

HPSP series



PROSURGE® HPSP series panel SPDs are defined as high performance surge protection solution for most commercial and industrial environments with critical operations. They include Type 1 and Type 2 Surge Protective Devices (SPDs) that protect against the harmful effects of transient surges. These surges are the result of:

- Direct and indirect lightning strikes
- Power company load switching
- Upstream load switching at other facilities

The SPD Types Per ANSI / UL 1449 4th:

Type 1 – Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service equipment overcurrent device, as well as the load side, including watt-hour meter socket enclosures and Molded Case SPDs intended to be installed without an external overcurrent protective device.

Type 2 – Permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device; including SPDs located at the branch panel and Molded Case SPDs.

HPSP is constructed with Prosurge’s patented PTMOVs, which has a thermally protected and arc extinguishing technology as the core of Prosurge’s competency. PSP C has a significant advantage in abnormal over-voltage & high fault current safety and thus ensures industry’s highest level of safety and performance. The parallel redundancy modules design makes the SPDs extremely robust and reliable and thus may handle great impulse current up to 600kA (8/20 μs) and multiple impulse current at its highest rated level.

The Prosurge HPSP series are tested and listed as UL1449 4th Type 1 and Type 2 SPD (UL1283 listed sine wave tracking function). Their front panels integrate functionality of SPD working status monitor and self-diagnosis to enhance the performance and usability. They feature with indicator and colored LEDs to demonstrate the power & protection status of each protected power phase. They are constructed with NEMA 4/4X enclosures to ensure that dirt, dust and water are resisted for either indoor or outdoor usage.

■ Typical Applications:

In high exposure locations

- Commercial
- Industrial
- Communications
- Renewable energy
- Critical power (hospitals, data centers, etc)

Outstanding PTMOV Technology

Thermally Protected MOV technology. Fast and safely disconnect in the case of abnormal over-voltage or current fault conditions.

■ Features:

- UL 1449 4th, CSA C22.2 listed Type 1 SPDs
- UL1283, UL1449 4th and CSA C22.2 listed Type 2 SPDs with Sine Wave Tracking (EMI/RFI filter)
- Prosurge Patented SCCR 200kArms thermally protected MOV technology(PTMOV) as core component
- Rating:

Surge capacity (8/20 us): 400~600 kA per phase

Lightning current capacity (10/350 us): 40~60kA per phase, EN/IEC 61643-1/11 class I test

Nominal discharge current 20kA 8/20 us

Short Circuit current rating (SCCR): 200 kArms - tested without external CB or fuse

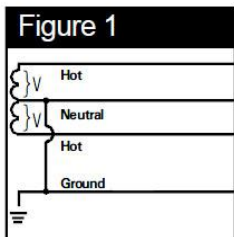
- UL1283 listed Sine Wave Tracking (EMI/RFI filter) filtering up to -45dB from 10kHz to 100MHz
- Full modes protection
- Large surge energy capability with compact size
- Low voltage protection rating
- Degradation failure indication, audible alarm, beep while SPD fail
- Surge event counter optional
- NEMA 4X plastic enclosure to resist dirt, dust and water
- Remote Alarm optional
- Threaded NPT

■ Configure & Ordering Information:

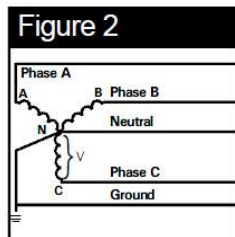
<i>PSP</i> Model series	<i>277Y</i> Voltage and system configuration	<i>C</i> Protection mode	<i>42</i> Surge capacity	<i>/ T1</i> SPD Category	<i>CTA</i> Additional function
<i>HPSP</i>	<p>120SP: 120/240V split</p> <p>240SP:240/480V split</p> <p>120Y:120/1208V WYE</p> <p>277Y: 277/480V WYE</p> <p>120H: 120/240V high leg delta</p> <p>240D: 240V delta</p> <p>120S:120V 1ph, 2W+G</p> <p>...</p>	<i>C:</i> Delete N-G protection mode	<p>42:400kA per phase</p> <p>52:500kA per phase</p> <p>62:600kA per phase</p>	<p>T1: UL type 1 SPD</p> <p>T2F: UL type 2 SPD with sine wave tracking UL 1283 listed</p>	<i>C:</i> surge event counter

