

PS series

PROSURGE® **PS series panel** SPDs are defined as ultra-Large surge capacity design for mission critical application. They are high performance surge protection solution for most commercial and industrial environments with critical operations, and 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.

PS panel SPDs are constructed with Prosurge’s patented surge protection module (**SMTMOV/HSMTMOV**), which has a thermally protected and arc extinguishing technology as the core of Prosurge’s competency. PS 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, in the event of a surge protection module (SMTMOV) failure the remaining module array will continue to provide surge protection. Further this design prompt SPDs to handle great impulse current up to 600kA (8/20 μs) and multiple impulse current at its highest rated level. PS surge panel can meet most critical challenge worldwide and ensure maintenance -free for its lifetime.

The 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

Anticipatory failure monitoring (AFM) technology

The ' Anticipatory failure monitoring ' technology allows the user to exchange panel SPDs before protected electrical equipments or systems are threatened by overloads to ensure permanent surge protection. **Three stages (BLUE /- YELLOW /- RED)** LED visual indication can help user to judge the protection status. While the indicator light turns to **YELLOW**, it means the potentially anticipatory failure of the panel SPD, at this point, the user is recommended to replace the panel SPDs. If the SPDs are not replaced, also they will continue to provide limited protection, but further overloads on the SPD, such as a follow up higher or repeated discharge of lightning currents, may lead to the increased risk of surge damage.

Outstanding SMTMOV Technology

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

The Prosurge PS series are tested and listed as UL1449 4th Type 1 and Type 2 SPD (with sine wave tracking function). They are constructed with NEMA 4 enclosures to ensure that dirt, dust and water are resisted for either indoor or outdoor usage.

■ **Typical Applications:**

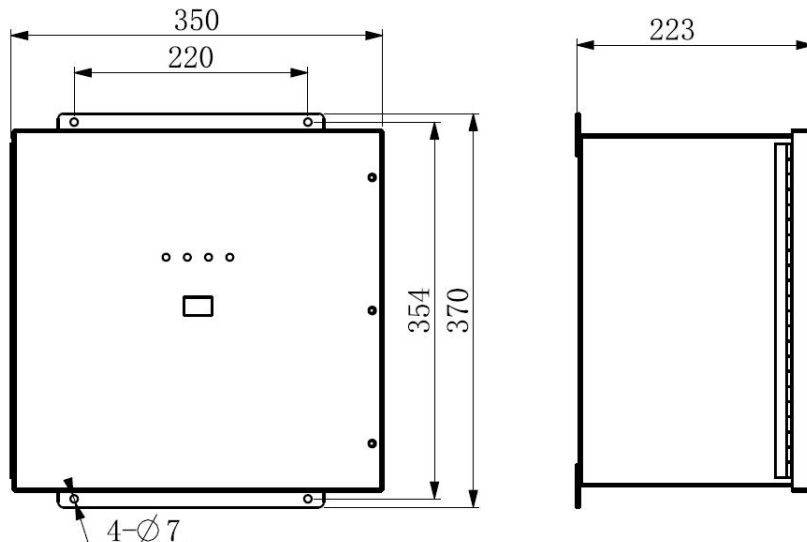
In high exposure locations, be ideal for primary service or building entrances protection applications.

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

■ **Features:**

- UL listed Type 1 (ANSI/UL1449 4th,CSA C22.2) SPDs.
- UL listed Type 2 (ANSI/UL1449 4th,CSA C22.2) SPDs with Sine Wave Tracking
- Rating:
 - MCOV: 150Vac~690Vac**
 - Surge capacity (8/20 us): 150~600 kA per phase while built with SMTMOV(Imax:50kA) modules**
225~900kA per phase while built with HSMTMOV(Imax:75kA) modules
 - Lightning capacity (10/350 us): 12.5~80kA per phase, EN/IEC 61643-1/11 class I test**
 - Short Circuit current rating (SCCR): 200 kArms - tested without external CB or fuse**
- Prosurge Patented SCCR 200kArms thermally protected MOV technology(SMTMOV/HSMTMOV) as core component
- Full modes protection, more options in protection mode combination for specified applications
- High surge energy capability with compact size
- Low voltage protection rating
- Three-stages degradation failure indication, **Anticipatory failure monitoring (AFM)** technology to ensure permanent surge protection
- With surge event counter
- Sine wave tracking function optional (for UL Type 2 listed model)
- With remote alarm
- Threaded NPT
- NEMA 4 metal enclosure to resist dirt, dust and water
- EN/IEC 61643-1/11 compliant

