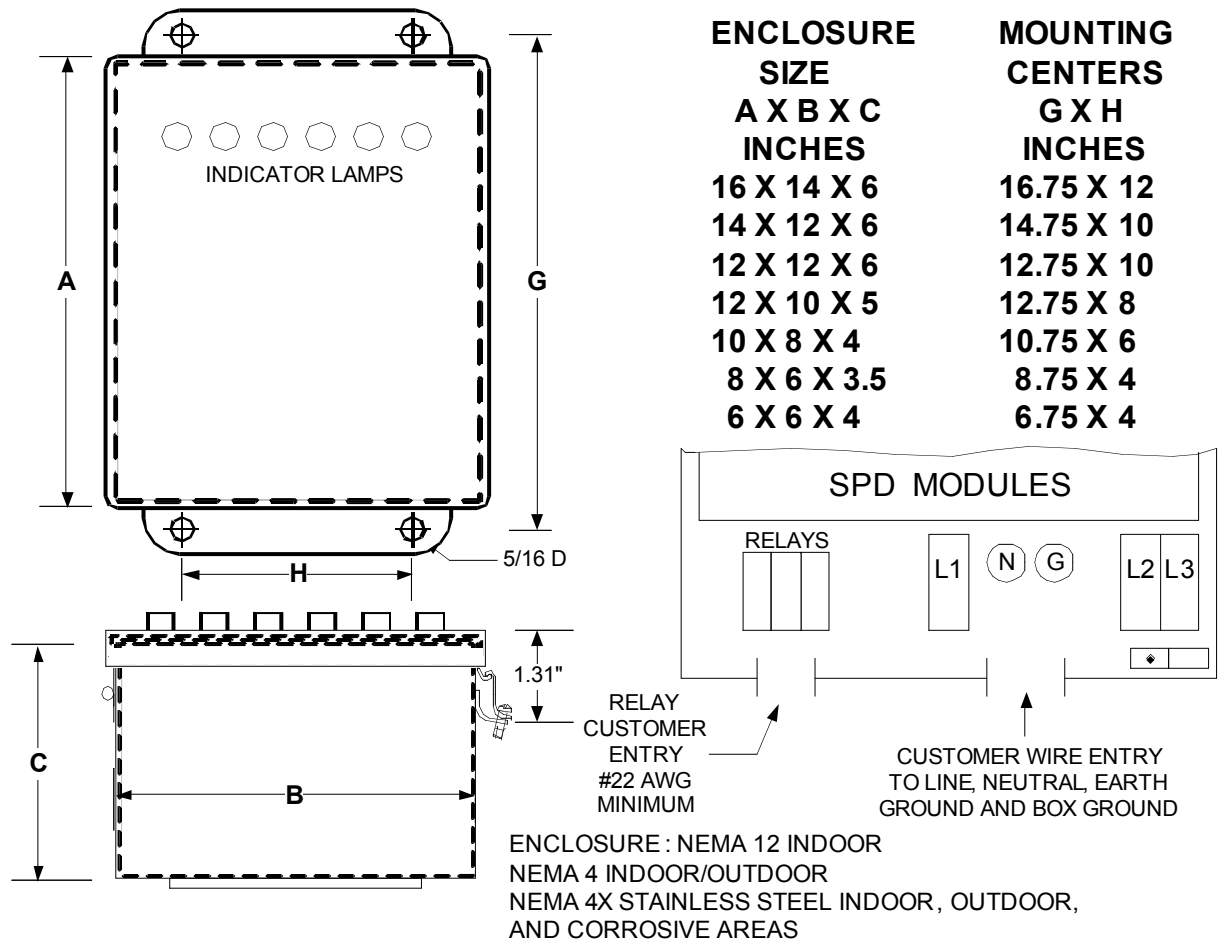


# LIGHTNING PROTECTION CORPORATION

## GENERAL INSTRUCTIONS AC POWER LIGHTNING AND SURGE PROTECTIVE DEVICES (SPD\*) FOR SINGLE & THREE PHASE, TO 1000 VRMS, 50/60 Hz SERVICE

### INSTALLATION



**CAUTION : RISK OF ELECTRIC SHOCK. DISCONNECT OR SHUT DOWN POWER BEFORE INSTALLING OR SERVICING THIS SPD.**

- 1) Mount the SPD using the four 5/16" dia. holes provided in the external mounting feet of the enclosure.
- 2) Punch the desired entry holes at bottom of the enclosure for wire entry and install suitable hubs.