Voltage code for power distribution system

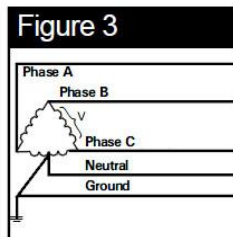
- 120SP ,240SP= 120/240V;240/480V-----Split-phase three-wire + ground (Figure1)
- 120Y, 127Y, 240Y, 277Y, 347Y = 208Y/120V,220Y/127V, 415Y/240V, 480Y/277V, 600Y/347V-----Three-phase wye (star) four-wire + ground (Figure2)
- 120H, 240H = 120/240V, 240V/480V-----Three-phase high leg delta (Figure3)
- 240D, 480D, 600D = 240V, 480V, 600V-----Three-phase delta three-wire + ground (Figure4)
- 120S, 127S, 240S, 277S, 347S =120V, 127V, 240V, 277V, 347V-----single-phase two-wire + ground (Figure5)



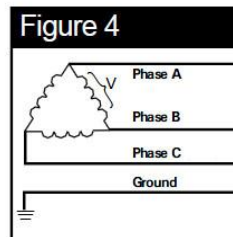
SPLIT
2 Hots, 1 Neu, 1 Grnd



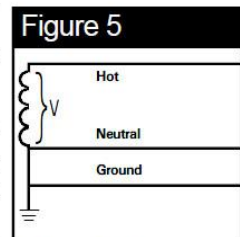
WYE
3 Hots, 1 Neu, 1 Grnd



HI-LEG DELTA (B High)
3 Hots, (B HIGH),
1 Neu, 1 Grnd



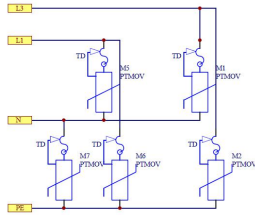
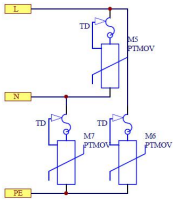
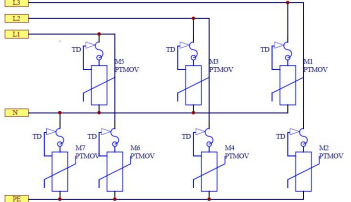
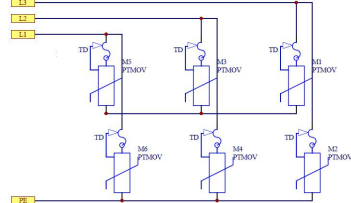
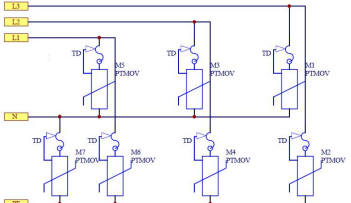
DELTA & HRG WYE
3 Hots, 1 Grnd



SINGLE POLE
1 Hot, 1 Neu, 1 Grnd

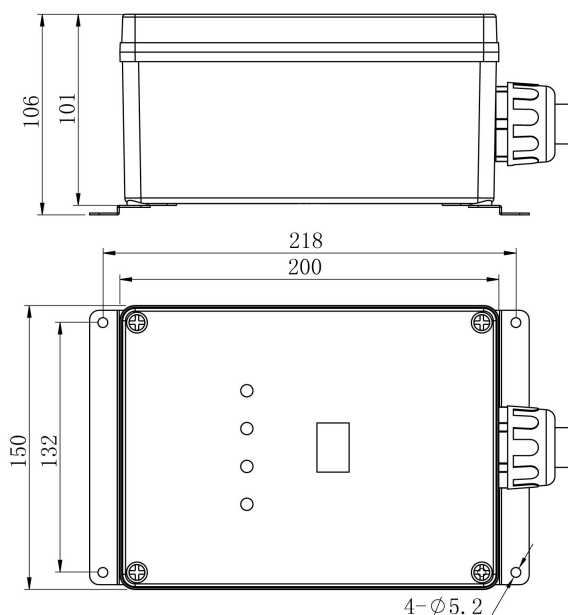
■ Basic circuit diagram

Note: x means 2 to 6 (Surge capacity 200kA~600kA)

Un/ Power system (50/60 HZ)	Basic circuit diagram of surge protection circuit
120/240 VAC Split phase 240/480 VAC Split phase ...	HPSP... SPx2 ...(3W+G) 
120 VAC single phase 127 VAC single phase 220 VAC single phase 230 VAC single phase 240 VAC single phase 277 VAC single phase ...	HPSP... Sx2 ...(2W+G) 
120/208 VAC WYE 127/220 VAC WYE 220/380 VAC WYE 230/400 VAC WYE 240/415VAC WYE 277/480 VAC WYE 347/600 VAC WYE ...	HPSP... Yx2 ...(4W+G) 
240 VAC Delta ...	HPSP... Dx2 ...(3W+G) 
120/240 VAC Hi-leg delta ...	HPSP... Hx2 ...(4W+G, L2 is High leg) 

■ Dimensions (unit: mm)

HPSP series can be fixed with bolts. The dimension of the devices and bolt holes are as below diagrams.