■ **Dimensions (unit: mm)**



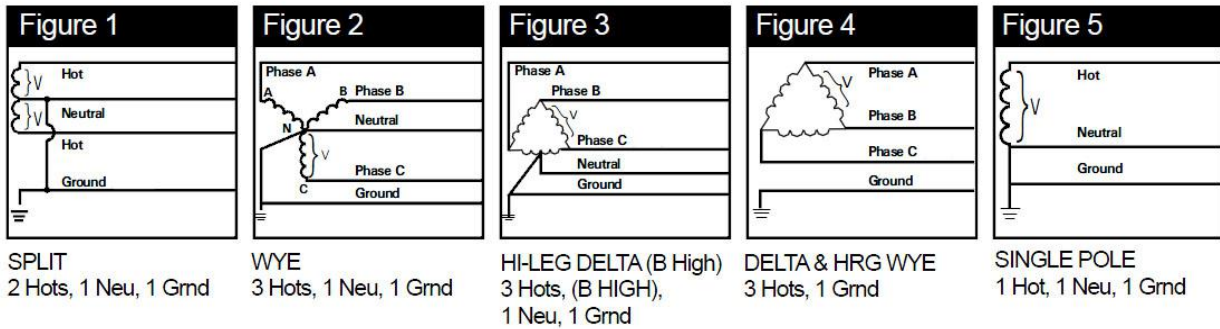
■ Configure & Ordering Information:

<u>PS</u> Model	<u>277Y</u> Voltage and system configuration	<u>C</u> Protection mode	<u>42</u> Surge capacity	<u>T</u> Gas Tube optional	<u>/ T1</u> SPD Category	<u>CA</u> Additional function
<u>PS</u>	<p><u>120SP</u>: 120/240V split</p> <p><u>240SP</u>: 240/480V split</p> <p><u>120Y</u>: 120/208V WYE</p> <p><u>277Y</u>: 277/480V WYE</p> <p><u>120H</u>: 120/240V high leg delta</p> <p><u>240D</u>: 240V delta</p> <p><u>120S</u>: 120V 1ph, 2W+G</p> <p>...</p>	<p><u>C</u>: Delete N-G protection mode,</p> <p><u>G</u>: Only L/N (if need) -G protection, delete L-N and L-L (if present) protection,</p> <p><u>N</u>: Only L-N&N-G protection, delete L-G protection.</p> <p><u>N/A</u>: Full mode protection</p>	<p><u>31</u>: 150 or 225kA⁽¹⁾ per phase</p> <p><u>41</u>: 200 or 300kA⁽¹⁾ per phase</p> <p><u>51</u>: 250 or 375kA⁽¹⁾ per phase</p> <p><u>61</u>: 300 or 450kA⁽¹⁾ per phase</p> <p><u>32</u>: 300 or 450kA⁽¹⁾ per phase</p> <p><u>42</u>: 400 or 600kA⁽¹⁾ per phase</p> <p><u>52</u>: 500 or 750kA⁽¹⁾ per phase</p> <p><u>62</u>: 600 or 900kA⁽¹⁾ per phase</p>	<p><u>T</u>: Gas Tube used for N-G protection mode</p>	<p><u>T1</u>: UL type 1 SPD</p> <p><u>T2F</u>: UL type 2 SPD with sine wave tracking</p>	<p><u>C</u>: surge event counter</p> <p><u>A</u>: remote alarm</p>

⁽¹⁾The model with higher surge capacity is built with HSMTMOV (Imax: 75kA) modules.

