Pr3Surge

Maximum Safety in Surge Protection

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2019 Edition

Surge Protective Device

Global Partners

GE Imagination at Work

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HITACHI Inspire the Next

中華電信 Chunghwa Telecom

Prosurge, Inc - Florida, USA

Prosurge Electronics Co., Ltd - Foshan, China

Prosurge is a globally competitive surge protection company and is one of the fastest growing companies in this industry. It consists of 2 companies:

Prosurge, Inc

Prosurge Electronics Co., Ltd

We start from a humble beginning by a group of experts and now we've grown into a business with more than 120 staffs. For the past 12 years, we extended our business in 6 continents and more than 60 countries. Although United States still remains our biggest single market, most of our revenue comes from international market.

Our mission is to protect millions of businesses, households and organizations from lightning & surge damages. Inspired and encouraged by this mission, we are doing things differently than many of our competitors.

We innovate. As an engineering driven company, we invest a way-above-average ratio of yearly revenue on R&D. This ensures Prosurge to be among the very few companies who can offer the most complete SPDs on both UL and IEC standards markets.

We challenge. Using our ingenuity, we are raising the standards for SPD quality & reliability via designing, manufacturing and testing. Our SPD is one of the safest on the market.

We collaborate. The Prosurge team is one of the best in industry. We share the same value: pursue excellence in everything we do. Together, we are delivering world-class products and solutions.

We progress. Despite our accomplishment, We deem ourselves progressive instead of successful. With a continuous improving mentality, we are always bettering than we used to be.

We support. Our customers are supported and well-served in various ways: 2-hour response, technical training, video conference, regular visit, well-documented material ect. In fact, they are so loyal and satisfied that they are happy to write recommendation letters for us.

Trust us with confidence. Stay safe and sound with Prosurge!

Team

Bill Goldbach

Bill has been recognized as a leading industry expert in power engineering and surge protective devices. He used to be member of IEEE' standards board and UL 1449 STP.

Terry Mao

Terry has been in surge protection industry for about 20 years. He has in-depth experience and expertise spanning from MOV to SPD.

Lab & Testing

From our foundation, we believe quality is paramount for a safety product like SPD. Thus we invest heavily to build a lab that is fully capable to perform tests according to IEC 61643-11 and UL 1449 4th Ed standards.

Impulse Current Generator

- For IEC/EN 61643 Type 1/Class B SPD testing
- Current Capacity: 50kA (10/350μs), 200kA (8/20μs)

Multi-waveform Surge Generator

- For IEC/EN 61643 Type2, 3/Class C, D SPD, and UL1449 all type testing
- Current Capacity: 120kA (8/20μs) & Combination wave (1.2/50μs voltage - 8/20μs current)

Vibration Tester

- Product structural stability & packaging testing

Online Aging tester

- U_c / MCOV compliance 100% online testing before packing

Rated Functioning Temperature (Tf)

- UL60691 & IEC60691

1.2/50 Voltage Impulse Generator

- UL 1449 & IEC61643

Environment Test Chamber

- UL 1449 & IEC61643

Thermal Stability Tester

- IEC61643

Intermediate Current Tester

- UL 1449

Accelerated Aging Tester

- UL 1449 & IEC61643

Handheld SPD Tester

- UL 1449 & IEC61643

Fluke Network Analysis

- UL497 & IEC61643-21

Oscilloscope

Digital Electric Bridge

SPD Component Tester

Varistor Parameter Tester

Certificates & Patents


CERTIFICATE OF COMPLIANCE

Certificate Number 20150820-E319871
Report Reference E319871-20100929
Issue Date 2015-AUGUST-20

Issued to: PROSURGE ELECTRONICS CO LTD
Dajin Industrial Zone
Jiansha Rd Danzao Nanhai
Foshan
Guangdong 528216 CHINA

This is to certify that representative samples of: COMPONENT - SURGE-PROTECTIVE DEVICES
Refer addendum page for models

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL1449 Surge Protective Devices
CSA C22.2 No. 8 13 Electromagnetic Interference (EMI) Filters, Electrical Notice No. 516 Surge/Transient Voltage Suppressors

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

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UL


Intertek

AUTHORIZATION TO MARK

Applicant: Prosurge Electronics Co., Ltd.
Manufacturer: Prosurge Electronics Co., Ltd.

