

Maximum Safety in Surge Protection

Welcome to Prosurge



www.Prosurge.com

Presentation Outline



- 01 Prosurge Profile
- 02 Manufacturing Site and Inhouse Lab
- 03 Overview of Products and Core Technology TPAE
- 04 QEHS Management
- 05 Global Marketing & Sales Achievement



01 Prosurge Profile

Who we are?

A globally competitive surge protection manufacturer and solutions provider

Milestone

- AC Din Rail SPD recognized by UL1449 Type 1 SPD.
- Test Lab certified by Government for "Lightning Protection R&D Center".
- Prosurge moved to newly rent bigger factory, 4 production lines.
- Market extended to USA and Europe covering more than 20 countries.



- Prosurge founded, established 2 production lines.
- Focused on R&D of surge protection products for international market and Patents.

- Test Lab certified as a recognized Laboratories by TÜV SÜD as External Test Laboratory
- DC PV MOV certified by TUV.
- Government-certified "Lightning Protection R&D Center.".
- Launched intelligent Surge Protective Device (iSPD).
- Acquired another 4,000 m² plant with 6 production lines.
- Became the largest manufacturer of thermally protected MOV in Asia
- Market covers more than 60 countries.



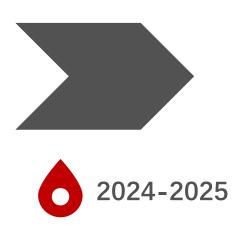


- Moved to its own 3000m² new plant,
 - 5 production lines.
- Established Prosurge Inc. in USA.
- Market extended much more with coverage about 50 countries.

Looking Ahead



- Prosurge is upgrading SPDs to the latest UL1449 5th
- Building a new plant EPROTEK in Malaysia with coverage about 2000m2 to continues its prosperous business expansion.







What distinguishes us from the others?

- Global Patent in USA, Germany, Korea, China
- Global R&D Team combined with valuable industry experience
- Professional Laboratory -TUV (Germany) cooperative laboratory
- International certifications (TUV, KEMA, UL, ETL, CE)
- Serving the most demanding customers like Fortune 500 companies
- Excel at SPD manufacturers market (Flexible manufacturing: Malaysia-based production (optional))
- Largest manufacturer of TPMOV in Asia
- Offering the most extensive Chinese brand SPDs for US market

Global Leader in Multiple SPD Categories



FY 2025

150

Employees

ISO 9001

Quality Management System































Patents & Certificates





Germany patent



The Director of the United States
Patent and Trademark Office
Has received an application for a patent for a control for a contr

USA patent



CERTIFICATE OF PATENT REGISTRATION

Patent Ring, No. : 16-1318882

Application No. : 16-1318882

Korea patent



TUV for AC/PV SPD



China patent



CE Certificate

Honor



National High-Tech Company Certificate



Model Enterprise for Intellectual Property



Maximum Safety in Surge Protection



Lightning Protection R&D Center



The Most Growing Enterprise



Excellence in Quality Management



Certificate of "Professional, refined, special, Innovative" Enterprise



Safe Production Certificate





High Tech Product Certificate



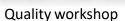
Manufacturing Site and Inhouse Lab

SPD Factory











Precision Soldering



Online Aging



Data Traceability

TPMOV 5 M Capacity 2024 Panel SPDs 1.2 M Capacity 2024

DIN- SPDs 10 M Capacity 2024

- Large-scale and automatic production equipment
- **4000m+ sq ft** of comprehensive workshop
- **16.2 million** units of annual production capacity
- EHS System (Environment, Health, Safety)

HIGHTLIGHTS:

Premium quality exclusiveworkshop;

2 automaticworkshops;

Real-time digital system for production data

FACTORY-MALAYSIA

PreSurge Maximum Safety in Surge Protection

Offers robust local resource capabilities



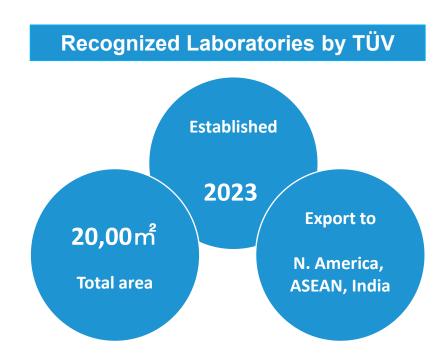
Automated Lead

Precision Soldering Data Traceability

Cutting

HIGHLIGHTS

- 2,000 m² of comprehensive workshop
- automatic workshops
- Efficient storage & logistics management
- Recognized Laboratories by TÜV (launch in Aug)



