

## SECTION 26 43 13 – TRANSIENT-VOLTAGE SUPPRESSION

## PART 1 - GENERAL

## 1.1 DESCRIPTION

- A. Provide transient voltage surge suppression equipment of a type indicated and specified herein, at locations shown on the Drawings
- B. Utilization voltages shall be as noted on the one-line diagram.

## 1.2 QUALITY ASSURANCE

- A. Underwriters Laboratories, Inc., listing/approval.
- B. U.L. Standard UL 1449 Rev. 2 "Transient Voltage Surge Suppressors."
- C. National Electrical Code.
- D. Product must be made by a company engaged in the manufacture of such devices for a minimum of 10 years.
- E. Source limitations: Obtain suppression devices from a single manufacturer.
- F. IEEE Compliance: Comply with ANSI/IEEE C62.41, "IEEE Guide for Surge Voltages in Low Voltage AC Power Circuits" and test devices in accordance with ANSI/IEEE C62.45, "IEEE Guide for Surge Suppressor Testing."
- G. NEMA Compliance: Comply with NEMA LS-1 "Low Voltage Surge Protective Devices."

## 1.3 SUBMITTAL AND RECORD DOCUMENTATION

- A. Product Data: For each type of product indicated. Include operating voltage, rated capacities, operating temperature, shipping and installed weights, and items per Part 2 - Products.

- B. Field Test Reports: Written reports of tests specified in Part 3 of this Section. Include the following:
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.
  - 3. Failed test results and corrective action taken to achieve requirements.
- C. Maintenance Data: To include installation instructions, operation and maintenance manuals specified in Division 1.
- D. Warranties: Special warranties specified in this Section.

#### 1.4 PROJECT CONDITIONS

- A. Placing into Service: Do not energize or connect service entrance equipment or panelboards to their sources until the surge protective devices are installed and connected. Do not single-phase, hi-pot or megger Service Entrance Equipment without disconnecting the surge protection device, as damage may result from these procedures to the surge protective device.
- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Architect's written permission.
- C. Service Conditions: Rate surge protective devices for continuous operation under the following conditions, unless otherwise indicated:
  - 1. Maximum Continuous Operating Voltage: Not less than 125% of nominal system operating voltage for 120/240V Single-Phase or 208Y/120V Wye systems. Not less than 115% for 480Y/277V Wye or 480V Delta systems.
  - 2. Operating Temperature: -40 to +185 degrees F (-40 to +85 degrees C)
  - 3. Humidity: 0 to 95%, noncondensing.

4. Altitude: Less than 20,000 feet (6,000 meters) above sea level.

## 1.5 COORDINATION

- A. Coordinate location of field mounted surge suppressors to allow adequate clearances for maintenance, clearance per NEC and all local electrical codes.

## 1.6 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of surge suppressors that fail in materials or workmanship within the following:
  1. Ten years (120 months) from date of Substantial Completion for service-entrance model.
  2. Five years (60 months) from date of Substantial Completion for panelboard model.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements of this specification herein, provide products by one of the following manufacturers:
  1. Intermatic, Inc.
  2. Wiremold.
  3. Leviton.
  4. Transtector Systems, Inc.
  5. LEA International
  6. Square D
  7. Cutler-Hammer
  8. Siemens
  9. GE

- B. This specification is performance based, and any other vendors who desire approval to bid this project shall refer to Section 16050 for product substitution request instructions.

## 2.2 SERVICE ENTRANCE TYPE SURGE SUPPRESSION

- A. Surge Protection Device Description: With the following features and accessories:
1. LED indicator lights for power and protective status.
  2. Utilizing metal oxide varistor technology.
  3. Integral EMI/RFI Filter providing up to 54 dB of attenuation from 20kHz to 100 MHz, which is UL1283 Listed.
  4. Internal surge fuses rated at a minimum of 200 KA interrupting capacity.
  5. Including thermal protection for each component, which is continuously monitored.
  6. Internal surge module easily replaceable.
  7. Integral Form C Contacts for remote indication of suppression status via connection to building management system (BMS provided by other Section of these Specifications)
  8. Integral Audible Alarm with silence switch.
  9. Nema 3R enclosure suitable for indoor or outdoor installation.
- B. Single Impulse Surge Current Capacity shall be as follows:
1. 125KA Line to Neutral, Line to Ground, Line to Line, and Neutral to Ground.
- C. UL 1449 (6KV, 500 Amp) let-through voltages as follows:

Mode	120/240V, 1-ph	208Y/120V, Wye	120/240V Delta	480Y/277V Wye
L-N	460V	460V	460V/632V	873V
L-G	480V	480V	480V/664V	857V
N-G	512V	512V	512V	774V
L-L	763V	763V	935V	1,523V

- D. Part Number: Intermatic "PG4000" series or equal by approved vendor.

## 2.3 PANELBOARD TYPE SURGE SUPPRESSION

## A. Surge Protective Device Description: With the following features and accessories:

1. LED indicator lights for power and protective status.
2. Utilizing metal oxide varistor technology.
3. Internal fuses rated at a minimum of 100KA interrupting capacity.
4. Including thermal protection for each component, which is continuously monitored.
5. Nema 1 enclosure suitable for indoor installation.
6. Flush mounting plate available for flush mount installations.

## B. Single Impulse Surge Current Capacity shall be as follows:

1. 26KA Line to Neutral, Line to Ground, Line to Line, and Neutral to Ground.

## C. UL 1449 (6KV, 500 Amp) let-through voltages as follows:

Mode	120V 1-ph	120/240V, 1-ph	208Y/120V, Wye	120/240V Delta	480Y/277V Wye
L-N	419V	376V	392V	392V/627V	791V
L-G	435V	389V	385V	385V/635V	775V
N-G	416V	365V	375V	373V	396V
L-L	N/A	635V	644V	661V	1,240V

## D. Part Number: Intermatic "EH" series or equal by approved vendor.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install devices at service entrance, distribution panels, and panelboards as indicated on electrical one-line diagram.
- B. Provide multi-pole, 100 Amp circuit breaker as a dedicated disconnect for the suppressor at Service Entrance location, unless otherwise indicated on drawings.
- C. Install devices per manufacturer's instructions with conductors between suppressor and points of attachment as short and as straight as possible. Do not mount internal to switchgear, to facilitate ease of future maintenance and/or replacement.
- D. Provide multi-pole, 30 Amp breaker as a dedicated disconnect for the suppressor at panelboard locations, unless otherwise indicated on drawings.

### 3.2 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

### 3.3 FIELD QUALITY CONTROL

- A. Testing: Perform the following field quality control testing:
  - 1. After installing the surge protective devices, but before electrical circuitry has been energized, test for compliance with requirements (voltage, temperature, etc.)
  - 2. Complete start-up checks and voltage verifications according to manufacturer's written instructions.
  - 3. Perform visual and mechanical inspection on each unit. Certify that units are installed per manufacturer's recommendations.
- B. Repair or replace malfunctioning units. Retest after repairs or replacements are made.

END OF SECTION 26 43 13