

SECTION 263553

TRANSIENT VOLTAGE SURGE SUPPRESSION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. TVSS Equipment.

1.2 RELATED SECTIONS

- A. Section 26 05 26 - Grounding and Bonding.
- B. Section 26 05 34 - Boxes.
- C. Section 26 41 00 - Lightning Protection Systems.

1.3 SYSTEM DESCRIPTION

- A. Transient voltage surge suppressions (TVSS) for the protection of all AC electrical circuits and exterior signal circuits.

1.4 REFERENCES

- A. UL 1449 - Standard for safety, transient voltage surge suppressors.

1.5 SUBMITTALS FOR REVIEW

- A. Shop Drawings: Indicate electrical characteristics and connection requirements. Show installation details and system configuration.
- B. Product Data: Provide dimensions and materials of each component and include indication of listing in accordance with UL 1449.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.6 PROJECT RECORD DOCUMENTS

- A. Record actual locations of TVSS devices.

1.7 QUALITY ASSURANCE

- A. Submit under the provisions of Division 01.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with a minimum of three (3) years' documented experience, and with service facilities within 100 miles of project.
- B. Supplier: Authorized distributor of specified manufacturer with a minimum of three (3) years' documented experience.

- C. Installer: Authorized installer of specified manufacturer with service facilities within 100 miles of project.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Advanced Protection Technologies.
- B. Liebert.
- C. LEA International.
- G. Square D.

2.2 COMPONENTS

- A. Suppression Elements: Between each phase conductor and the system neutral and between the neutral conductor and ground.
- B. Indicator Lights: Visible indication of proper suppressor connection and operation.
- C. Maximum single per phase impulse current rating (L-N, L-G, N-G): 240,000 Amps for service entrance, 120,000 Amps per phase (L-N, L-G, N-G) for distribution panels and 25,000 Amps per phase for 120V hard wired suppressors.
- D. The TVSS UL1449 Clamping voltage and the Category C3 clamping voltage (ANSI/IEEE c.62.41 - 1991 (20KV - 1.2/50 us., 10KA - 8/20 us) for any suppression mode shall not exceed 500 volts for 120/208V electrical systems and 800 volts for 277/480V systems.
- E. Pulse Life Rating: 1,000 occurrences with no clamping drift for service entrance and secondary distribution panels; 3,000 amperes every thirty (30) seconds for 200 occurrences for hard-wired suppressors.
- F. Turn-on And Turn-Off Times: Less than one nanosecond.
- G. Construction: Surge current modules (MOV based).
- H. Alarm: Visual and/or alarm shall actuate when any surge current module has failed. If the alarm is audible an on/off switch shall silence the alarm and a push-to-test switch shall be provided to test the alarm.

PART 3 EXECUTION

3.1 SERVICE ENTRANCE

- A. Install one primary suppressor at each utility and emergency generator service entrance to the facility, according to the manufacturer's recommendations.
- B. Suppressors shall be installed on the line side of the service entrance with proper protection.
- C. Conductors between suppressor and point of attachment shall be kept as short and straight as possible.
- D. Suppressors ground shall be bonded to the service entrance ground.

3.2 SECONDARY DISTRIBUTION PANELS

- A. Install one secondary suppressor at each subpanel location located on plans.
- B. Suppressor shall be installed on subpanel per manufacturer's installation instructions.
- C. Conductors between suppressor and point of attachment shall be kept as short and straight as possible.
- D. Neutral and ground shall not be bonded together at secondary panelboard locations.

3.3 ELECTRONIC EQUIPMENT AC POWER SUPPLY

- A. Install one hard-wired circuit suppressor between each equipment item and its power supply conductors and between each equipment item and all exterior incoming lines as follows:
 - 1. Fire alarm control panel (including incoming telephone lines and alarm lines).
 - 2. TV head-end equipment.
 - 3. Telephone switch (receptacles and incoming business lines).
 - 4. Med-Gas alarm systems.
- B. Install suppressor according to the manufacturer's recommendations.

END OF SECTION