



Surge Protection Devices and NEC Code 2020

White Paper

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Infinite Electronics

The latest NEC 2020 Sections detail the *requirement of surge protection devices (SPDs)* in specific applications.

In this document, we will go through each section and identify the application, provide examples, and identify potential surge protection solutions.

New Requirements:

Section 230.67 (A) – Dwellings

All services supplying dwelling units shall be provided with a surge protection device (SPD).

Sensitive electronics and systems found in modern appliances, safety devices (IE: GFI outlets), smoke alarms, and other equipment in homes, apartments, and other dwellings warrant protection by surge protection devices. If compromised by surges, these systems may be damaged or fail to operate, posing economic and safety concerns.

A Type 1 or Type 2 SPD must be installed at or near the service entrance panel.

Code Exception 230.67 (B): SPD is not required at service entrance panel if you install an SPD at the downstream sub-panels towards the load.

Explanation of Type 1 and Type 2 Surge Protective Devices:

- Type 1 devices are typically intended to be installed before the main breaker in the load center.
- Type 2 devices are installed after the main breaker in the load center.
- Type 1 SPDs are intended for installation between the secondary of the service transformer (utility) 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 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.
- Type 2 SPDs are intended for installation on the load side of the service equipment overcurrent device, including SPDs located at the branch panel.

Examples of Transtector Type 1 and/or Type 2 UL-listed SPDs that can help with this code requirement:

PV Part # B93-00-2141	A Type 1, 200KA/Phase, modular MOV surge protection device for 120/208
APEX Part # 1101-808-1	A Type 2, 160KA/Phase, modular MOV & SASD hybrid surge protection device
SP Part # B70-00-6002	A Type 2, 100KA/Phase, compact MOV surge protection device
SP Part # SP50-240SP	A Type 1 and Type 2, 50KA/Phase, compact MOV surge protection device

Existing Requirements:

Section 708.20 – Critical Operations Power Panels

Surge protection devices shall be provided at all facility voltage distribution levels for critical operation power systems (COPS).

COPS are defined as power systems for facilities or parts of facilities that require continuous operation for public safety, emergency management, national security or business continuity. These include, but are not limited to, power systems, HVAC, fire alarms, security, communications, and signaling for designated critical operations areas. This includes main and distribution panel boards. Protection at these points ensures proper operation in the event of an emergency.

Section 645.18 – Critical Operations Data Systems

Surge protection shall be provided for Critical Operations Data Systems.

This requirement includes information technology equipment systems that require continuous operation for reasons of public safety, emergency management, national security, or business continuity.

Section 620.51 (E) – Emergency Systems

Where any of the disconnecting means in 620.51 has been designated as supplying an emergency system load, surge protection shall be provided.

Emergency system loads includes elevators, escalators, moving sidewalks, chairlifts, and associated equipment—also known as mechanical/automated person or personnel moving systems.

Section 700.8 – Emergency Systems Power Panels

A listed SPD shall be installed in or on all emergency systems switch boards and panel boards.

The NEC defines emergency power systems as systems legally required to automatically supply power to designated loads upon loss of normal power. Included in this category is any main or distribution panel board fed by an emergency generator or secondary power source, as well as a switchboard with an automatic transfer switch. This provision ensures reliable power to critical life safety loads in the event of surges being created during generator transfer, protecting circuitry and equipment downstream.

Section 670.6 – Industrial Machinery

Industrial machinery with safety interlock circuits shall have surge protection installed.

If compromised by over-voltages, safety interlocks may be damaged or fail to operate, causing a safety risk to operators who may not be aware of a disabled or faulty safety mechanism.

Section 694.7 (D) – Wind Power Generation

A surge protection device shall be installed between a wind electric system and any loads served by the premise electrical system.

The surge device can be on the circuit serving the wind electric system or on the load side of the service disconnect.

Section 695.15 – Fire Pumps

A listed surge protection device shall be installed in or on the fire pump controller.

The SPD is necessary to provide protection to the pump controller. A damaged or nonfunctioning controller could lead to catastrophic damage to buildings and pose extreme danger to occupants.

Transtector: Reliable Surge Protection, Same-Day Shipping

Meeting today's NEC code requirements for time-sensitive projects can be challenging with the typical lead times of most surge protection manufacturers. Transtector is not your typical surge protection company.

Whether you need same-day shipping for an urgent project, detailed product information on-demand, or effective customer and technical support, Transtector is poised to help.

E-commerce—Online ordering is easy, with a comprehensive product portfolio, 24/7 online chat, and a commitment to in-stock availability.

Same-Day Shipping—For mission-critical product shipments that require immediate delivery within the shortest available time frame, we offer same-day shipping you can count on.

24/7 Customer Support—Have questions about your order or technical inquiries on a product? Our trained customer service team is online to provide quality customer support day or night.

Professional Services—Customized protection and grounding training courses, consulting, and site audits available from a team of experts in our industry.

Contact us at www.transtector.com or 208 635 6400 for additional support or to schedule a conference call with our technical support team.

Application	Commercial/Residential/Industrial Applications		Light Commercial Applications		Original Equipment Manufacturer/Control Panel Applications		911 Critical facilities	
Product Category	Main Service Entrance		Distribution panelboard, subpanels.		Control panel, point of use		Service Entrance and Subpanels	
NEC code requirements for surge protection	620.51(E), 645.18, 694.7(D), 700.8, 230.67 (A)		620.51(E), 645.18, 695.15, 700.8, 708.20		670.6, 695.15, 708.20		620.51(E), 645.18, 694.7(D), 700.8, 708.20	
IEEE Exposure	Category C		Category B		Category A		Category C	Category B
Typical Panel Current Rating	Unlimited	400 A or lower	Up to 1000 A	Up to 400A	Control panel/point of use up to 200 A		Service Entrance	Subpanels
Peak kA Rating Per Phase	100-600 kA	50-200 kA	100-600 kA	50-200 kA	75 kA	10 kA	Unlimited	Unlimited
UL® 1449 Type	1 and 2*	1 and 2*	1 and 2*	1 and 2*	1 and 2*	2	1 and 2*	1 and 2*
R56 type							2A and 2B	2A
Application	Panel/side-mount	Panel/side-mount	Panel/side-mount	Panel/side-mount	Din Rail	Din Rail	Panel/side-mount	Panel/side-mount
Modularity	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Technology	MOV	MOV	MOV	MOV	MOV	SAD	MOV and SAD/MOV	SAD/MOV
Options								
Internal Disconnect	Yes	No	Yes	No	No	No	No	No
Status indication	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Audible Alarm	Yes	Available as option	Yes	Available as option	No	No	No	No
Form C Contacts	Yes	Available as option	Yes	Available as option	Yes	Yes	Yes	Yes
Surge Counter	Yes	No	Yes	No	No	No	No	No
								
Product Series	PV200	SP200P	LS200P	SP50	I2R75K	I2RIEP	APEX/IMAX	APEX/IMAX

NOTES:

*Must be installed with device ahead of the SPD.

Enclosure ratings: Enclosures are available in a wide variety of options for indoor and outdoor applications.