■ General Specification:

PSP category	HPSP	
Certification	ANSI/UL1449 4th edition, CSA C22.2, Type1 SPD ANSI/UL1449 4th edition, CSA C22.2, UL1283, Type2 SPD	
Connection Type	Parallel Connected	
Capacity	Surge current	400-600kA (8/20μs) per Phase
	Lightning current	40~60kA (10/350μs) per Phase
Nominal discharge current In	20kA	
SCCR	200kArms	
UL1283 EMI/RFI filter	Sine wave tracking, up to -45dB from 10kHz to 100MHz (Type2 only)	
Lightning counter Current	≥ 200A (with Reset button)	
Failure pre-test	Press 2S (test button)	
Power Status Indication	Normal=Blue LED ON	
Working Status Indication	Normal= Blue LED ON; Fail= Blue LED turn to Red Buzzer inside, beep while SPD fail	
Power Connecting	10AWG, 762mm (30") length, (L1=black; L2=red; L3=blue; N=white; PE=green)	
Signal cable	16AWG, 762mm (30") length,(C=red; NC=blue; NO=brown)	
Working environments	Temperature -40℃~+75℃, Humidity relative 5~95% (25℃) , Altitude≤3km	
Dimensions (W x D x H)	200 x 150 x 100 mm	
Threaded NPT	3/4"NPT	
Enclosure	Plastic enclosure, NEMA 4X	
Net Weight (typical value)	1.8 kg	

■ Technical Data:

Model No ⁽¹⁾ .	System voltage (50/60Hz)	In (kA)	Protected mode				Voltage Protection Ratings (VPR @6kV/ 3kA)				Surge Capability ⁽²⁾	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L		
HPSP120SP22/*#	120/240V split-phase	20	✓	✓	✓	✓	600	700	700	1200	200kA/phase, 100kA/mode	150/300 ⁽³⁾
HPSP120SP32/*#			✓	✓	✓	✓	600	700	700	1200	300kA/phase, 150kA/mode	150/300 ⁽³⁾
HPSP120SP42/*#			✓	✓	✓	✓	600	700	700	1200	400kA/phase, 200kA/mode	150/300 ⁽³⁾
HPSP120SP52/*#			✓	✓	✓	✓	600	700	700	1200	500kA/phase, 250kA/mode	150/300 ⁽³⁾
HPSP120SP62/*#			✓	✓	✓	✓	600	700	700	1200	600kA/phase, 300kA/mode	150/300 ⁽³⁾
HPSP240SP22/*#	240/480V split-phase	20	✓	✓	✓	✓	1200	1200	1200	2000	200kA/phase, 100kA/mode	320/640 ⁽³⁾
HPSP240SP32/*#			✓	✓	✓	✓	1200	1200	1200	2000	300kA/phase, 150kA/mode	320/640 ⁽³⁾
HPSP240SP42/*#			✓	✓	✓	✓	1200	1200	1200	2000	400kA/phase, 200kA/mode	320/640 ⁽³⁾
HPSP240SP52/*#			✓	✓	✓	✓	1200	1200	1200	2000	500kA/phase, 250kA/mode	320/640 ⁽³⁾
HPSP240SP62/*#			✓	✓	✓	✓	1200	1200	1200	2000	600kA/phase, 300kA/mode	320/640 ⁽³⁾
HPSP127Y22/*#	220Y127V Three-phase wye	20	✓	✓	✓	✓	600	700	700	1200	200kA/phase, 100kA/mode	150
HPSP127Y32/*#			✓	✓	✓	✓	600	700	700	1200	300kA/phase, 150kA/mode	150
HPSP127Y42/*#			✓	✓	✓	✓	600	700	700	1200	400kA/phase, 200kA/mode	150
HPSP127Y52/*#			✓	✓	✓	✓	600	700	700	1200	500kA/phase, 250kA/mode	150
HPSP127Y62/*#			✓	✓	✓	✓	600	700	700	1200	600kA/phase, 300kA/mode	150
HPSP240Y22/*#	415Y/240V Three-phase wye	20	✓	✓	✓	✓	1200	1200	1200	2000	200kA/phase, 100kA/mode	320
HPSP240Y32/*#			✓	✓	✓	✓	1200	1200	1200	2000	300kA/phase, 150kA/mode	320
HPSP240Y42/*#			✓	✓	✓	✓	1200	1200	1200	2000	400kA/phase, 200kA/mode	320
HPSP240Y52/*#			✓	✓	✓	✓	1200	1200	1200	2000	500kA/phase, 250kA/mode	320
HPSP240Y62/*#			✓	✓	✓	✓	1200	1200	1200	2000	600kA/phase, 300kA/mode	320