1. Voltage code for power distribution system

- 120SP, 240SP= 120/240V;240/480V-----Split-phase three-wire + ground (Figure1)
- 120Y, 127Y, 220Y,230Y,240Y, 277Y, 347Y = 208Y/120V,220Y/127V, 380Y/220V,400Y/230V,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,220V,230V, 240V, 277V, 347V-----single-phase two-wire + ground (Figure5)



2. *: SPD Type per UL1449 4th edition

- T1= UL Type 1 SPD
- T2F=UL Type 2 SPD with Sine wave tracking

3.: Additional function

- C = Surge Counter
- A=Remote Alarm



■ Basic circuit diagram Note: % means 3 to 6 (Surge capacity 150kA~300kA per mode (SMTMOV), or 225~450kA(HSMTMOV))

Un/ Power system (50/60 HZ)	Basic circuit diagram of surge protection circuit				
	Normal model	N-G mode use GDT, Delete L-G mode	Delete L-G mode (if present)	Delete L-N or L-L mode (if present)	Delete N-G mode (if present)
120/240 VAC Split phase 240/480 VAC Split phase ...	PS... SP %2...(3W+G) 	PS... SPN %1 T ...(3W+G) 			PS... SPC %1...(2W+G)
120 VAC single phase 127 VAC single phase 230 VAC single phase 240 VAC single phase 277 VAC single phase 347 VAC single phase	PS... S %2...(2W+G) 	PS... SN %1 T ...(2W+G) 	PS... SN %1...(2W+G) 	PS... SG %1...(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	PS... Y %2...(4W+G) 	PS... YN %1 T ...(4W+G) 	PS... YN %1...(4W+G) 	PS... YG %1...(4W+G) 	PS... YC %1...(3W+G)
240 VAC Delta 480 VAC Delta 600 VAC Delta ...	PS... D %2...(3W+G) 			PS... DG x1...(3W+G) 	
120/240 VAC Hi-leg delta 240/480 VAC Hi-leg delta ...	PS... H %2...(4W+G, L2 is High leg) 	PS... HN %1 T ...(4W+G, L2 is High leg) 	PS... HN %1...(4W+G, L2 is High leg) 	PS... HG %1...(4W+G, L2 is High leg) 	PS... HC %1...(3W+G, L2 is High leg)

■ General Specification:

PS category	D
Certification	ANSI/UL1449 4th, CSA C22.2, Type 1, Type 2
Connection Type	Parallel Connected
Surge Capacity (8/20 us)	150-600kA per Phase (PS model built with SMTMOV) 225-900kA per Phase (PS model built with HSMTMOV)
Lightning Capacity (10/350 us)	12.5-50kA per Phase (PS model built with SMTMOV) 20-80kA per Phase (PS model built with HSMTMOV)
SCCR	200kArms
Sine wave tracking	Optional for UL Type 2 listed
Lightning counter Current	≥ 200A (with Reset button)
Failure pre-test	Press 2S (test button)
Power Status Indication	Normal=Blue LED ON
Working Status Indication	Three stage (Normal= Blue LED ON ; Need replace= Yellow, Fail= Turn to Red)
Power Connecting	8 AWG, 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°C ~ +85°C , Humidity relative 5~95% (25°C) , Altitude ≤ 3km
Dimensions, W x D x H	350x370x223 mm
Threaded NPT	1" NPT
Enclosure	Metal enclosure, NEMA 4
Net Weight (typical value)	10.6 kg

One-port Panel SPDs

■ Technical Data:

Model No.	System Voltage (50/60Hz)	In (kA)	Protected Mode (Direct protection mode)				Voltage Protection Ratings (VPR @6KV/ 3kA)				Surge Capacity per phase ⁽²⁾	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L		
PS120SP% ⁽¹⁾ 2/*CA	120/240V split-phase	20	√	√	√	×	700	700	700	1200	400~900kA	150
PS120SPC%1/*CA			×	√	×	×	-	700	-	1200	150~450kA	150
PS120SPN%1T/*CA			√	×	√	×	700	1500	1500	1200	150~450kA	150
PS240SP%2/*CA	240/480V split-phase	20	√	√	√	×	1200	1200	1200	2000	400~900kA	320
PS240SPC%1/*CA			×	√	×	×	-	1200	-	2000	150~450kA	320
PS240SPN%1T/*CA			√	×	√	×	1200	2000	1500	2000	150~450kA	320
PS120Y%2/*CA	208Y120V Three-phase wye	20	√	√	√	×	700	700	700	1200	400~900kA	150
PS120YN%1T/*CA			√	×	√	×	700	1500	1500	1200	150~450kA	150
PS120YN%1/*CA			√	×	√	×	700	1200	700	1200	150~450kA	150
PS120YG%1/*CA			×	√	√	×	1200	700	700	1200	150~450kA	150
PS120YC%1/*CA			×	√	×	×	-	700	-	1200	150~450kA	150
PS127Y%2/*CA	220Y127V Three-phase wye	20	√	√	√	×	700	700	700	1200	400~900kA	150
PS127YN%1T/*CA			√	×	√	×	700	1500	1500	1200	150~450kA	150
PS127YN%1/*CA			√	×	√	×	700	1200	700	1200	150~450kA	150
PS127YG%1/*CA			×	√	√	×	1200	700	700	1200	150~450kA	150
PS127YC%1/*CA			×	√	×	×	-	700	-	1200	150~450kA	150
PS230Y%2/*CA	380Y/220V 400Y/230V Three-phase wye	20	√	√	√	×	1200	1200	1200	2000	400~900kA	320
PS230YN%1T/*CA			√	×	√	×	1200	1500	1500	2000	150~450kA	320
PS230YN%1/*CA			√	×	√	×	1200	2000	1200	2000	150~450kA	320
PS230YG%1/*CA			×	√	√	×	2000	1200	1200	2000	150~450kA	320
PS230YC%1/*CA			×	√	×	×	-	1200	-	2000	150~450kA	320
PS240Y%2/*CA	415Y/240V Three-phase wye	20	√	√	√	×	1200	1200	1200	2000	400~900kA	320
PS240YN%1T/*CA			√	×	√	×	1200	1500	1500	2000	150~450kA	320
PS240YN%1/*CA			√	×	√	×	1200	2000	1200	2000	150~450kA	320
PS240YG%1/*CA			×	√	√	×	2000	1200	1200	2000	150~450kA	320
PS240YC%1/*CA			×	√	×	×	-	1200	-	2000	150~450kA	320
PS277Y%2/*CA	480Y/277V Three-phase wye	20	√	√	√	×	1200	1200	1200	2000	400~900kA	320
PS277YN%1/*CA			√	×	√	×	1200	2000	1200	2000	150~450kA	320
PS277YG%1/*CA			×	√	√	×	2000	1200	1200	2000	150~450kA	320
PS277YC%1/*CA			×	√	×	×	-	1200	-	2000	150~450kA	320
PS347Y%2/*CA	600Y/347V Three-phase wye	20	√	√	√	×	1500	1500	1500	2500	300~600kA	420
PS347YN%1/*CA			√	×	√	×	1500	2500	1500	2500	150~300kA	420
PS347YG%1/*CA			×	√	√	×	2500	1500	1500	2500	150~300kA	420
PS347YC%1/*CA			×	√	×	×	-	1500	-	2500	150~300kA	420

