

## ***Specifications, Installation, and Operating Instructions***

**Model: SP Plus Family**



**CAUTION:** THE INSTALLATION OF A SURGE PROTECTION DEVICE (SPD) MUST BE DONE BY QUALIFIED ELECTRICAL PERSONNEL. A SPD MUST BE GROUNDED THROUGH THE POWER SYSTEM GROUND FOR PROPER OPERATION.



**WARNING:** BEFORE INSTALLING THE SUPPRESSOR, AC POWER MUST BE OFF. FAILURE TO DO SO COULD RESULT IN DAMAGE TO THE SUPPRESSOR AND POSES A POTENTIAL ELECTRICAL SHOCK HAZARD TO PERSONNEL.



**WARNING:** READ SPD LABEL ON SIDE OF THE ENCLOSURE TO VERIFY VOLTAGE CONFIGURATION.



**WARNING:** DISCONTINUE INSTALLATION IF THE MEASURED VOLTAGE IS NOT IN THE RANGE OF THE MODEL VOLTAGE CONFIGURATION OF THE SPD BEING INSTALLED. CONTACT LEA INTERNATIONAL'S TECHNICAL SUPPORT WITH ANY QUESTIONS CONCERNING THE VOLTAGE CONFIGURATION PRIOR TO INSTALLATION AND APPLICATION OF POWER.

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Part Number	Model: Type II SPD	Description	Fig. Ref.
B70-00-6000	SP 100 120/240-SP	MOV 100kA, NEMA 4X plastic encl, Single Phase, Alarm/no Switch	2
B70-00-6002	SP 100 120/240-SP	MOV 100kA, NEMA 1 plastic encl, Single Phase, Alarm/with Switch	2
B70-00-6005	SP 100 120/208-3Y	MOV 100kA, NEMA 4X plastic encl, Wye, Alarm/no Switch	3
B70-00-6007	SP 100 120/208-3Y	MOV 100kA, NEMA 1 plastic encl, Wye, Alarm/with Switch	3
B70-00-6010	SP 100 277/480-3Y	MOV 100kA, NEMA 4X plastic encl, Wye, Alarm/no Switch (Option) MOV 100kA, NEMA 1 plastic encl, Wye, Alarm/with Switch	3
B70-00-7000	SP 200 120/240-SP	MOV 200kA, NEMA 4X plastic encl, Single Phase, Alarm/no Switch (Option) MOV 200kA, NEMA 1 plastic encl, Split Phase, Alarm/with Switch	5
B70-00-7005	SP 200 120/208-3Y	MOV 200kA, NEMA 4X plastic encl, Wye, Alarm/no Switch (Option) MOV 200kA, NEMA 1 plastic encl, Wye, Alarm/with Switch	6
B70-00-7010	SP 200 277/480-3Y	MOV 200kA, NEMA 4X plastic encl, Wye, Alarm/no Switch (Option) MOV 200kA, NEMA 1 plastic encl, Wye, Alarm/with Switch	6
B70-00-7020	SP 200 480-3D	MOV 200kA, NEMA 4X plastic encl, Delta, Alarm/no Switch	7
	<b>Model: Type I SPD</b>		
B70-00-6100	SP 100 120/240-1	MOV 100kA, NEMA 4X plastic encl, Single Phase, Alarm/no Switch	2
B70-00-6102	SP 100 120/240-1	MOV 100kA, NEMA 1 plastic encl, Single Phase, Alarm/with Switch	2

# Specifications: All Models

Protection Provided

L-N, L-G, N-G, L-L (Single Phase, Wye);  
L-G, L-L (Delta)

Maximum Surge Current  
Dissipation per Phase\*

100,000 Amps SP-100  
200,000 Amps SP-200

Nominal Discharge Current (In)

20 kA

Maximum Load Current per Phase

Unlimited

Operating Temperature Range

-40°C to +85°C

Operating Humidity (noncondensing)

5% to 95%

Operating Altitude (feet)

Up to 12,000

Certifications

UL 1449 3<sup>rd</sup> Edition Listed (E315238)