Supplied Category & Annual Capacity

Category	ТРМОV	Panel SPDs	DIN- SPDs
Annual Capacity (units)	5 Million	1.2Million	10 Million

PreSurge Maximum Safety in Surge Protection

TÜV SÜD External Test Laboratory









- Prosurge is appointed by the local government as Lightning
 Protection R&D Center.
- Prosurge can perform testing according to ANSI/UL 1449,
 497a/b/c, EN/IEC 61643-1/11/31, EN 50539-11, EN60730-1,
 EN/IEC 61643-21,IEEE C62.41 etc. at PROSURGE in-house Lab







Multi-wave Impulse Current Generator

- Can generate 10/350 up to 100kA & 8/20 up to 150kA &
 Combination wave impulse current
- Meet the test requirements of UL1449 and IEC61643-11 and IEC61643-31:
- TEST PROGRAM INCLUDE:

Voltage Protection Level test (Up/VPR)

Operating duty test (In, Imax)

Additional duty test for test class I (limp)

Surge Testing

Test Facilities





- Meet the test requirements:
 - UL60691& IEC60691,
- UL60691, CAN/ CSA-E691-94,
- EN60691 test requirement for rated functioning temperature





Vibration Tester

 Test packing conditions of the goods before shipment

PreSurge Maximum Safety in Surge Protection

Test Facilities







UL 1449 & IEC61643

- Environment Test Chamber
- UL 1449 & IEC61643



Intermediate Current and Thermal Stability Tester

 According to UL1449 & IEC61643-11



Salt and Spray Tester Test as per IEC60068

 IEC Environment test, check corrosion resistance of materials and surface coatings



Test Facilities

























Team



- Terry Mao: Managing Director, over 15 years' experience in surge protection. Member of UL1449 Standard STP1449.
- Ding Xudong: Chief Technology Officer, over 20 years' experience in surge protection industry and former engineering director from a public listed surge protection company.
- Mr. Bill Goldbach: engineering consultant, member of IEEE's Standards Board and member of the UL1449 STP1449. 30+ years' experience in surge protection industry.
- Feng Miao: VP of Operation and Product Manager, 20+ years in MOV and surge protection industry.
- Xu Liangsheng: Quality Manager, 20+ years in MOV and Surge Protection industry.



Team



Mr. Bill Goldbach

- Engineering Consultant in USA, PHD
- a leading industry expert in Power Engineering and Surge Protective Devices
- member of IEEE's Standards Board
- member of the WG (Working Group) chair of WG 3.6.4 (C62.41.1, C62.41.2 and C62.45);
- member of the **UL1449 STP**; **CSA** Technical Committee for SPD's; **NFPA** Lightning Protection Technical Committee, **NSAA** (National Ski Area Assoc.), **PEG**(Protection Engineers Group) and a corresponding member of the US IEC TAG.
- Awarded the IEEE Standards Medallion in 2004.
- The papers authored by Mr. Bill Goldbach include:

Solar Water Heating in the NorthWest

Lightning Physics and Effects

Filters, Uses and Myths

Filters and TVSS

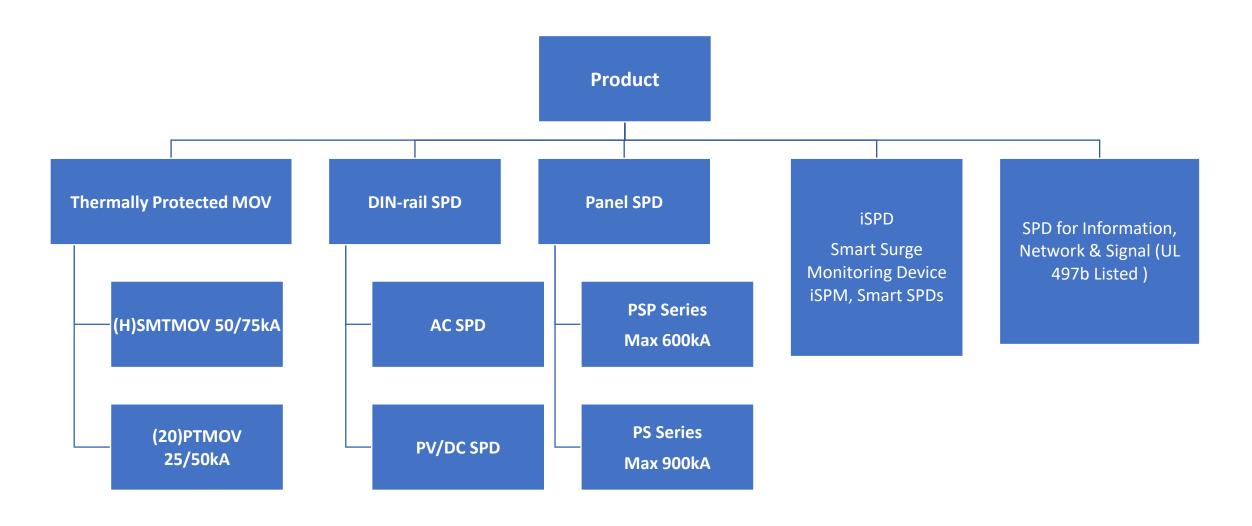
Optimizing the use of Surge Protective Devices