This document supersedes all previous Authorizations to Mark for the noted Report Number.

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ETL


DEKRA

CERTIFICATE

Issued to: Applicant: Prosurge Electronics Co., Ltd.
Dajin Industrial Zone
528216 Nanhai, Foshan, Guangdong, China

Manufacturer/Licensee: Prosurge Electronics Co., Ltd.
Dajin Industrial Zone
528216 Nanhai, Foshan, Guangdong, China

Products: surge protective devices
Trade names: PROSURGE, SAFSURGE, HIT

DEKRA Certification B.V.

KEMA


CERTIFICATE

No. B 16 08 96605 006

Holder of Certificate: Prosurge Electronics Co., Ltd.
Dajin Industrial Zone, Jiansha Road, Danzao Nanhai
528216 Foshan, Guangdong
PEOPLE'S REPUBLIC OF CHINA

Certification Mark:

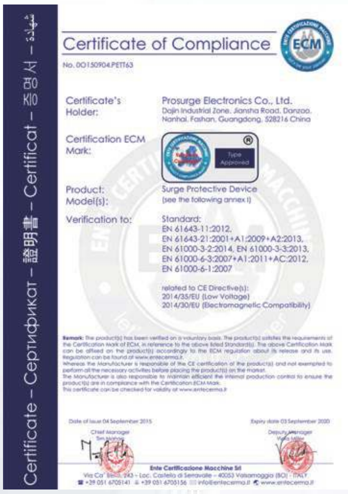
Product: Surge protection equipment
[Surge Protective Device(SPD)]

Valid until: 2019-09-14

Date, 2016-08-18

Page 1 of 2

TUV


Certificate of Compliance

No. 0O150904.PETT63

Certificate's Holder: Prosurge Electronics Co., Ltd.
Dajin Industrial Zone, Jiansha Road, Danzao, Nanhai, Foshan, Guangdong, 528216 China

Certification ECM Mark:

Product: Surge Protective Device
Model(s): (see the following annex I)

Verification to: Standard:
EN 61643-11:2012,
EN 61643-21:2001+A1:2009+A2:2013,
EN 61000-3-2:2014, EN 61000-3-3:2013,
EN 61000-6-3:2007+A1:2011+AC:2012,
EN 61000-6-1:2007

related to CE Directive(s):
2014/35/EU (Low Voltage)
2014/30/EU (Electromagnetic Compatibility)

Ente Certificazione Macchine Srl

CE


CERTIFICATION INTERNATIONAL

Certificate of Registration

This is to certify that

Prosurge Electronics Co.,Ltd

Has been assessed as conforming to meet the requirements of

ISO9001:2015

for the scope of activities

Manufacture and sale of lightning protection electronic products (except the qualification license)

Certificate No: CI/138726Q
Issue Date: 10 May 2018 Valid until 9 May 2021

ISO 9001: 2015


The Director of the United States Patent and Trademark Office

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

The United States of America

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

US PATENT


Bundesrepublik Deutschland

Urkunde

über die Erteilung des
Patents Nr. 11 2010 005 119

Bezeichnung:
Überspannungsableiter mit thermischer Überlastsicherung

IPC:
H02H 9/04

Inhaberin/Inhaber:
Xiaomao Mao, Foshan, CN

Erfinderin/Erfinder:
Wei, Tianyun, Guangdong, CN; Mao, Xiaomao, Guangdong, CN

Priorität:
12.01.2010 CN 201010019307.8

Tag der Anmeldung:
02.02.2010

Tag der Veröffentlichung der Patenterteilung:
12.03.2015

Die Präsidentin des Deutschen Patent- und Markenamts

Cornelia Rudloff-Schäffer

München, 14.07.2015

GERMANY PATENT


KIPO

CERTIFICATE OF PATENT REGISTRATION

Patent Reg. No. : 10-1318852

Application No. : 10-2011-7030783
Application Date : December 22, 2011
Registration Date : October 10, 2013

