



## Surge Protective Devices in the N.E.C. – Quick Notes

### Surge Protective Devices & the 10 Foot Tap Rule - 240

**240.21 Location in Circuit.** Overcurrent Protection shall be provided in each ungrounded circuit conductor and shall be located at the point where the conductors receive their supply except as specified in 240.21(A) through (H).

**240.21(B)(1) – Taps Not over 3 m (10 ft) Long.** Exception: Where listed equipment, such as a surge protective device(s) {SPD(s)}, is provided with specific instructions on minimum conductor sizing, the ampacity of the tap conductors supplying that equipment shall be permitted to be determined based on the manufacturer’s instructions.

**240.21(C)(2) – Transformer Secondary Conductors Not over 3 m (10 ft) Long.** Same Exception as **240.21(B)(1)**.

### SURGE PROTECTIVE DEVICES & EMERGENCY SYSTEM LOADS - 620

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

- 620.51(C)(1) “On Elevators Without Generator Field Control.”
- 620.51(C)(2) “On Elevators with Generator Field Control.”
- 620.51(C)(3) “On Escalators and Moving Walks.”
- 620.51(C)(4) “On Platform Lifts and Stairway Chairlifts.”

### Surge Protective Devices & Critical Operating Data Systems - 645

#### 645.2 Information Technology Equipment – Definitions Critical Operations Data Systems

“An information technology equipment system that requires continuous operation for reasons of public safety, emergency management, national security, or business continuity.”

#### 645.18 Surge Protection for Critical Operations Data Systems

“Surge protection shall be provided for critical operations data systems.”

### Surge Protective Devices & Wind Electric Systems - 694

**694.7(D)** “A surge protection device shall be installed between a wind electric system and any loads served by the premises electrical system.”

## **Surge Protective Devices & Fire Pump Controllers - 695**

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

## **Surge Protective Devices & Essential Electrical Systems - 517**

### **517.25 Scope – Essential Electrical Systems**

The essential electrical system for these facilities shall comprise a system capable of supplying a limited amount of lighting and power service, which is considered essential for life safety and orderly cessation of procedures during the time normal electrical service is interrupted for any reason. This includes **clinics, medical and dental offices, outpatient facilities, nursing homes, limited care facilities, hospitals, and other health care facilities serving patients.**

### **517.26 Health Care Facilities– Application of Other Articles**

The essential electrical system shall meet the requirements of Article 700, except as amended by Article 517.

## **Surge Protective Devices & Emergency Systems - 700**

### **700.2 Definitions - Emergency Systems**

Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction.

- Illumination
- Power
- Or Both

### **700.8 “A listed SPD shall be installed in or on all emergency systems switchboards and panelboards.”**

Additional equipment covered under this section may include, but is not limited to:

- automatic transfer switches
- emergency warning systems
- emergency communications systems
- public egress / evacuation sites
- egress illumination
- fire alarm systems
- remote operated doors
- smoke alarms and detectors
- high-rise elevators
- fuel cell power systems
- UPS systems

# Surge Protective Devices & Critical Operations Power Systems (COPS) - 708

## 708.2 Critical Operations Power Systems

“Power systems for facilities or parts of facilities that require continuous operation for the reasons of public safety, emergency management, national security, or business continuity.”

### 708.20(D) “Surge protection devices shall be provided at all facility distribution voltage levels.”

This means everything from the Service Entrance, Distribution Panels, MCCs, and Branch Panels that are part of the COPS.

## Surge Protective Devices & Article 285

### Article 285 Surge-Protective Devices (SPDs), 1000 Volts or Less

#### Par I. General

**285.1 Scope.** This article covers general requirements, installation requirements, and connection requirements for surge protective devices (SPDs) permanently installed on premises wiring systems of 1000 volts or less.


**285.6 Listing.** An SPD shall be a listed device.




**285.7 Short-Circuit Current Rating.** The SPD shall be marked with a short-circuit current rating and shall not be installed at a point on the system where the available fault current is in excess of that rating. This marking requirement shall not apply to receptacles.

**285.12 Routing of Connections.** The conductors used to connect the SPD to the line or bus and to ground shall not be any longer than necessary and shall avoid unnecessary bends.

**285.13 Type 4 and Other Component Type SPD.** Type 4 component assemblies and other components type SPDs shall only be installed by the equipment manufacturer.

Only applies to  Type 4 Recognized Component Assemblies,

not  fully Listed Type 1 or Type 2 stand-alone SPDs.

#### 285.23 Type I SPDs

(A) **Installation.** Type 1 SPDs shall be installed as follows:

- (1) Type 1 SPDs shall be permitted to be connected to the supply side of the service disconnect as permitted in 230.82(4), or
- (2) Type 1 SPDs shall be permitted to be connected as specified in 285.24.

**285.24 Type 2 SPDs.** Type 2 SPDs shall be installed in accordance with 285.24(A) through (C).

- (A) **Service-Supplied Building or Structure.** Type 2 SPDs shall be connected anywhere on the load side of a service disconnect overcurrent device required in 230.91, unless installed in accordance with 230.82(8).
- (B) **Feeder-Supplied Building or Structure.** Type 2 SPDs shall be connected at the building or structure anywhere on the load side of the first overcurrent device at the building or structure.
- (C) **Separately Derived System.** The SPD shall be connected on the load side of the first overcurrent device in a separately derived system.

**285.25 Type 3 SPDs.** Type 3 SPDs shall be permitted to be installed on the load side of branch-circuit overcurrent protection up to the equipment served. If included in the manufacturer's instructions, the Type 3 SPD connection shall be a minimum 10 m (30 ft) of conductor distance from the service or separately derived system disconnect.