Overview of Products and Core Technology - TPAE



Prosurge Products at a Glance





















Our major products are based on TPAE technology



Thermally Protected MOV



AC DIN-rail SPD



DC DIN-rail SPD



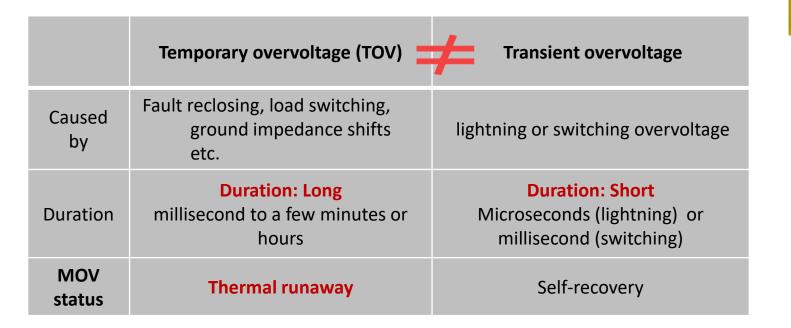
UL 1449 Panel SPD

Why we need TPAE?

It is generally known that the metal oxide varistor (MOV) is an ideal component for limiting surge voltage and current as well as for absorbing energy,

But MOV or SPD may go into thermal runaway resulting in overheating, smoke, and potentially fire hazard due to:

- End of life
- Sustained abnormal over-voltage (TOV)
- Surge with unexpected energy

















Due to their potential high voltage and long duration, TOV's can be very detrimental to MOV based SPD. TOV can cause permanent damage to the SPD and resulting in failure, potentially accompanied by fire or explosion.

Why TPAE Technology? - TOV

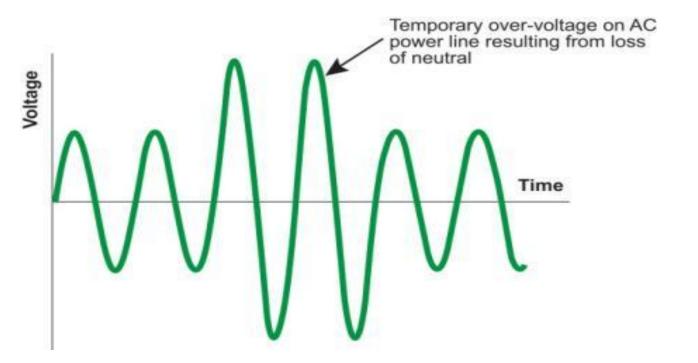
ProSurge

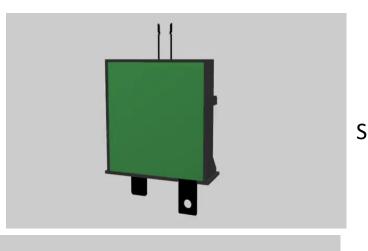
Maximum Safety in Surge Protection

Prosurge TPAE technology helps to solve problems due to MOV's thermal runaway.

SPD with TPAE technology can be fail-safe & self-protected even TOV is twice of MCOV

without upstream over-current protection.





SMTMOV

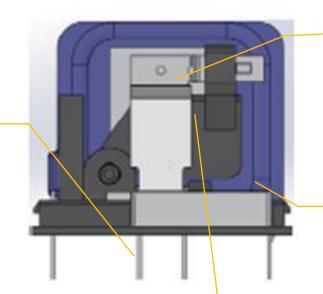


Patent Design Introduction



Compact and robust design

Remote signaling contact Fault/degradation indication



Arc extinguishing device

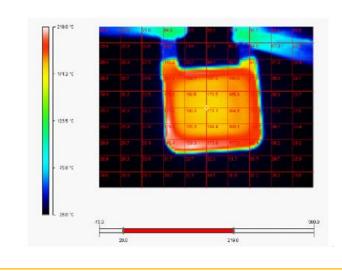
Permanently and securely disconnected from the power system, cutoff AC arc / short circuit to prevent fire hazard

