



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-LP080-3Y208-FL for 120/208 (4W+G) volt panels and TK-LP080-1S240-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 & A3 ring wave, 180 degree phase angle, category B3 Ringwave, 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:

ANSI/IEEE C62.41-1991 Measured Limiting Voltage

A1 Ring Wave (2kV, 67A)	Tested at 180 degree phase angle			
Voltage (Voltage Code)	L-N	L-G	L-L	N-G
120/240 (1S240)	29V	46V	39V	40V
120/208 (3Y208)	29V	46V	39V	40V

A3 Ring Wave (6kV, 200A)	Tested at 180 degree phase angle			
Voltage (Voltage Code)	L-N	L-G	L-L	N-G
120/240 (1S240)	56V	81V	88V	112V
120/208 (3Y208)	56V	81V	88V	112V

B3 Ring Wave (6kV, 500A)	Tested at 90 degree phase angle			
Voltage (Voltage Code)	L-N	L-G	L-L	N-G
120/240 (1S240)	437V	592V	612V	324V
120/208 (3Y208)	437V	592V	612V	324V

UL Voltage Protection Ratings 4 th Edition				
Voltage (Voltage Code)	L-N	L-G	L-L	N-G
120/240 (1S240)	700V	700V	1000V	700V
120/208 (3Y208)	700V	700V	1000V	700V

4. The unit shall have a peak surge current of no less than 80kA/phase, 40kA/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. Fusing 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. Because of space limitation, the enclosure shall not exceed 160 cubic inches to allow close-to-the load installation on flush mount panels and between adjacent panel boards. It shall be a Nema 1 steel enclosure. For recessed panels, a flush mount cover plate shall be provided with each unit.
8. The suppressor shall include Form C dry contacts (N.O. or N.C.) for remote monitoring capability, green LED lights (normally on) for each phase.
9. The SPD shall come standard with not less than a Thirty 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 materials and workmanship 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 phone 800-853-8265.