Title of Invention : SURGE SUPPRESSOR WITH THERMAL PROTECTIVE FUNCTION

Owner of Patent Right : Prosurge Electronics Co., Ltd.
Second floor, 30 Gongyedadao, Xiabai, Luocun Town, Nanhai Foshan, Guangdong 528226 China

Inventor(s) : MAO, Xiaomao
Second floor, 30 Gongyedadao, Xiabai, Luocun Town, Nanhai Foshan, Guangdong 528226 China

Inventor(s) : WEI, Tianyun
Second floor, 30 Gongyedadao, Xiabai, Luocun Town, Nanhai Foshan, Guangdong 528226 China

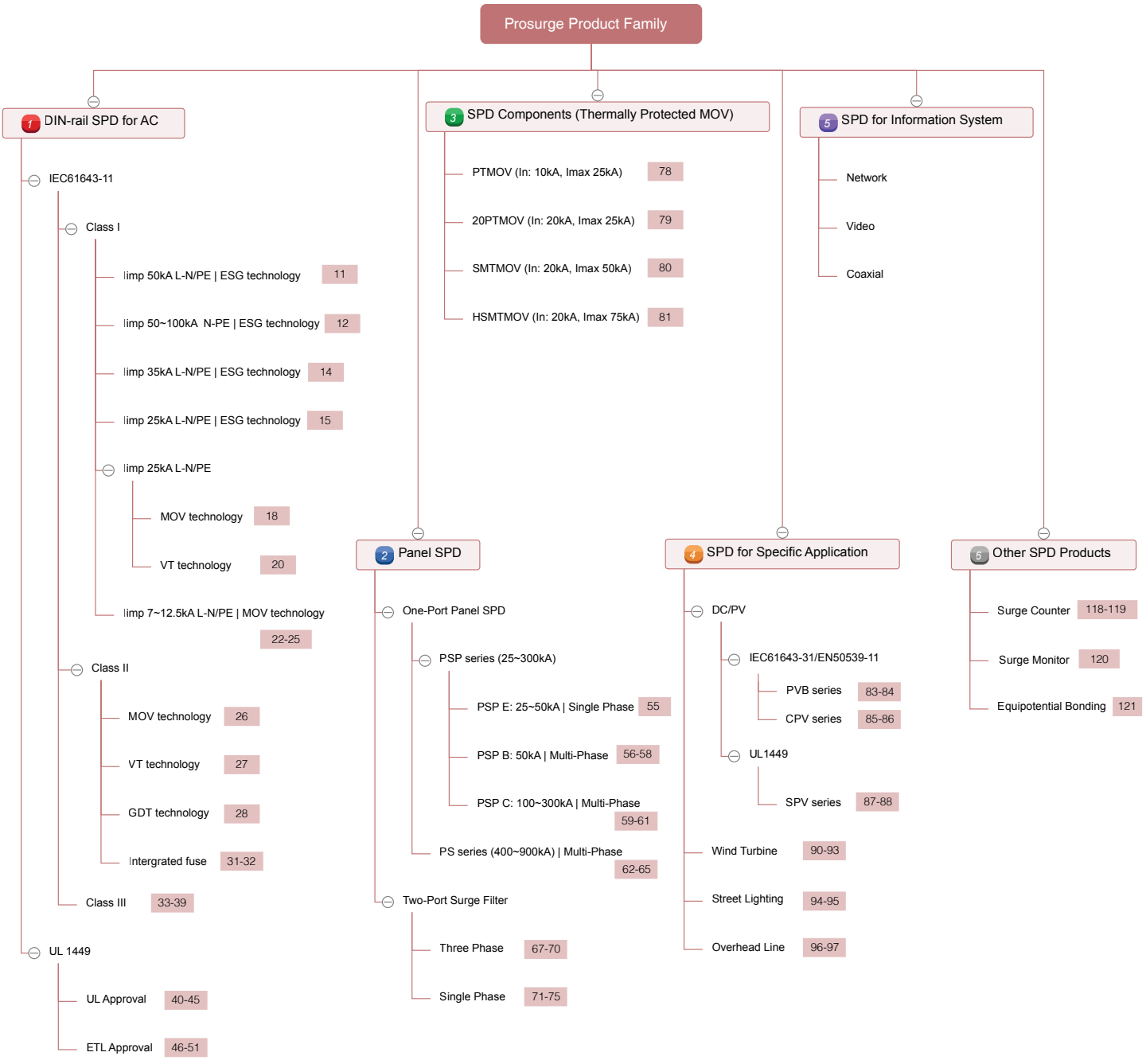
This is to certify that the above invention has been registered in the original Patent register in accordance with the Patent Law.