One-port Panel SPDs

HPSP277Y22/*#	480Y/277V Three-phase wye	20	✓	✓	✓	✓	1200	1200	1200	2000	200kA/phase, 100kA/mode	320
HPSP277Y32/*#			✓	✓	✓	✓	1200	1200	1200	2000	300kA/phase, 150kA/mode	320
HPSP277Y42/*#			✓	✓	✓	✓	1200	1200	1200	2000	400kA/phase, 200kA/mode	320
HPSP277Y52/*#			✓	✓	✓	✓	1200	1200	1200	2000	500kA/phase, 250kA/mode	320
HPSP277Y62/*#			✓	✓	✓	✓	1200	1200	1200	2000	600kA/phase, 300kA/mode	320
HPSP347Y22/*#	600Y347V Three-phase wye	20	✓	✓	✓	✓	1500	1500	1500	2500	200kA/phase, 100kA/mode	420
HPSP347Y32/*#			✓	✓	✓	✓	1500	1500	1500	2500	300kA/phase, 150kA/mode	420
HPSP347Y42/*#			✓	✓	✓	✓	1500	1500	1500	2500	400kA/phase, 200kA/mode	420
HPSP347Y52/*#			✓	✓	✓	✓	1500	1500	1500	2500	500kA/phase, 250kA/mode	420
HPSP347Y62/*#			✓	✓	✓	✓	1500	1500	1500	2500	600kA/phase, 300kA/mode	420
HPSP120H22/*#	120/240V high leg delta	20	✓	✓	✓	✓	600- 1200HL	700- 1200HL	700	1200-200 0HL	200kA/phase, 100kA/mode	150/ 320(HL)
HPSP120H32/*#			✓	✓	✓	✓	600- 1200HL	700- 1200HL	700	1200- 2000HL	300kA/phase, 150kA/mode	150/ 320(HL)
HPSP120H42/*#			✓	✓	✓	✓	600- 1200HL	700- 1200HL	700	1200- 2000HL	400kA/phase, 200kA/mode	150/ 320(HL)
HPSP120H52/*#			✓	✓	✓	✓	600- 1200HL	700- 1200HL	700	1200- 2000HL	500kA/phase, 250kA/mode	150/ 320(HL)
HPSP120H62/*#			✓	✓	✓	✓	600- 1200HL	700- 1200HL	700	1200-200 0HL	600kA/phase, 300kA/mode	150/ 320(HL)
HPSP240D22/*#	240V Three-phase delta	20	x	✓	x	✓	-	1200	-	1200	200kA/phase, 100kA/mode	320
HPSP240D32/*#			x	✓	x	✓	-	1200	-	1200	300kA/phase, 150kA/mode	320
HPSP240D42/*#			x	✓	x	✓	-	1200	-	1200	400kA/phase, 200kA/mode	320
HPSP240D52/*#			x	✓	x	✓	-	1200	-	1200	500kA/phase, 250kA/mode	320
HPSP240D62/*#			x	✓	x	✓	-	1200	-	1200	600kA/phase, 300kA/mode	320

One-port Panel SPDs

HPSP127S22/*#	127V Single-phase	20	✓	✓	✓	*	600	700	700	-	200kA/phase, 100kA/mode	150
HPSP127S32/*#			✓	✓	✓	*	600	700	700	-	300kA/phase, 150kA/mode	150
HPSP127S42/*#			✓	✓	✓	*	600	700	700	-	400kA/phase, 200kA/mode	150
HPSP127S52/*#			✓	✓	✓	*	600	700	700	-	500kA/phase, 250kA/mode	150
HPSP127S62/*#			✓	✓	✓	*	600	700	700	-	600kA/phase, 300kA/mode	150
HPSP277S22/*#	277V Single-phase	20	✓	✓	✓	*	1200	1200	1200	-	200kA/phase, 100kA/mode	320
HPSP277S32/*#			✓	✓	✓	*	1200	1200	1200	-	300kA/phase, 150kA/mode	320
HPSP277S42/*#			✓	✓	✓	*	1200	1200	1200	-	400kA/phase, 200kA/mode	320
HPSP277S52/*#			✓	✓	✓	*	1200	1200	1200	-	500kA/phase, 250kA/mode	320
HPSP277S62/*#			✓	✓	✓	*	1200	1200	1200	-	600kA/phase, 300kA/mode	320

Note: “* “ MCOV for L1-L 2

Note:

(1) 2 to 6 means the surge capacity 100kA, 150kA, 200kA, 250kA, 300kA per mode and 200kA , 300kA, 400kA, 500kA, 600kA per phase.

(2) Surge capacity of HPSP series per EN/IEC61643-1/11 class I test, the lightning impulse current (10/350 us), given in below table.

Code	lightning current capacity 10/350 us
22	20 kA per phase
32	30 kA per phase
42	40 kA per phase
52	50 kA per phase
62	60 kA per phase

(3) MCOV for L1-L 2

(end)