One-port Panel SPDs

PS120H%2/*CA	120/240V high leg delta	20	√	√	√	×	700-1200HL	700-1200HL	700	1200-2000HL	400~900kA	150/320HL
PS120HN%1T/*CA			√	×	√	×	700-1200HL	1500-2000HL	1500	1200-2000HL	150~450kA	150/320HL
PS120HN%1/*CA			√	×	√	×	700-1200HL	1200-2000HL	700	1200-2000HL	150~450kA	150/320HL
PS120HG%1/*CA			×	√	√	×	1200-2000HL	700-1200HL	700	1200-2000HL	150~450kA	150/320HL
PS120HC%1/*CA			×	√	×	×	-	700-1200HL	-	1200-2000HL	150~450kA	150/320HL
PS240H%2/*CA	240/480V high leg delta	20	√	√	√	×	1200-2000HL	1200-2000HL	1200	2000-3000HL	400~600kA	320/550HL
PS240HN%1T/*CA			√	×	√	×	1200-2000HL	1500-2000HL	1500	2000-3000HL	150~300kA	320/550HL
PS240HN%1/*CA			√	×	√	×	1200-2000HL	2000-3000HL	1200	2000-3000HL	150~300kA	320/550HL
PS240HG%1/*CA			×	√	√	×	2000-3000HL	1200-2000HL	1200	2000-3000HL	150~300kA	320/550HL
PS240HC%1/*CA			×	√	×	×	-	1200-2000HL	-	2000-3000HL	150~300kA	320/550HL
PS240D%2/*CA	240V three-phase	20	×	√	×	√	-	1200	-	1200	400~900kA	320
PS240DG%1/*CA	delta		×	√	×	×	-	1200	-	1500	150~450kA	320
PS480D%2/*CA	480V three-phase	20	×	√	×	√	-	1800	-	1800	400~600kA	550
PS480DG%1/*CA	delta		×	√	×	×	-	1800	-	3000	150~300kA	550
PS600D%2/*CA	600V three-phase	20	×	√	×	√	-	2000	-	2000	400~600kA	690
PS600DG%1/*CA	delta		×	√	×	×	-	2000	-	4000	150~300kA	690
PS120S%2/*CA	120V Single-phase	20	√	√	√	×	700	700	700	-	400~900kA	150
PS120SN%1T/*CA			√	×	√	×	700	1500	1500	-	150~450kA	150
PS120SN%1/*CA			√	×	√	×	700	1200	700	-	150~450kA	150
PS120SG%1/*CA			×	√	√	×	1200	700	700	-	150~450kA	150
PS127S%2/*CA	127V Single-phase	20	√	√	√	×	700	700	700	-	400~900kA	150
PS127SN%1T/*CA			√	×	√	×	700	1500	1500	-	150~450kA	150
PS127SN%1/*CA			√	×	√	×	700	1200	700	-	150~450kA	150
PS127SG%1/*CA			×	√	√	×	1200	700	700	-	150~450kA	150
PS230S%2/*CA	220V&230V Single-phase	20	√	√	√	×	1200	1200	1200	-	400~900kA	320
PS230SN%1T/*CA			√	×	√	×	1200	1500	1500	-	150~450kA	320
PS230SN%1/*CA			√	×	√	×	1200	2000	1200	-	150~450kA	320
PS230SG%1/*CA			×	√	√	×	2000	1200	1200	-	150~450kA	320
PS240S%2/*CA	240V Single-phase	20	√	√	√	×	1200	1200	1200	-	400~900kA	320
PS240SN%1T/*CA			√	×	√	×	1200	1500	1500	-	150~450kA	320
PS240SN%1/*CA			√	×	√	×	1200	2000	1200	-	150~450kA	320
PS240SG%1/*CA			×	√	√	×	2000	1200	1200	-	150~450kA	320
PS277S%2/*CA	277V Single-phase	20	√	√	√	×	1200	1200	1200	-	400~900kA	320
PS277SN%1/*CA			√	×	√	×	1200	2000	1200	-	150~450kA	320
PS277SG%1/*CA			×	√	√	×	2000	1200	1200	-	150~450kA	320

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PS347S%2/*CA	347V Single-phase	20	√	√	√	×	1500	1500	1500	-	400~600kA	420
PS347SN%1/*CA			√	×	√	×	1500	2500	1500	-	150~300kA	420
PS347SG%1/*CA			×	√	√	×	2500	1500	1500	-	150~300kA	420

⁽¹⁾% means 3 to 6 (Surge capacity 150kA~300kA per mode (SMTMOV), or 225~450kA(HSMTMOV))

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

While PS built with SMTMOV module

Code	Surge capacity 8/20 us	lightning capacity 10/350 us
31	150 kA per phase or line	12.5kA per phase or line
41	200kA per phase or line	15kA per phase or line
51	250kA per phase or line	20kA per phase or line
61	300kA per phase or line	25kA per phase or line
32	300kA per phase or line	25kA per phase or line
42	400kA per phase or line	30kA per phase or line
52	500kA per phase or line	40kA per phase or line
62	600kA per phase or line	50kA per phase or line
PS...T... (GDT for NPE mode)	200kA for NPE mode	100kA for NPE mode

While PS built with HSMTMOV module (Available for 150~320 Vac PS model)

Code	Surge capacity 8/20 us	lightning capacity 10/350 us
31	225kA per phase or line	20kA per phase or line
41	300kA per phase or line	25kA per phase or line
51	375kA per phase or line	30kA per phase or line
61	450kA per phase or line	40kA per phase or line
32	450kA per phase or line	40kA per phase or line
42	600kA per phase or line	50kA per phase or line
52	750kA per phase or line	60kA per phase or line
62	900kA per phase or line	80kA per phase or line
PS...T... (GDT for NPE mode)	200kA for NPE mode	100kA for NPE mode