\* SPD is generic for the many terms used such as arresters, surge arresters, lightning and surge arresters, suppressors, TVSS, AC power arresters, secondary surge arresters, MOV surge arrester, surge filter, protector, etc. SPD stands for SURGE PROTECTIVE DEVICES.

- 3) Connect the SPD to the power bus using No. 8 copper building wire. Terminate wires at the SPD disconnects, which can accommodate up to No. 2 or heavier wire if desired.

Note: The SPD is a parallel device connected across the power lines (there is no load current flow through the SPD).

NOTE : CONNECTING WIRES MUST BE AS SHORT AS POSSIBLE.

- 4) Connect phase wires to the fused disconnects; connect neutral wire (if used) to "N"; connect terminal "G" to earth ground; connect green safety wire to ground lug provided on the panel.

Note : The "N" and "G" SPD terminals are insulated from the enclosure.

- 5) Connect relay-alarm circuit (if used), for example, using #22 insulated wire. Each phase has its own independent relay. The relay coil remains "on" with power. Relay contacts of the phases may be connected in series for customer's use in a single alarm system. "NC" and "NO" dry contacts provided.

### OPERATION

The SPD is automatically operational when connected to the power bus. Lit neon lamps located on the cover of the SPD indicate that the power is on and the SPD is in working order. Lamps unlit indicate one of three situations: the power is off, the lamps need to be replaced, or the SPD is no longer functional.

Each phase relay has "NC" and "NO" contacts for customer's use for his remote alarm system. Like the lamps on the SPD cover, the relays indicate whether the SPD is operational. The relay coil is energized when power is connected. The SPD requires service when the relays de-energize and the customer's remote alarm circuit indicates. Lamps and relays operate independently of each other.

### MAINTENANCE

<b><u>CAUTION</u> : RISK OF ELECTRIC SHOCK. DISCONNECT OR SHUT DOWN POWER BEFORE INSTALLING OR SERVICING THIS SPD.</b>
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Special field tests to show that the SPD is operational are not necessary. When connected, the lit indicator lamps show that the SPD is in working order. If it is desired to check lamps before installation, connect a single phase rated voltage source to a phase terminal and "N". The light will turn on and the relay will energize. Repeat on the remaining phases.

The SPD is provided with internally fused disconnect means so that it may be serviced without shutting down house power. This feature allows changing out parts without removing the SPD or any connections.

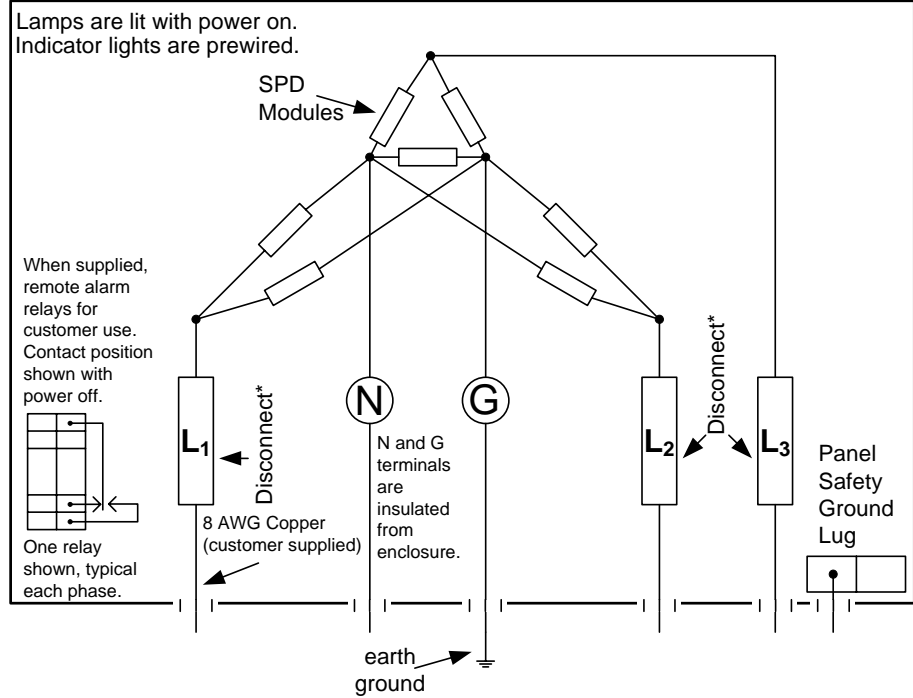
- A. Replace lamps when burned out. Unscrew lens, replace lamp.

