

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- .1 This section specifies requirements for the supply and installation of Transient Voltage Surge Suppression (TVSS) for the protection of the building electrical system.

1.2 REFERENCES

- .1 IEEE C62.41-1991, Surge Voltages in Low-Voltage AC Power Circuits.
- .2 ANSI/IEEE 1100-2005, Powering and Grounding Electronic Equipment.
- .3 NEMA LS1-1992, Low Voltage Surge Protection Devices.
- .4 OSHA, Occupational Safety and Health Association, Compliance Handbook 1992.
- .5 UL 1283-15, Electromagnetic Interference Filters.
- .6 UL 1449-2006, Transient Voltage Surge Suppressors.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings and product data in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Provide Shop Drawings with wiring diagrams, installation information, testing and maintenance procedures, and operational information for the transient protection system.
- .3 Indicate:
 - .1 Dimensional Drawing indicating proposed mounting arrangements.
 - .2 Written functional description of the transient protection circuit in terms of components, configuration, design approach, and performance capability per NEMA LS1.
 - .3 The means of connection of the TVSS to the electrical distribution system per NEMA LS1.
 - .4 Manufacturer will provide UL-1449, data card showing the Suppressed Voltage Rating (SVR) for the specific catalog number submitted. "Typical" UL 1449, data is not acceptable.

- .5 Mark the devices with the short circuit current rating. This rating must meet or exceed the available fault current. Provide test data from an independent testing laboratory to demonstrate the short circuit current rating has been tested on a complete device.
- .6 Submit test report data clearly demonstrating the maximum surge current rating has been tested on a complete TVSS unit including all necessary fusing/overcurrent protection, thermal disconnects, integral disconnects and monitoring systems. Manufacturers who cannot provide this data will not be considered.
- .7 Submit data demonstrating the complete TVSS unit, including all overcurrent protection, is fully capable of a minimum repetitive surge current rating of 12,000 ANSI/IEEE C62.41, Category C3 (10kA) impulses without failure or a change in performance characteristics of more than 10%.
- .8 Written detailed response to each paragraph of the specification indicating that the proposed product meets or exceeds this specification. If specific paragraphs are not met, provide written explanation as to why not.

1.4 EXTENDED WARRANTY

- .1 Provide an extended product warranty for a period of not less than 10 years from the Date of Substantial Completion. Warranty to cover unlimited replacement of system protection modules during warranty period. The first five (5) years of this warranty must include any field labor required to perform repair or replacement work.

1.5 OPERATION AND MAINTENANCE DATA

- .1 Provide maintenance data for TVSS for incorporation into manual specified in Section 01 78 00 - Closeout Procedures.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Acceptable Products:
 - .1 Liebert: Interceptor II
 - .2 Current Technology: SEL
 - .3 Cutler-Hammer Clipper Supervisor Series.

2.2 ENVIRONMENTAL

- .1 General requirements:
 - .1 No audible noise shall be generated.
 - .2 Operating Conditions:
 - .1 30 - 130 Degrees F
 - .2 15 - 85 Percent Humidity Non-Condensing
- .2 Enclosure: unit to have a heavy duty NEMA 12 dust-tight, drip-tight enclosure.

2.3 SURGE SUPPRESSORS

- .1 General requirements:
 - .1 Rated for a 600Y/347 volt, 60 Hertz, 3-phase, 4-wire.
 - .2 Provide surge suppressors in accordance with the following requirements:
 - .1 Parallel in design and connect in parallel to main bus of main distribution panel. Each surge suppression element (MOV) must be individually fused so that a failure of one element and/or fuse shall not affect other surge suppression elements.
 - .2 Unit to be UL 1449 Listed.
 - .3 Unit to provide maximum UL 1449 Surge Voltage Rating (SVR) for 600Y/347 Volt systems as follows:
 - .1 L-L = 2000V
 - .2 L-N = 1000V
 - .3 L-G = 1000V
 - .4 N-G = 1000V
 - .4 Unit to provide maximum surge current rating of 200,000 amperes per mode (L-L, L-G) and 400,000 amperes per phase based on ANSI/IEEE C62.41 standard 8 by 20 microsecond current waveform.
 - .5 Unit to have a short circuit current rating of 50,000 amperes at rated voltage or greater.
 - .6 Unit to be UL 1283 listed as an electromagnetic interference filter and provide 50 Ohm noise attenuation of at least 40 dB at 100 kHz, 30 dB at 1 MHz, 35 dB at 10 MHz, and 50 dB at 100 MHz.
 - .7 Unit to include solid-state, long-life externally mounted LED visual status indicators that indicate the on- line status and operational integrity of each phase of the unit.
 - .8 Unit to have a Form C summary alarm output contact rated for at least 1 amp at 120VAC for remote annunciation of TVSS status.

- .9 Unit to include a built-in, push-to-test feature that tests the integrity of all modules, MOVs and fuses in the system. Manufacturers that require an external test device to perform this feature will include the test set in this quotation.
- .10 Unit to have an audible alarm with an alarm on/off switch to silence the alarm and a push to test switch to test the alarm function.
- .11 Provide an adjustable (resettable) counter to totalize transient voltage surges in both the normal and common mode. Provide the counter with a 10-year battery back-up to maintain counts in the event of power loss.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 General requirements:
 - .1 Install suppression system where indicated on the drawings.
 - .2 Conductors between suppressor and point of attachment to service equipment shall be as short as possible, preferably not exceeding 600 mm.
 - .3 Grounding: bond suppressor ground to the equipment grounding conductor and service entrance ground.
- .2 Arrange and pay for a factory certified representative to set up and commission the TVSS at site for proper operation to the satisfaction of the Departmental Representative. Document all testing and set up and submit to the Departmental Representative.

END OF SECTION