Thermal-disconnector (not Fuse link)

Fast response to abnormal heat of MOV body before thermal runaway

Well-selected MOV

uniform thermal distribution under TOV

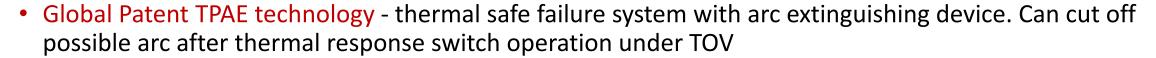


Thermally protected MOV



Unique technology to ensure a safe protection:

- UL1449 5th listed Type 1CA SPD
- Short Circuit Current Rating (SCCR) 200kArms
- Without external fuse or CB



- TPAE technology ensure a fast thermal response to guarantee thermal response switch work quickly under TOV. Fast thermoal transmission design to guarantee quick heat transmission from MOV to thermal response switch
- TPAE technology design with fail-safe & self-protected function, can disconnect itself rapidly in the event of overheating due to an abnormal over-voltage or TOV and will interrupt abnormal current that may be encountered





Thermally protected MOV - PCB Mounting SPD



Unique technology to ensure a safe protection— Global Patented TPAE technology:

- UL1449 5th listed Type 1CA SPD
- Short Circuit Current Rating (SCCR) 200kArms without external fuse or CB



Prosurge developed two series Thermal protected MOV (patented)

	PTMOV	20PTMOV	SMTMOV	HSMTMOV	
Nominal discharge current (In)	10kA	20 kA	20kA	20kA	
Surge capacity (Imax)	25kA	50kA	50kA	75kA	
MCOV	150~690 Vac	150~550 Vac	150~690 Vac	150~320 Vac	
SCCR	200kArms		200kArms		
Dimension(mm)	30x26x1	2.8 (15.5)	42x44.2x15.8		



Thermally protected MOV



- PCB mounting design, will be easy integrated on printed circuit boards (PCB) and close to sensitive electronic element inside device, to minimize the potential impact of lightning events.
- Compatible with reflow and wave soldering procedure
- Compact size with large surge current discharge capacity.
- Best alternative to traditional MOV component, because of its fail-safe & self-protected. Is popular in electronic and electrical industry, including SPD industry.





ANSI/UL1449 Panel SPD - PSP Series

PreSurge

Maximum Safety in Surge Protection

- ANSI/UL1449 5th Ed. Listed Type 1 / Type 2 SPD
- Adopt Prosurge's PTMOV as key component
- Designed with TAPE technology
- Has significant advantage in abnormal over-voltage & high fault current safety
- SCCR 200kA, tested without external fuse or CB
- Full mode protection
- Surge current capacity: 25-600kA 8/20 per phase
- Waterproof enclosure (equal to IP65~67)













Key component:





ANSI/UL1449 AC Panel SPD Technical Data



SI	PD series	PSPE	PSPF	PSP (B)	20PSP (B)	PSP (C1,C2)	HPSP	POSP	
Certifica- tion	UL1449 5th	Type 1 SPD							
	CSA C22.2	Type2 SPD							
	UL1283 EMI/RFI	_	_	_	_	UL 1283	_	_	
Connectio	n Type	Parallel Connected							
MCOV		150~690Vac	150~690	150~690Vac	150~320Vac	150~690Vac	150~320Vac	150~690Vac	
Surge capa	acity per phase	25~50kA	50kA	50kA	100kA	100~300 kA	200~600kA	50kA	
Nominal d	lischarge current	10kA	20kA	10kA	20kA	20kA	20kA	20kA	
SCCR ratin	ıg	200kArms							
EMI/RFI fil	Itering	_	_	Sine wave tracking (for Type 2)					
Lightning (counter Current	_	_	_		≥ 200A (with Reset button)			
Power Sta	tus Indication	Normal	=LED ON	Normal=Power LED ON		Normal=Blue LED ON		Normal=Power LED ON	
Working Status Indication		Fail= LED off Fail= Surge Protection LED ON		Normal= Blue LED ON ; Fail= LED off		Fail- LED off			
		raii– Surge Frotection LED ON			Fail= Blue LED turn to Red				
Enclosure	nclosure Waterproof plastic enclosure			C1: Waterproof Plastic C2: Wateproof Metal	Waterproof plastic enclosure	Waterproof plastic enclosure			