Note: A lamp out on a phase means one of three things: the power is off, the lamp needs to be replaced, or the SPD requires attention.

- B. The relay provides remotely the same alarm function as the lamps. If the customer's remote alarm indicates but the lamps are on, then either the relay or the alarm system needs attention. If the lamps are out and the alarm indicates, then either the power is off or the SPD needs attention. Lamps operate independently of the relays. The relay is easily replaceable. Slide the wire retainer from the relay and pull out of the socket.

- C. Defective SPD modules are replaceable. First disconnect power by pulling the SPD disconnects or shut the main power off. Insulate any "hot" terminals against accidental contact by personnel and tools.

### SPD ENCLOSURE



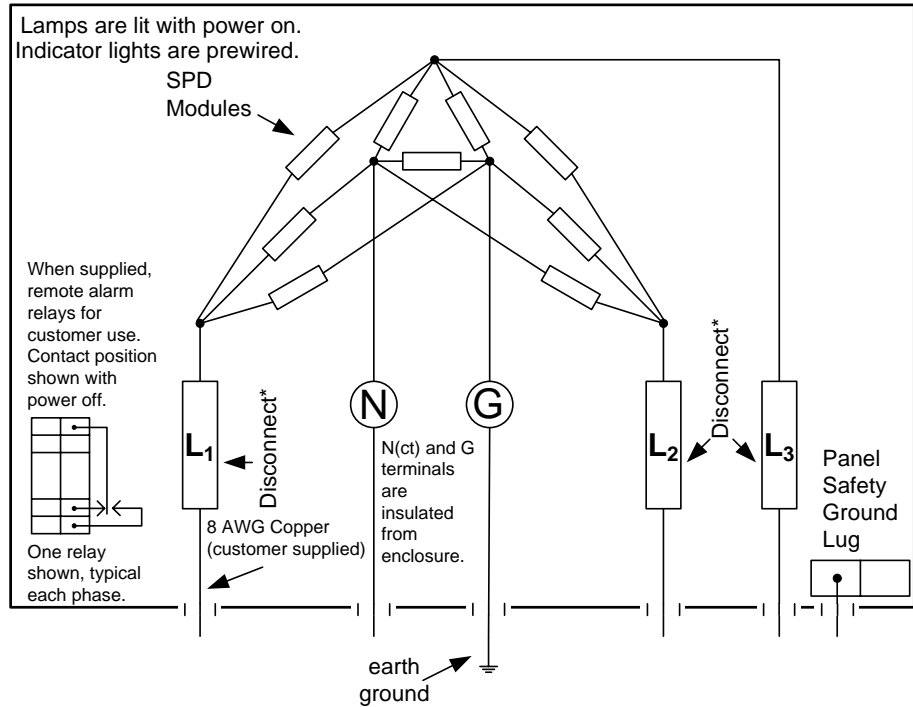
Bus connections shown for 3 phase Wye, 4W+G models.

For 1 phase, 3W+G models, Line L3 circuit not installed.

For 1 phase, 2W+G models, Line L2 and L3 circuits not installed.

\*Disconnect with surge fuses 200 KA I.R.