This 10th day of October, 2013

The Commissioner of the Korean Intellectual Property Office

KOREA PATENT

Product Family



Note: Please check related product series based on the page number.

Contents

Surge Protective Device (SPD)

Device that contains at least one nonlinear component that is intended to limit surge voltages and divert surge currents

Surge

A transient wave of current, potential or power in an electric circuit. Surges do not include temporary overvoltages (TOV) consisting of an increase in the power frequency voltage for several cycles.

One-port SPD

SPD having no intended series impedance

Two-port SPD

SPD having a specific series impedance connected between separate input and output connections

SPD Category per IEC61643 (EN61643)

Class I tests: Tests carried out with the impulse discharge current I_{imp}, with an 8/20 current impulse with a crest value equal to the crest value of I_{imp}, and with a 1,2/50 voltage impulse

Class II tests: Tests carried out with the nominal discharge current I_n, and the 1,2/50 voltage impulse

Class III tests: Tests carried out with the 1,2/50 voltage - 8/20 current combination wave generator

SPD Category per UL1449

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 1 SPDs for use in PV systems can be connected between the PV array and the main service disconnect.

Note: SPDs investigated for Type 1 applications are automatically suitable for Type 2 applications and may be marked for SPD Type 1 and/ or Type 2 applications. SPDs only marked "SPD Type 2" are not suitable for Type 1 applications.

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.

Type 3: Point of utilization SPDs, installed at a minimum conductor length of 10 meters (30 feet) from the electrical service panel to the point of utilization, for example cord connected, direct plug-in, receptacle type and SPDs installed at the utilization equipment being protected. The distance (10 meters) is exclusive of conductors provided with or used to attach SPDs.

Type 4 Component Assemblies: Component assembly consisting of one or more Type 5 components together with a disconnect (integral or external) or a means of complying with the limited current tests.

Type 1, 2, 3 Component Assemblies: Consists of a Type 4 component assembly with internal or external short circuit protection.

Type 5: Discrete component surge suppressors, such as MOVs that may be mounted on a PWB, connected by its leads or provided within an enclosure with mounting means and wiring terminations.

Note: Type 5 SPDs and Types 1, 2, 3 and 4 component assemblies are intended only for factory installation within another component, device or product.

Mode of Protection of an SPD

An intended current path, between terminals that contains protective components, e.g. line-to line, line-to-earth, line-to-neutral, neutral-to-earth.