\*8 x 20 µsec I wave per ANSI/IEEE C62.41

Model	Product Type	V (V ac)	Phase	Mode(s) @	VPR (Vpk)	In	MCOV
SP100 120/240	Type 2 SPD	120/240	1	L-N L-G L-L N-G	800 700 1200 700	20 kA	127/254
SP100 120/208	Type 2 SPD	120/208	3Y	L-N L-G L-L N-G	800 700 1200 700	20 kA	127/220
SP100 277/480	Type 2 SPD	277/480	3Y	L-N L-G L-L N-G	1200 1200 2000 1200	10 kA	293/508
SP200 120/240	Type 2 SPD	120/240	1	L-N L-G L-L N-G	700 700 1200 700	20 kA	127/254
SP200 120/208	Type 2 SPD	120/208	3Y	L-N L-G L-L N-G	700 700 1200 700	20 kA	127/220
SP200 277/480	Type 2 SPD	277/480	3Y	L-N L-G L-L N-G	1200 1200 2000 1200	20 kA	293/508
SP100 120/240-1	Type 1 SPD	120/240	1	L-N L-G L-L N-G	700 700 1200 700	20 kA	138/276
SP200 480	Type 2 SPD	480	3D	L-L L-G	2000 2000	20 kA	508



## PRE-INSTALLATION NOTES

- Please read the entire installation manual before installing this SPD. Unpack unit carefully, removing packing material. Inspect for damages during shipment. If unit seems damaged, contact LEA International and shipping agency. Do not continue to install unit.
- Confirm install location temperature will not exceed SPD rating (-40°C to +85°C).
- Verify that all nuts and bolts have good tight connections.
- Verify install location meets SPD enclosure NEMA type rating (1 or 4) per SPD label.
- **Electrical Specification for SPD Installation:**  
Verify the voltage configuration of the SPD matches actual system voltage configuration of service point. Ground resistance is less than 25 ohms and all wiring conductors are in accordance with the appropriate layout/installation drawing.

## INSTALLATION PROCEDURE

- **Length of leads and conductor size:**  
Leads must be as short as possible, not exceeding the recommended length of a foot and a half (1.5'); and routed with gradual bends avoiding sharp or 90° bends. The SPD comes with #10 AWG wire pre-cut for installation. Extending existing wire by splicing is not recommended.
- **Mounting:**  
The SPD is installed in parallel with the incoming phase conductors. After removing the clear enclosure cover screws mount the SPD using the concealed screw holes located near each outside corner of the enclosure. For the SP100, the mounting holes of the enclosure have a distance in length (from top to bottom) of 4.962" and a distance in width (from left to right) of 5.748". And for the SP200, the mounting holes of the enclosure have a distance in length (from top to bottom) of 9.00" and a distance in width (from left to right) of 5.10". The SPD should be mounted as close as possible to the connection of service point; utilizing a ½" knockout in the panel. Secure a conduit locknut onto the ½" nipple before proceeding.
- **Electrical Connection:**  
Connect the phase input wires (black) to the terminals marked phase 1, phase 2, or phase 3 inputs as illustrated on the drawings. Connect the neutral input wires (white) to the terminal marked neutral in the service point, as illustrated in drawings (if applicable). Connect the ground leads (green) to the terminal marked ground in the service point, as illustrated in the drawings. It is recommended to use a minimum 30 Amp circuit breaker when connecting the SPD.
- **Final check:**  
Check installation of unit as indicated in installation drawings. Apply external AC power to the SPD. The unit is operational. If all green indicator lamps are illuminated. If not, contact LEA International's technical support at +1.208.772.8515.
- **Visual inspection:**  
Operational status of the SPD is verified by observing the phase status indicator LED(s). The LED, illuminated Green indicates normal operation with all protection modes functioning.

## INSTALLATION CHECKLIST:

YES	NO	
[ ]	[ ]	The voltage configuration of the SPD matches actual voltage configuration of service point.
[ ]	[ ]	Ground resistance is less than 25 ohms.
[ ]	[ ]	All wiring conforms to the national electric code (NEC)
[ ]	[ ]	All conductors are in accordance with the appropriate layout/installation drawing.
[ ]	[ ]	All lead lengths are as short as possible.
[ ]	[ ]	The SPD is installed in parallel with the incoming phase conductors.
[ ]	[ ]	After installation, all lights are illuminated green.
[ ]	[ ]	All critical loads are protected by the SPD. If not, additional SPD(s) may be required.