ANSI/UL1449 Panel SPD - POSP Series



- ANSI/UL1449 5th Ed. Listed Type 1 / Type 2 SPD
- Adopt Prosurge's PTMOV as key component
- Designed with TAPE technology
- Has significant advantage in abnormal over-voltage & high fault current safety
- SCCR 200kA, tested without external fuse or CB
- Quick plug-on design requires two pole spaces, easy to install on Load Centers or Panel Boards
- Full mode protection
- Easy-to-Understand LED failure indicator
- Surge current capacity: 50kA 8/20 per phase
- Watrproof enclosure (equal to IP65~67)

Key component:





Plug-on installation display

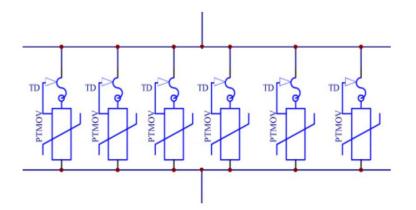






Surge Capacity & Redundant parallel design

- Higher surge capacity (kA) ratings are achieved by paralleling more PTMOV(PSP series) or SMTMOV(PS series).
- 1~6 surge path for each protection mode, so each individual PTMOV/SMTMOV handle less of the surge.
- Redundant design, in a single event of lightning can occur many discharges. Failure of MOV (if only one) at the first discharge could cause damage to equipment protected by subsequent discharges, so paralleling design making it a much more reliable and effective protection.



ANSI/UL1449 AC Panel SPD - PS Series



- UL listed Type 1 (ANSI/UL1449 5th, CSA C22.2) SPDs.
- UL listed Type 2 (ANSI/UL1449 5th, CSA C22.2) SPDs with Sine Wave Tracking
- Adopt Prosurge's SMTMOV as key component
- Design with TPAE technology
- Surge capacity: 400kA~900kA (8/20) per phase
- Full mode protection
- Waterproof metal enclosure
- Meet standards IEC61643-11:2011



Key component:



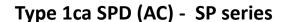


UL1449 5TH --- DIN-rail SPD for AC & PV/DC

- UL 1449, CSA Type 1ca SPD
- Designed with TAPE technology
- Up to 100/200kArms SCCR test without external fuse or CB







Imax: 50kA 8/20μS

Max. Continuous Operating Voltage, MCOV (VAC): 150V~690 Vdc

Up to 200kArms SCCR Rating









Type 1ca SPD (DC/PV) - SPV series

Imax: 50kA 8/20μS

Max. permitted DC voltage(Vpvdc): 48V~1500 Vdc

Up to 100kArms SCCR Rating

SPD for data, signal and communication systems

PriSurge

Maximum Safety in Surge Protection

- UL497b (UL File No. E504171)
- IEC61643-21:2012
- Pluggable design for easy maintenance
- With fault indication light for maintenance
- Suitable to use for Binary signals, TTY 4-20mA, TTY, TTL, Procontic C31 (RS232) and high-frequency transmission system etc.





for two lines with common reference potential in the low-bandwidth or low-data rate signal/data transmission system





for four lines with common reference potential in the data, signal and communication systems



Product structure - DM

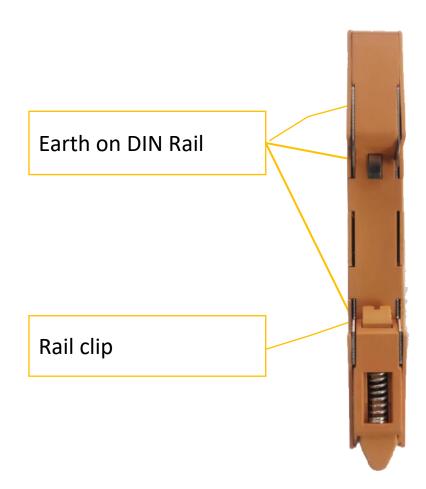




Terminal block

Base
Signal will not be
disconnected while replace
the module

Pluggable protection module



SPD for LED Street Lighting







- Comply with IEC 61643-11 and UL 1449 5th.
- Open Circuit Voltage Uoc to 20kV
- Offering full mode protection to L-PE, L-N, N-PE.
- ➤ IP65 waterproof enclosure.
- Parallel type connection and series type connections are available



