

## SECTION 26 43 13

### SURGE PROTECTION FOR LOW VOLTAGE POWER CIRCUITS

#### PART 1 GENERAL

##### 1.01 QUALIFICATIONS

- A. Manufacturer shall be a company specializing in lightning or surge protection equipment with a minimum three (3) years of documented experience.
- B. Those firms responding to this specification shall provide proof that they have been regularly engaged in the design, manufacturing and testing of SPD for not less ten (10) years.

##### 1.02 WARRANTY

- A. Manufacturer shall provide a product warranty for a period of not less than five (5) years. Warranty shall cover unlimited replacement of SPD modules during the warranty period.

#### PART 2 PRODUCTS

##### 2.01 ACCEPTABLE MANUFACTURERS – SPD.

- A. Current Technology.
- B. Eaton/Cutler-Hammer.
- C. General Electric.
- D. LEA International.
- E. Liebert.
- F. Siemens.
- G. Square D.

##### 2.02 MATERIALS SPD

- A. Transient Voltage Surge Suppressor (SPD) shall be listed in accordance with UL 1449 4<sup>th</sup> edition, UL 1283 6<sup>th</sup> edition, and UL 67 12 edition for internal panelboard mounted types.
- B. All primary transient paths shall utilize copper wire, aluminum bus bar and lugs of equivalent capacity to provide equal impedance interconnection between phases. Small gauge wiring nor plug-in module or components shall be used in surge carrying paths.
- C. The SPD ground shall be bonded to the service entrance ground. Panelboard SPD units shall be grounded to the panelboard ground bar.
- D. Each protection module shall have a visual indicator that signifies that the protection circuitry is on line. The unit shall not be taken off line to verify integrity of system. Redundant status indicators shall be mounted on the front of the door that monitors the system protection circuitry. A push-to-test button shall be provided to test each phase indicator.
- E. The system shall be modular with field replaceable modules. Modular units shall contain a minimum of one module per phase.
- F. Each protection module shall have a capacitive filtering system connected in each Line to Neutral (L→N)(Wye) mode or Line to Line (L→L)(Delta) mode to provide EMI/RFI noise attenuation (UL 1283).
- G. Protection modes: The SPD shall provide Line to Neutral (L→N)(Wye), Line to Ground (L→G) (Wye or Delta), Line to Line (L→L)(Delta) and Neutral to Ground (N→G)(Wye) protection.
- H. Equipment shall provide the following monitoring features: digital surge counter, audible alarm with alarm disable switch, disconnect switch, remote status monitor and spare module.
- I. Equipment shall utilize a NEMA 12 enclosure if mounted outside the main switchgear lineup or panelboard.

- J. Provide dry contacts (one normally open and one normally closed) to allow connection to a remote monitor or other system. The output of the dry contacts shall indicate a failure of a phase or the entire unit.
- K. The SPD shall include an internal UL listed disconnect switch.
- L. Static Voltage Regulator (SVR) clamp levels for wye and single phase (L-N, L-G and N-G):
  - 1. 400-600V for 120V systems.
  - 2. 800-1200V for 277V systems.
  - 3. 1200-1500V for 347V systems.
- M. SVR clamp levels for high leg circuits:
  - 1. L-N: 400-600V for 120/240V systems.
  - 2. L-N: 800-1200V (High Leg).
  - 3. L-G: 400-600V for 120/240V systems.
  - 4. L-G: 800-1200V (High Leg).
  - 5. N-G: 400-600V for 120/240V systems.
- N. SVR clamp levels for delta circuits (L-L and L-G):
  - 1. 1000-1200V for 240V systems.
  - 2. 1500-1800V for 480V systems.
  - 3. 1800-2000V for 600V systems.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. The specified service entrance/switchboard/switchgear system shall be installed with the shortest lead length possible not to exceed five (5') electrical feet from the power conductor(s) it is protecting, must have a grounding of 25 Ohms (NEC Article 250.56) or less and shall avoid any unnecessary or sharp bends.
- B. The specified branch panel system shall be installed with the shortest lead length possible not to exceed five (5') electrical feet from the power conductor(s) it is protecting, must have a grounding of 25 Ohms (NEC Article 250.56) or less and shall avoid any unnecessary or sharp bends.

**END OF SECTION 26 43 13**