## TROUBLESHOOTING

Problem	Solution
Alarm sound is audible	If disable switch is available. Silence alarm by using disable switch; otherwise use the circuit breaker to disconnect power and silence the alarm.
Status LED(s) are red	This indicates loss of protection in phase(s), unit may need replacement. Please call LEA technical support to check warranty.
Status LED(s) are not illuminated	This indicates a loss of power. Please verify power is being supplied to service point; if problem persists, call LEA technical support.

LEA Technical Support is available at +1.208.772.8515.

## Wiring Diagrams:

The following section contains all layout/installation drawings found within the SP Plus Family. Locate the appropriate drawing based on the model number of your system.

### GENERAL ELECTRICAL WIRING DIAGRAM (SP100)

SURGE PROTECTION DEVICE  
MODEL NAME: SP100 120/208-3Y

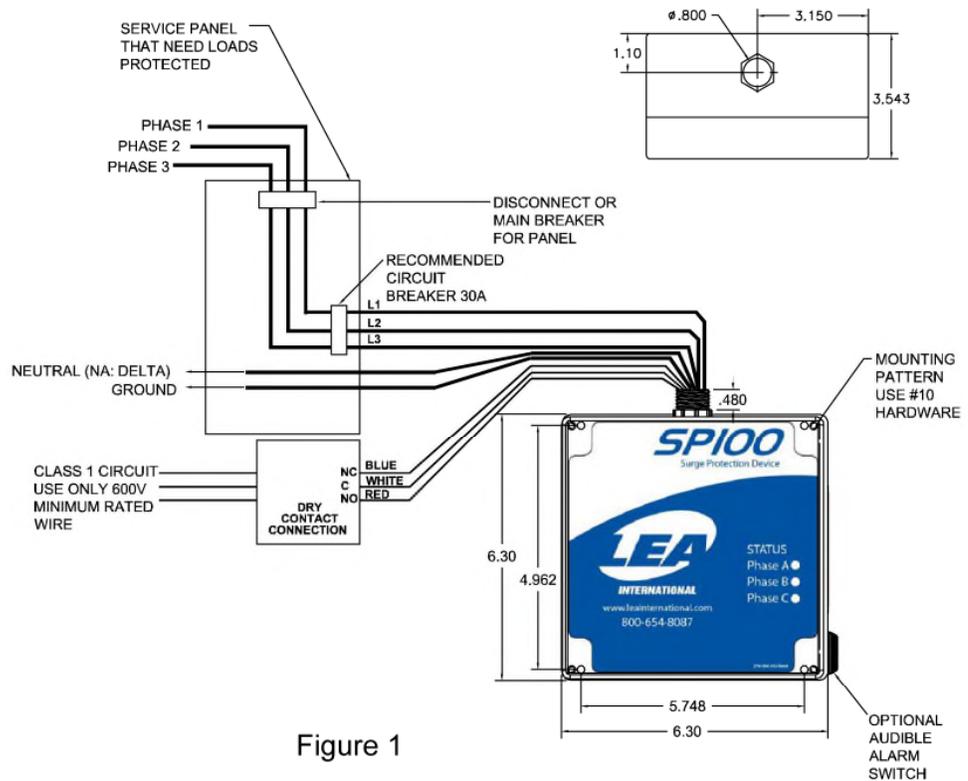
IF LEDS FAIL TO ILLUMINATE CALL  
LEA INTERNATIONAL IMMEDIATELY.  
800-654-8087 USA  
813-621-1324 INTERNATIONAL  
10701 AIRPORT DRIVE  
HAYDEN, ID 83835

SHUT OFF ELECTRICAL POWER  
BEFORE SERVICING. SERVICE BY  
AUTHORIZED PERSONNEL ONLY.