### SPD ENCLOSURE

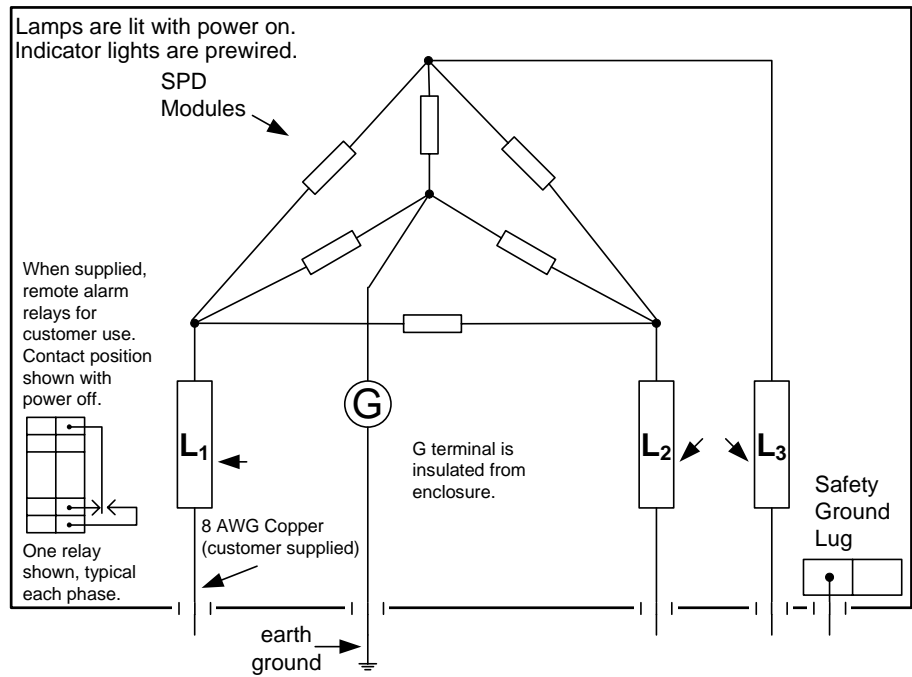


Bus connections shown for 3 phase delta, 4W+G models.

\*Disconnect with surge fuses 200 KA I.R.

## CONNECTION DIAGRAMS

## SPD ENCLOSURE



Bus connections shown for 3 phase delta, 3W+G models.

For 1 phase, 2W+G models  
Line L3 circuit not installed.

\*Disconnect with surge fuses  
200 KA I.R.

### REPLACEMENT PARTS LIST

Model Number	Complete SPD
SPD Modules	All are identical, order replacements by serial number of the SPD
Relay	One required per phase
Neon Lamp	Indicator lamp bulb (NE51B2A, two required per phase)
Lens	Indicator lamp lens (two required per phase)

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## **GENERAL SPECIFICATIONS**

### **AC POWER LIGHTNING AND SURGE PROTECTIVE DEVICES (SPD) FOR SINGLE & THREE PHASE, TO 1000 VRMS, 50/60 Hz SERVICE**

- 1) For use at : service entrance, transfer switch, distribution panels, and directly on the equipment itself requiring protection; at service entrance for line side or load side of the main disconnect means.
- 2) Instantaneous and automatic in operation, no re-setting required. Conduction of overvoltage condition starts immediately and extinguishes the instant the transient passes. Response is less than one nanosecond. Protection provided in all applicable modes, L – L, L – N, L – G, N – G.
- 3) Gapless – no spark gaps. High energy, multiple, solid state devices are used for dependable protection of sensitive equipment. There is no impulse breakdown voltage.
- 4) KVA unlimited. The SPD is connected across the power lines on any KVA rated source or load. Series impedance (inductors, resistors, etc.) not used.
- 5) No power follow current : The SPD conducts transients and stops conduction the instant the line voltage returns to normal.
- 6) Bipolar operation. Clamping voltages are of same value in either polarity of the transient.
- 7) The SPD provides protection against transients coming in on the power lines or generated from within the facility.
- 8) Routine testing not required. Periodical maintenance not required. The SPD has no moving parts and draws no power current. The condition of the SPD is continuously self-monitoring with indicator lamps and optional remote alarm relays installed in each phase : These show whether or not the TVSS is operational.
- 9) Life of the SPD generally exceeds the life of the equipment being protected.
- 10) Surge Current (8/20  $\mu$ s wave) ratings per mode to 240,000 amperes. Special designs for ultra critical applications are rated equivalent to 1,200,000 amperes per mode.
- 11) Indicator lamps and remote alarm relays (provided with NO and NC contacts).
- 12) Temperature range -55<sup>o</sup> to +170<sup>o</sup> F; altitude to 20,000 ft.
- 13) SPD is completely enclosed in appropriate enclosure for any specified environment: outdoor, indoor, water hose down, corrosive atmosphere, explosive atmosphere.
- 14) Detailed specifications are provided for each specific model.
- 15) Lightning Protection Corporation designs and manufactures under strict quality control measures of ISO 9001-2000, registration certified by Underwriters Laboratories, File No. A5103.