SPD for Information, Network & Signal





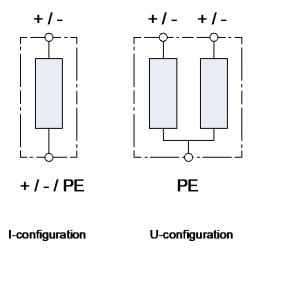
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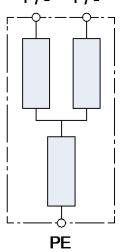
- UL 497b (UL file No.: QVGQ.E504171)
- Data network protector In according with standard IEEE802.3at/af,
 UL497b, EN50173 Category 6, IEC61643-21
- Ethernet CAT5/6 system protection;
- Applied in offices and industries like Gigabit Ethernet, ATM or ISDN system, and VoIP system (e.g. switch, router, hub, modem and so on)
- High discharge capability, total nominal discharge current 10kA 8/20 and Lightning current up to 1.0KA 10/350
- DIN-rail type is available;
- 4,8,24 ports are available



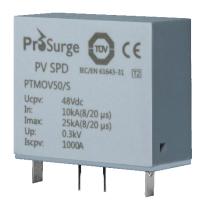
Thermally protected MOV

- Prosurge PTMOV has been qualified as T2/Class II PV SPD by TUV, according to PV SPD standards IEC 61643-31,EN 50539-11.
- Ucpv (maximum continuous operating voltage for PV application): 48V~1000V DC (single modules).
- Three recommends protective circuits for PV/DC application.





Y-configuration











DIN-rail SPD for AC (KEMA / TUV certified)

- Type 1 + Type 2 SPD as per IEC61643-11 (TUV certified)
- Type 2 SPD as per IEC61643-11 (KEMA certified)
- Design with high surge energy capacity
- Pluggable design for easy maintenance



T1+T2 SPD (TUV) Imax 100kA 8/20 Iimp L-N 25kA; N-PE 100kA 10/350



T1+T2 SPD (TUV) Imax 80kA 8/20 Iimp up to 12.5kA 10/350





T1+T2 SPD (TUV) Imax 50kA 8/20 Iimp up to 7.5kA 10/350





T2 SPD (KEMA) Imax 40kA 8/20





Advantage:

- Very low clamping level and high surge current capability (high limp, low Up)
- Increased TOV withstand (increase reliability for area with unstable power network)
- No follow current
- No aging, no leakage current
- Robustness and reliability (improve reliability, longer life duration)
- Easier surge protection coordination (VT=T1+2+3, easier to use)







DIN-rail SPD for DC/PV (TUV certified)

- ◆ Type 1 + Type 2 PV/DC SPD
- Available for 48VDC~1500VDC systems
- Prewired Y protection circuit, for common mode & differential mode protection









T1+T2 SPD (TUV certified)

Imax 80kA 8/20 Iimp up to 12.5kA 10/350 T1+T2 SPD (TUV) Imax 50kA 8/20 Iimp up to 7.5kA 10/350



Two-Port Surge Filter







- LC Filtering, Low Up
- Load current from 10A up to 400A
- Surge current up to 200kA
- With remote alarm contact
- With surge event counter
- IEC 61643-11, UL 1449 5th & ANSI/IEEE C62.41, AS1768-1991, AS3100 compliance

Lightning arrester for over-head line surge protection





- Imax 40kA 8/20
- Provide protection for low-voltage overhead lines, consumer in-house supplies, distribution transformers and other systems.
- With fault indication





Failed- arrester disconnected

Surge arrester for transformer low-voltage side protection

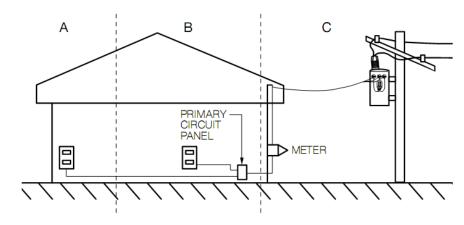








- Designed for the transformer low-voltage side protection against the risk of the harmful effects of transient surges, to ensure the smooth operation of transformer.
- Max discharge current 40kA(8/20 μs);
- Waterproof and flame resistant, IP68(or NEMA6P)





Digital/Mechanical Lightning Event Counter

- Low maintenance and long service life
- High sensitive response with trigger current down to 150A
- Can register very high lightning strike up to 100kA (10/350μs, 8/20μs)
- Easy viewable LCD/ Mechanical display
- Easy to install and use
 Fast installation directly on the round wire or flat strip of an existing down conductor
 No need to remove the enclosure
- Battery option
 Digital Counter: CR2450 lithium coin battery for easy installation and replacement
 Mechanical Counter: no requirement of external power or batteries for operation
- Can be reset through the internal reset button
- IP20 and IP67 version available with UV resistant & anti-aging plastic, water-proof, dust-proof, anti-sunburn
- Complaince with standards IEC/EN 62561-6 and EN 50164-6









Intelligent Power & Surge Monitor (iSPM)

PréSurge

Maximum Safety in Surge Protection

The PROSURGE Intelligent Power & Surge Monitor (iSPM) is a multi-function monitoring device for power systems and LPS (lightning Protecting System), a core unit for the Intelligent Surge Protective Device (iSPD), which is an innovative solution t make your LPS smart and intelligent.







