

SECTION 26 43 00
SURGE PROTECTIVE DEVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surge protection devices (SPD's) for service entrance switchboard and other panel boards.

1.2 REFERENCES

- A. UL 96A-Standard for Installation Requirements for Lightning Protection System
- B. UL 1363- Standard for Relocatable Power Taps
- C. UL 1449 Standard for Surge Protection Devices
- D. IEEE C62.33- Standard test specifications for Varistor Surge Protection Devices
- E. IEEE C62.41 (IEEE 587) - Recommended Practice on Characterization of Surge in Low-Voltage (1000V and Less) AC Power Circuits Corrigendum
- F. IEEE C62.45- Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage AC Power Circuits

1.3 SYSTEM DESCRIPTION

- A. The work required under this division shall include all materials, labor, and auxiliaries required to furnish and install complete surge protection.
 - 1. Formerly known as Transient Voltage Surge Suppressors (TVSS) or simply Suppressors for the protection of building electrical and electronics systems from the effects of line induced transient voltage surge and lightning discharge as indicated on drawings or specified in this section.
- B. Provide surge protective devices (SPD's) for the equipment described herein:
 - 1. On the electrical service entrance switchboards and panels.
 - 2. On the distribution and branch circuit panels as indicated on drawings.

1.4 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Schematic data on each suppressor type indicating component types.
- C. Dimension drawing of each suppressor type.
- D. Provide the manufacturer's performance data on each suppressor type.
- E. Provide the Underwriters Laboratories approval compliance letter.
- F. Provide the manufacturer's performance data on each suppressor type.

1.5 QUALITY ASSURANCE

- A. A company normally engaged in the design, development, and manufacture of such devices for electrical and electronics system equipment shall manufacture all SPD's.
 - 1. The said firm shall have minimum of 5-years documented experience in manufacturing surge protection devices.
- B. The SPD manufacturer shall offer technical assistance through support by a factory representative and local stocking distributor.

1.6 WARRANTY

- A. Provide 10-year warranty on all SPD's covering defects in materials and workmanship under normal use in accordance with the instructions.
- B. The manufacturer and installer shall repair or replace any SPD, showing evidence of failure or incorrect operation during the warranty period.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Cooper Crouse Hinds-MTL/Atlantic Scientific Inc
- B. LEA International
- C. APT
- D. Square D

2.2 SURGE PROTECTION DEVICES

- A. Surge Protective Devices shall be UL Type 1 or Type 2 rated and supplied in accordance with their intended installation location.
- B. Provide Surge Protective Devices listed in accordance with UL 1449, Third Edition- marked in accordance with referenced standard and approved for the installed location in.
- C. Surge Protective Devices shall be either close nipped to the device being protected or mounted internally in a position which minimizes lead length between suppressor and the panel circuit breaker to which the suppressor manufacturer's recommended maximum lead length is not exceeded without specific approval of the Engineer.
- D. Surge Protective Devices shall be designed for the specific type and voltage of electrical service and shall have interrupting rating (AIC) equal to or greater than the available fault currents at the terminal of the panel that is being protected but the unit AIC shall not be less than 25,000 amps, symmetrical.
- E. Provide Surge Protective Devices designed to withstand a maximum continuous operating voltage of not less than 115% of nominal RMS line voltage.
- F. Provide Surge Protective Devices containing internal safety surge rated fusing designed to disconnect the suppressor from the electrical source if the suppressor fails.
- G. Surge Protective Devices shall be failsafe, shall have no holdover current, shall have repeated surge capability, shall be solid state and self-restoring, and shall be fully automatic.
- H. Surge Protective Devices shall contain a visual indication on the front door of the enclosure of the SPD unit to verify either that the suppressor has failed or that the suppressor is operational and functional.
- I. Surge Protective Devices shall have an operating temperature range of (-40°C) to (+60°C.)
- J. All SDP's shall have a UL 1449, third edition "In" rating of 20KA, qualifying for LPS master labeling under UL 96A.

2.3 SUPPRESSOR CRITERIA

- A. Surge Protective Device for service entrance equipment (switchboard/panel board):
 - 1. 277/480 volt, 3 phase, 4 wire, WYE
 - a. Provide seven modes protection, line to neutral, line to ground, and neutral to ground.
 - b. Suppression voltage of 1200 volts maximum.
 - c. Surge capacity of 100,000 AMPS
 - d. Modular per mode unit audible alarm after failure
 - 2. 120/208 volt, 3 phase, 4 wire, WYE
 - a. Provide seven modes protection, line to neutral, line to ground and neutral to ground.
 - b. Suppression voltage of 600 volts maximum.
 - c. Surge capacity of 100,000 AMPS
 - d. Modular per mode unit audible alarm after failure
- B. Surge Protective Device for distribution and branch panels:
 - 1. 277/480 volt, 3 phase, 4 wire, WYE
 - a. Provide normal modes protection: line to neutral, line to ground, and neutral to ground.

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- b. Suppression voltage of 1200 volts maximum.
 - c. Surge capacity of 70,000 AMPS
 2. 120/208 volt, 3 phase, 4 wire, WYE
 - a. Provide normal modes protection: line to neutral, line to ground, and neutral to ground.
 - b. Suppression voltage of 600 volts maximum.
 - c. Surge capacity of 70,000 AMPS

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install the suppressors as close as practical or mount internally to the electric panel or electronic equipment to be protected, consistent with available spaces.
- B. Install the suppressors in a neat, competent manner.
 1. Provide a lead length as short (36" maximum length) and as straight as possible.
 2. Consistent with industry requirements for the type of system installed.
- C. Use #6 AWG copper conductor and approved connections for supplementary grounding and bonding connections required between the bonding bus or ground plane for each equipment cluster and other locations as indicated unless otherwise noted.
- D. Install Surge Protective Devices and locate in accordance with requirements of all applicable NFPA codes.

3.2 DEMONSTRATION AND TRAINING

- A. Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative.
 1. Provide competent, factory authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems.
 2. Schedule the instruction in coordination with the Owner's Representative after submission and approval of formal training plans.
 3. Refer to Section 01 91 00, Commissioning, for further contractor training requirements.
- B. Provide demonstration and training for all types of SPD's installed in this project.

END OF SECTION