CONTAINS NO USER  
SERVICEABLE PARTS

#### NOTES:

1. GREEN GROUND WIRE, #10 AWG
2. BLACK PHASE WIRES, #10 AWG
3. WHITE NEUTRAL WIRE, #10 AWG
4. DCO TERMINALS:  
#22 AWG. MINIMUM 18 INCHES  
LONG OUTSIDE ENCLOSURE.
5. CONTACT RATINGS:  
0.3 AMPS @ 125 VDC  
0.3 AMPS @ 110 VDC  
1.0 AMPS @ 30 VDC
6. NC CONTACT IS CLOSED WHEN SPD  
IS POWERED AND FUNCTIONAL.
7. REMOVE COVER MOUNT SP 100 BASE  
SECURELY WITH #10 METAL SCREWS OR  
EQUIVALENT REPLACE COVER.
8. DIMENSION TOLERANCE XXX± .030





**Model:**  
Split Phase (-SP)

**Part Number:**  
B70-00-6000  
B70-00-6002  
B70-00-6100  
B70-00-6102

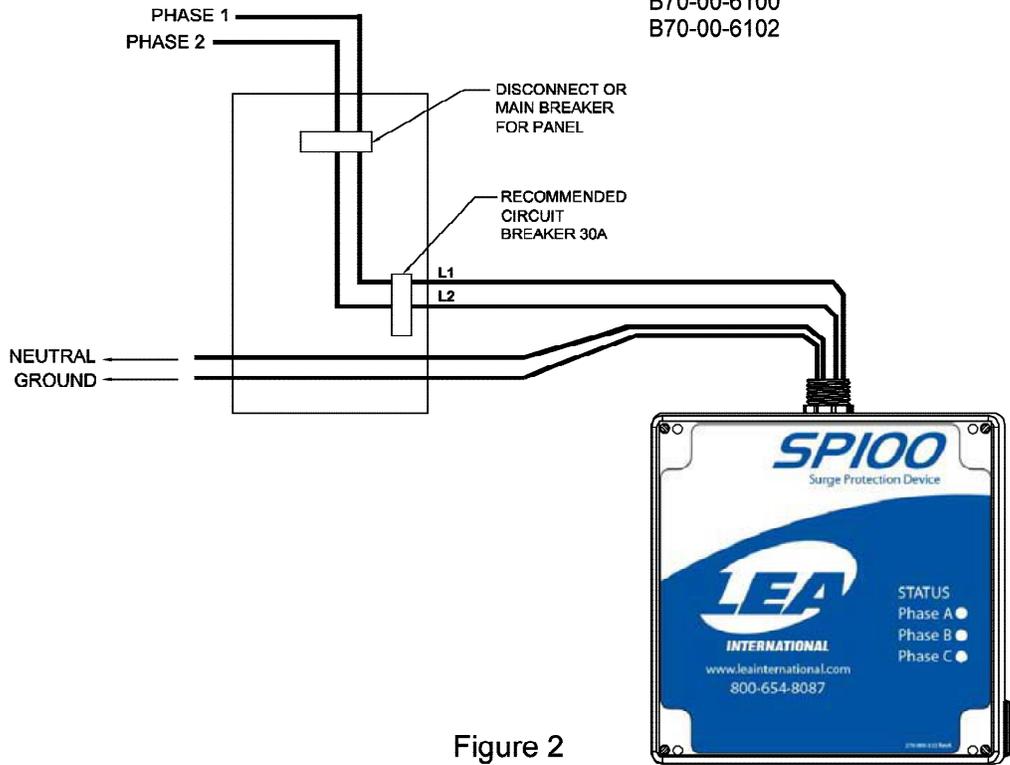


Figure 2

**Model:**  
3 Phase Wye (-3Y)

**Part Number:**  
B70-00-6005  
B70-00-6007  
B70-00-6010

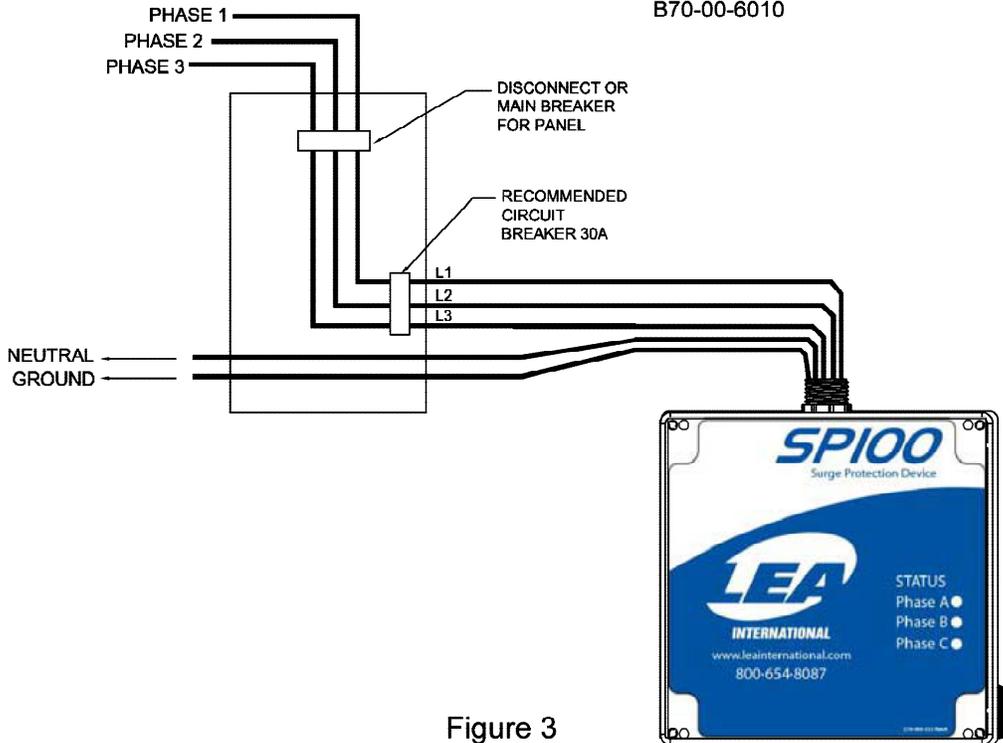


Figure 3

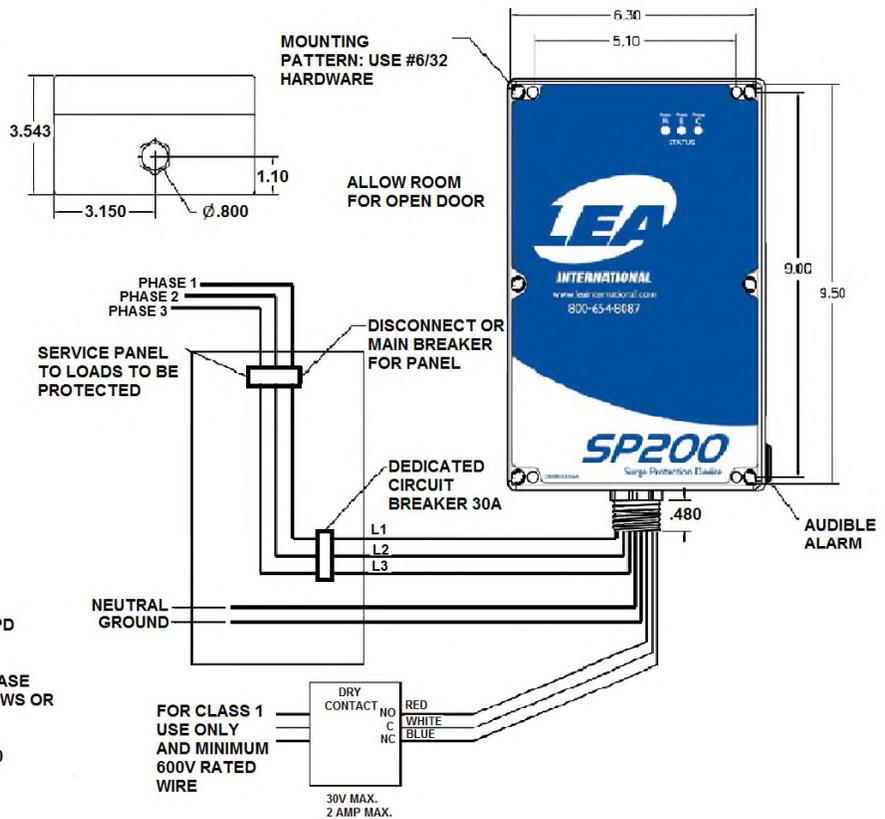
**SURGE PROTECTION DEVICE**  
**MODEL NAME: SP200 120/208-3Y**