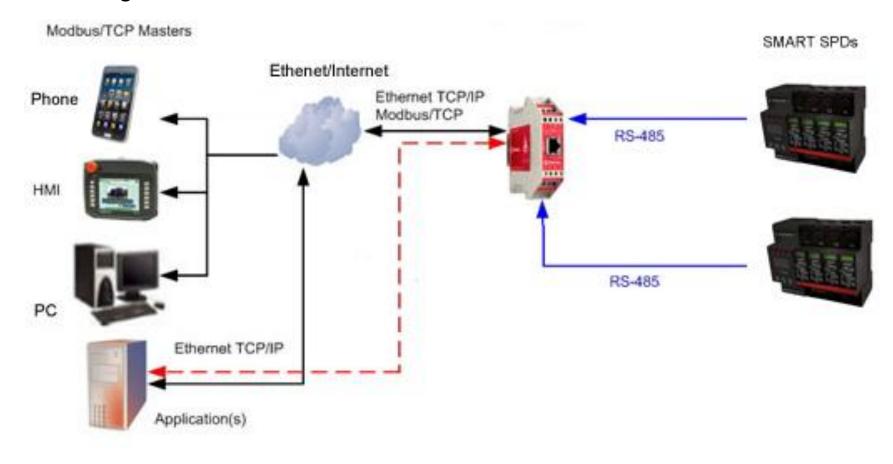




Intelligent Power & Surge Monitor (iSPM)

The iSPM can communicate with computer or smart terminal.

It allows the RS485 half-duplex MODBUS RTU protocol communication mode, to connect to a remote monitoring center.

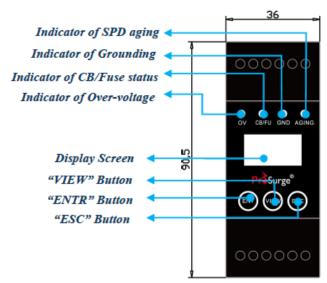


Intelligent Surge & Power Monitor iSPM-02







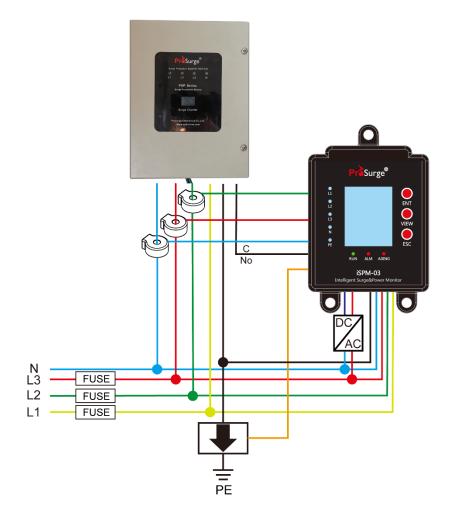


- •SPD working status and alarm
- •SPD's aging and alarm while close to end-of-life
- •Lightning and surge event (record 999 event time, accumulated frequency)
- •Backup over-current protection device working status (circuit breaker or fuse) and alarm
- Voltage on SPD in real-time, overvoltage alarm
- Grounding conditions of SPD and alarm
- N line lost alarm

Intelligent Surge & Power Monitor iSPM-03







- SPD working status and alarm
- SPDs aging and alarm while close to end-of-life
- Lightning and surge event (surge amplitude, (record 5000 event time, accumulated frequency)
- Power line & Grounding lost monitoring and alarm
- N line lost monitoring and alarm
- Backup over-current protection device working status (circuit breaker or fuse) and alarm
- Voltage on SPD in real-time (all phase lines), overvoltage alarm

Intelligent Surge Protective Device (iSPD)





- iSPD composes three essential parts: SPD, surge circuit breaker (SCB), and intelligent surge & power monitor (iSPM)
- SPD designed with Prosurge TAPE technology for a fail-safe surge protection (no fire hazard problem)
- Prosurge SCB is excellent in sensitivity of short-circuit current (below 3A)
- Prosurge SCB achieve a better balance between surge withstand performance (no tripping while expected surge occurs) and rapidly response against ultra-low short circuit and abnormal leakage current
- RS485 half-duplex MODBUS RTU protocol communication mode to connect to a remote monitoring center



Quality Assurance





Bar/QR CodeTracing system

- each item is supplied with its ID to trace #Lot No, incoming materials, parameter, materials specification, key process operator etc.



