vac systems. This easily plugs into a single-phase Type BR loadcenter and occupies two 1-inch (25.4 mm) pole spaces similar to a two-pole Type BR breaker. When installed properly, it provides surge protection for the entire loadcenter. If internal components are damaged, the BRSURGE LED visual indicators will signal the need for replacement. This device is suitable for service entry locations when installed in accordance with NEC guidelines. This unit is also classified by UL for use in select GE, ITE/Siemens, and Crouse-Hinds Panels. (Refer to Pub No. 5655B65H01 for additional details.)

- **Type CHQSA**—For use on single-phase, 120/240 Vac systems. This unit easily plugs into a Square D single-phase loadcenter Type QO® and occupies two 3/4-inch (19.1 mm) pole spaces similar to a two-pole Type QO breaker. When installed properly, it provides surge protection for the entire loadcenter. If internal components are damaged, the CHQSA LED visual indicators will signal the need for a replacement. This device is suitable for service entrance locations installed in accordance with NEC guidelines. This device is UL classified to be used in place of Square D Type QO surge arresters (refer to Pub-23974).

- **Type BRSURGECSA**—For use on single-phase 120/240 Vac systems. This easily plugs into a single-phase Type BR loadcenter and occupies two 1-inch (25.4 mm) pole spaces similar to a two-pole Type BR breaker. When installed properly, it provides surge protection for the entire loadcenter. If internal components are damaged, the BRSURGECSA LED visual indicators will signal the need for replacement. This device is suitable for service entry locations when installed in accordance with Canadian Electrical Code. This device is CSA® listed to be used in a Type BR loadcenter.

### Type 3 Point-of-Use Surge Protection

Point-of-use surge strips are designed to offer premium surge protection for specific electronics while providing innovative features to enhance user convenience.

### Standards and Certifications




- CHSPT1 Products: UL 1449 3rd Edition Type 1
- CHSPT2 Products: UL/cUL® 1449 3rd Edition Type 2
- CHSPTELE: UL 497A, cUL
- CHSPCABLE: UL 6500, cUL
- NEMA® 3R Enclosure for CHSPTELE and CHSPCABLE: UL 50 Enclosure
- BRSURGE, CHSA, BRSURGECSA, CHQSA: UL 1449 3rd Edition plug-in type; Type 2 SPD



## SPD Type 2 CHSP Service Entrance Surge Protection—UL 1449 3rd Edition; cUL

**Product Features**

- AC power protection
- Universally connects to any manufacturer's loadcenter (breaker box)
- Quick connect design—easy to mount telephone and cable protection modules
- LED status indication

Catalog Number	Connection	Enclosure	Voltage	Phase	Frequency (Hz)	MCOV <sup>①</sup>	VPR <sup>②</sup>	I <sub>n</sub> <sup>③</sup>	SCCR <sup>④</sup>	Surge Current Capacity, Per Phase Rating <sup>⑤</sup>	
<b>CHSPT2ULTRA</b> 	CHSPT2ULTRA	Can be attached to the outside of any manufacturer's loadcenter (breaker box). This product should be connected on the load side of the loadcenter main service disconnect through a dedicated circuit breaker (follow NEC Guidelines).	NEMA 4	120/240 Vac rated line voltage	Single	60	150V L-N, 300V L-L	600V L-N, 1000V L-L, 800V N-G, 600V L-G	20 kA <sup>⑥</sup>	22 kA	<b>108 kA</b> (L1-N 54 kA, L1-G 54 kA, L2-N 54 kA, L2-G 54 kA)
<b>CHSPT2MAX</b> 	CHSPT2MAX	Can be attached to the outside of any manufacturer's loadcenter (breaker box). This product should be connected on the load side of the loadcenter main service disconnect through a dedicated circuit breaker (follow NEC Guidelines).	NEMA 4	120/240 Vac rated line voltage	Single	60	150V L-N, 300V L-L	600V L-N, 1000V L-L, 800V N-G, 600V L-G	10 kA	22 kA	<b>72 kA</b> (L1-N 36 kA, L1-G 36 kA, L2-N 36 kA, L2-G 36 kA)
<b>CHSPT2MICRO</b> 	CHSPT2MICRO	Can be attached to the outside of any manufacturer's loadcenter (breaker box). This product should be connected on the load side of the loadcenter main service disconnect through a dedicated circuit breaker (follow NEC Guidelines).	NEMA 4	120/240 Vac rated line voltage	Single	60	150V L-N, 300V L-L	600V L-N, 1000V L-L, 800V N-G, 600V L-G	5 kA	22 kA	<b>36 kA</b> (L1-N 18 kA, L1-G 18 kA, L2-N 18 kA, L2-G 18 kA)

**Notes**

- <sup>①</sup> MCOV: Maximum Continuous Operating Voltage that may be applied to the device per mode.
- <sup>②</sup> VPR: Voltage Protection Rating is the measured limiting voltage after a surge event.
- <sup>③</sup> I<sub>n</sub>: Nominal Discharge Current is the current that the device can withstand for 15 impulses.
- <sup>④</sup> SCCR: The amount of current the product can withstand under short-circuit conditions.
- <sup>⑤</sup> Surge Current Capacity: The maximum one time surge current rating per phase.
- <sup>⑥</sup> When used with a 50A two-pole circuit breaker, 10 kA when used with a 15A two-pole circuit breaker.

For warranty details, go to [www.eaton.com/surgetrap](http://www.eaton.com/surgetrap).