**GENERAL ELECTRICAL WIRING DIAGRAM (SP200)**

**SHUT OFF ELECTRICAL POWER BEFORE SERVICING. SERVICE BY AUTHORIZED PERSONNEL ONLY.**

**CONTAINS NO USER SERVICEABLE PARTS**

- NOTES:**
1. GREEN GROUND WIRE, #10 AWG
  2. BLACK PHASE WIRE, #10 AWG
  3. WHITE NEUTRAL WIRE, #10 AWG
  4. DCO TERMINALS: #22 AWG, MINIMUM 18 INCHES LONG OUTSIDE ENCLOSURE
  5. CONTACT RATING:  
 0.3 AMPS @ 125 VDC  
 0.3 AMPS @ 110 VDC  
 1.0 AMPS @ 30 VDC
  6. NC CONTACT IS CLOSED WHEN SPD IS POWERED AND FUNCTIONAL.
  7. REMOVE COVER MOUNT SP 200 BASE SECURELY WITH #10 METAL SCREWS OR EQUIVALENT REPLACE COVER
  8. DIMENSION TOLERANCE XXX±.030

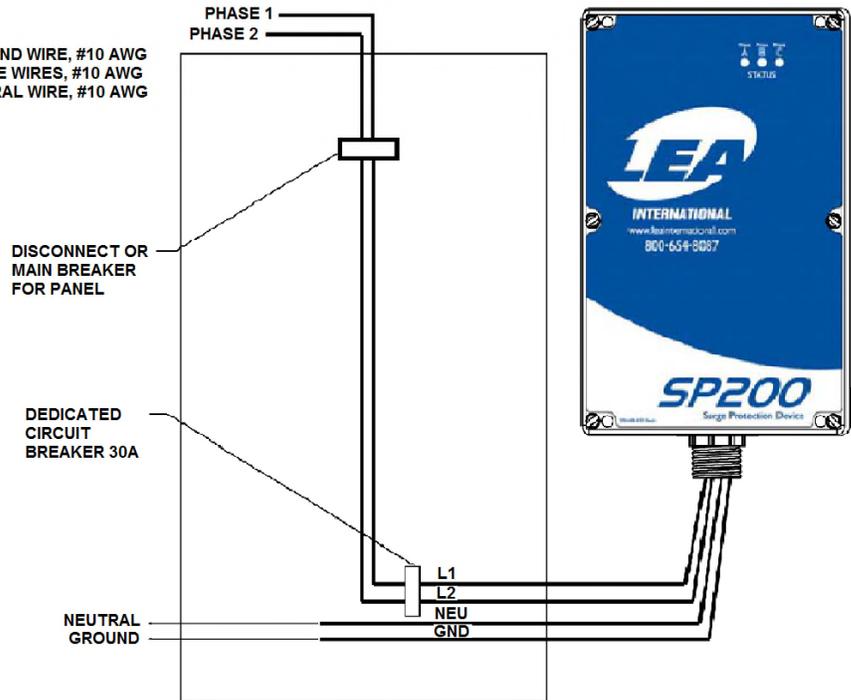


**FIGURE 4**

**Model:**  
**Single Phase (-SP)**

**Part Number:**  
**B70-00-7000**

- NOTES:**
1. GREEN GROUND WIRE, #10 AWG
  2. BLACK PHASE WIRES, #10 AWG
  3. WHITE NEUTRAL WIRE, #10 AWG



**FIGURE 5**



**Model:**  
3 Phase Wye (-3Y)

**Part Number:**  
B70-00-7005  
B70-00-7010

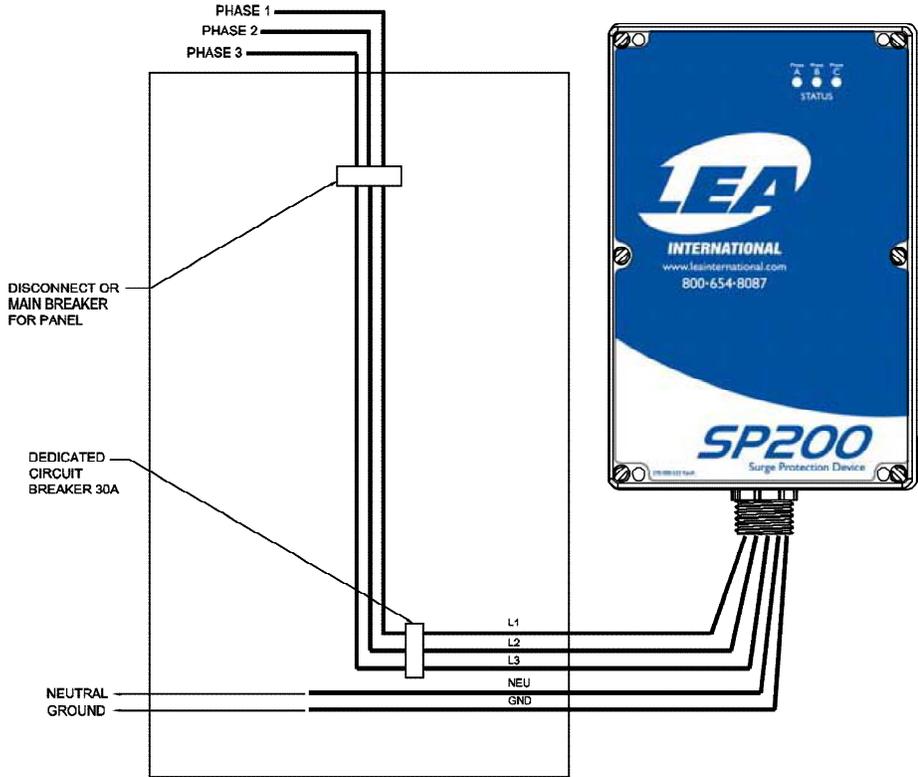


Figure 6

**Model:**  
3 Phase Delta (-3D)

**Part Number:**  
B70-00-7020

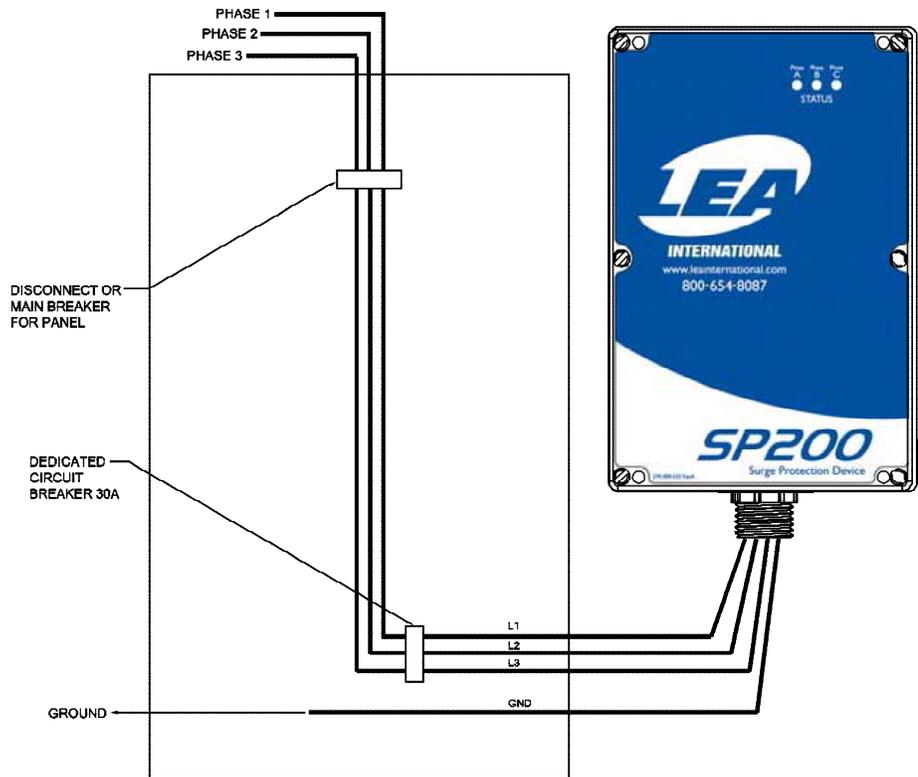


Figure 7