Online Aging

- Goods are 100% tested online with Uc applied before packing

• EHS – Environment, Health, Safety







• EHS – Environment, Health, Safety











Annual Physical Examination Report





Fire Drill

First Aid Training



Global Marketing & Sales Achievement







Solar Power systems



Energy storage



Electricity



Industrial control system



Railway system



CCTV system



Building



LED street light



Charger for electric vehicles



Wind energy system



Telecommunicaiton system



Petrol &Gas Industry

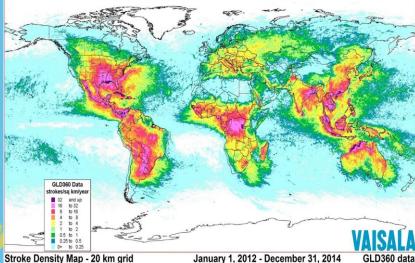
Global Sales Network- over 60 countries





Our major markets like North America, South America, South East Asia, Oceania, are all areas with the most lightning hits.

It indicates that Prosurge SPD is protecting critical asssets in the toughest environment.





Prosurge is serving Most Demanding Customers





















Projects Reference

• Surge protection project in Thailand



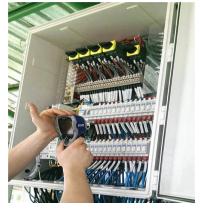










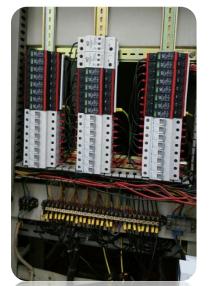
























Maximum Safety in Surge Protection



Surge protection project for switchgear in Philippines Powercity is one of the biggest generator manufacturers in the Philippines

Surge protection project in Chile









• SPD Panel in Columbia





Surge protection project in USA







• Surge protection project in Germany (Data Network Centre)
Prosurge's SPD DM-12/S2 and DM-24/S2 are installed in a data center in Germany

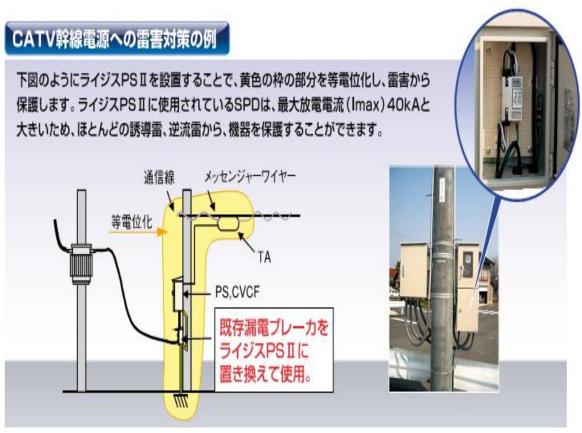






Prosurge SPD used in Japan







Marketing & Sales – Customer Recommendation

Our company has been working with major companies from China for over 10 years and I can safely state that Prosurge is one of the best companies that we work with. The products provided by Prosurge are state of the art, excellent quality and most importantly carry all of the necessary international agency approvals such as UL which is extremely important in the United States.

Howard Minnic, Automation Systems Interconnect, Inc

To my experience Prosurge Electronic is the most professional designer and manufacturer of surge protection products to any level of protection required...is one of the very few companies world wide offering a full capability of test equipment and engineers to confirm the parameters of all their surge designs and products.

Alfonso Najera, Electronic Alliance Asia



Marketing & Sales – Customer Recommendation

The product has never had a failure on sight therefore I can say that Prosurge is a high standard company with high technical engineers and factory staff. Working with Prosurge is so easily done because all questions regarding their products range are so easily explained and quickly delivered.

Russell Pereira, A.K. Power Solutions

We Altech Process& Controls De Mexico highly recommend Prosurge Electronics
Co.,Ltd.Prosurge has satisfied our needs about product range, quality, service, R&D and engineering support.

Viotor Manuel Lopez Flores, Altech Process& Controls De Mexico

Marketing & Sales – Global Exhibitions













Corporate Culture



Our Vision

To be the best surge protection manufacturer and solutions provider

Our Mission

Protecting Against Lightning For the Benefit of Mankind

Our Core Value

Honest	Duty
Innovative	Win - win

Our Teamwork Building













Maximum Safety in Surge Protection

Thank You!



Maximum Safety in Surge Protection www.Prosurge.com