

A. SUBPANEL and LIGHTING PANEL PROTECTION

1. SPD(s) for this location shall be as indicated on project drawings. SPD shall be separate from panel board. Integral SPD shall not be acceptable. SPD's shall be certified to UL1283 and UL1449 Fourth Edition. Type 1, 10kA I-n for use in Type 1 and Type 2 locations.
2. Subpanels and lighting panels shall be protected by a Total Protection Solutions panel mounted SPD, TK-TT2-065-600NN-FL for 600 (3W+G) volt panels, TK-TT2-065-3Y600-FL for 347/600 (4W+G) volt panels, TK-TT2-100-3Y208-FL for 120/208 (4W+G) volt panels and TK-TT2-100-1S240-FL for 120/240 (3W+G) volt split phase panels:
3. The manufacturer shall provide written specifications showing let-through voltage of the unit with six inches of lead length (at the module or at the lug data is not acceptable as it does not represent true "as installed" performance) pursuant to ANSI/IEEE C62.41 and C62.45, 2002, categories A1 ring wave, 180 degree phase angle, category B3, Impulse Wave and UL suppressed voltage ratings, 90 degree phase angle, positive polarity, measurements in peak voltage from the zero reference, all dynamic tests except N-G, which shall be no higher than:

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|---|----------------------------------|-------|-----|------|
| ANSI/IEEE C62.41-1991 Measured Limiting Voltage | | | | |
| A1 Ring Wave (2kV, 67A) | | | | |
| Voltage (Voltage Code) | Tested at 180 degree phase angle | | | |
| | L-N | L-G | L-L | N-G |
| 120/240 (1S240) | 36V | 283V | 56V | 322V |
| 120/208 (3Y208) | 36V | 283V | 56V | 322V |
| 347/600 (3Y600) | 58V | 982V | 88V | 948V |
| 600 (600NN) | | 1265V | 50V | |

| | | | | |
|----------------------------|---------------------------------|-------|-------|-------|
| B3 Impulse Wave (6kV, 3kA) | | | | |
| Voltage (Voltage Code) | Tested at 90 degree phase angle | | | |
| | L-N | L-G | L-L | N-G |
| 120/240 (1S240) | 590V | 597V | 980V | 590V |
| 120/208 (3Y208) | 590V | 597V | 980V | 590V |
| 347/600 (3Y600) | 1191V | 1170V | 2292V | 1197V |
| 600 (600NN) | | 2223V | 2228V | |

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|--|-------|-------|-------|-------|
| UL 1449 Voltage Protection Ratings per 4 th edition | | | | |
| Voltage (Voltage Code) | L-N | L-G | L-L | N-G |
| 120/240 (1S240) | 600V | 600V | 1000V | 600V |
| 120/208 (3Y208) | 600V | 600V | 1000V | 600V |
| 347/600 (3Y600) | 1200V | 1200V | 2000V | 1200V |
| 600 (600NN) | | 2500V | 2500V | |

4. The unit shall have a peak surge current of no less than 65kA/phase, 30kA/mode, 8 X 20 us waveform, single impulse, verified by third party test reports.
5. Internal Fusing - Over current Protection
 - a. Each Metal Oxide Varistor, or other primary suppression component, shall be individually fused for safety and performance to allow the SPD to withstand the full rated single pulse peak surge capacity per mode without the operation or failure of the fuses. Over-current fusing that limits the listed peak surge current of the SPD is not acceptable. Replaceable cartridge type per phase or per mode over-current fusing is not acceptable.
 - b. Component Level Fusing (CLF) shall be present in every mode, including Neutral-to-Ground.
 - c. The fusing shall be capable of interrupting up to a 200kA symmetrical fault current with 600VAC applied.
6. The SPD shall be capable of attenuating internally generated ringing type transients and noise, and shall have an enhanced transient filter supported by a specification sheet which lists the IEEE A1 Ring Wave let-through levels no higher than those set forth above.
7. For voltages less than 300V: Because of space limitation, the enclosure shall not exceed 200 cubic inches to allow close-to-the load installation on flush mount panels and between adjacent panels. For recessed panels, a flush mount cover plate shall be provided with each unit. For voltages greater than 300V the enclosure shall not exceed 340 cubic inches
8. The suppressor shall include one status indicator light per phase for monitoring capability and shall have at minimum a Nema 1 steel enclosure.
9. The SPD shall come standard with not less than a Twenty-five Year Warranty, and the warranty shall include unlimited free replacements of the unit if destroyed by lightning or other transients during the warranty period. Warranties limited to defects in workmanship and materials are not acceptable. Special or optional warranties in excess of the unit's standard warranty for purposes of this bid are not acceptable.
10. The SPD shall have an internal audible alarm with mute on front cover.
11. For further information contact 800-853-8265.