Lightning Protection System (LPS)

Complete system used to protect a structure and its contents against the effects of lightning

1,2/50 Voltage Impulse

Voltage impulse with a nominal virtual front time of 1,2 µs and a nominal time to half-value of 50 µs

8/20 Current Impulse

current impulse with a nominal virtual front time of 8 µs and a nominal time to half-value of 20 µs

Combination Wave

A wave characterized by defined voltage amplitude (U_{OC}) and waveshape under open-circuit conditions and a defined current amplitude (I_{CW}) and waveshape under short-circuit conditions

Thermal Runaway

Operational condition when the sustained power dissipation of an SPD exceeds the thermal dissipation capability of the housing and connections, leading to a cumulative increase in the temperature of the internal elements culminating in failure

SPD Disconnector (Disconnector)

Device for disconnecting an SPD, or part of an SPD, from the power system

Status Indicator

The device that indicates the operational status of an SPD, or a part of an SPD.

Thermal Stability

SPD is thermally stable if, after heating up during the operating duty test, its temperature decreases with time while energized at specified maximum continuous operating voltage and at specified ambient temperature conditions

Nominal Varistor Voltage (U_{1mA})

The voltage across the MOV measured at 1 mA DC

Nominal Discharge Current (I_n)

The crest value of the current through the SPD having a current waveshape of 8/20

Impulse Discharge Current (I_{imp})
The crest value of a discharge current through the SPD with specified charge transfer Q and specified energy W/R in the specified time

Total Discharge Current (I_{Total})
The current which flows through the PE or PEN conductor of a multipole SPD during the total discharge current test

Maximum Discharge Current (I_{max})
The crest value of a current through the SPD having an 8/20 waveshape and magnitude according to the manufacturers specification. I_{max} is equal to or greater than I_n.

Maximum Continuous Operating Voltage (U_c)
Maximum r.m.s. voltage, which may be continuously applied to the SPD's mode of protection

Maximum Continuous Operating Voltage for PV Application (U_{CPV})
Maximum DC voltage which may be continuously applied to the SPD's mode of protection

Follow Current (I_f)
The peak current supplied by the electrical power system and flowing through the SPD after a discharge current impulse

Follow Current Interrupt Rating (I_{fi})
Prospective short-circuit current that an SPD is able to interrupt without operation of a disconnector

Rated Load Current (I_L)
Maximum continuous rated r.m.s. current that can be supplied to a resistive load connected to the protected output of an SPD.

Voltage Protection Level (U_p)
Maximum voltage to be expected at the SPD terminals due to an impulse stress with defined voltage steepness and an impulse stress with a discharge current with given amplitude and waveshape.

Voltage Protection Rating (VPR) per UL 1449
A rating selected from a list of preferred values as given in the latest revision of ANSI/UL 1449. The value of VPR is determined as a higher value taken from table of UL 1449 to the average measured limiting voltage determined during the first set of measured limiting voltages tests during the transient-voltage surge suppression test using the combination wave generator at a setting of 6kV, 3kA. As a standardized rating system, VPR allows the direct comparison between like SPDs (i.e. same Type and Voltage).

Temporary Overvoltage Value of the Power System (U_{TOV})
Power frequency overvoltage occurring on the network at a given location, of relatively long duration. TOVs may be caused by faults inside the LV system (U_{TOV}(LV)) or inside the HV system (U_{TOV}(HV))

Open Circuit Voltage (U_{oc})
Open circuit voltage of the combination wave generator at the point of connection of the device under test

Short-Circuit Current Rating (I_{sc}) per IEC 61643
Maximum prospective short-circuit current from the power system for which the SPD, in conjunction with the disconnector specified, is rated

Short Circuit Current Rating (I_{sccr}) per UL 1449
The suitability of an SPD for use on an AC power circuit that is capable of delivering not more than a declared rms symmetrical current at a declared voltage during a short circuit condition. SCCR is not the same as AIC (Amp Interrupting Capacity). SCCR is the amount of "available" current that the SPD can be subjected to and safely disconnect from the power source under short circuit conditions. The amount of current "interrupted" by the SPD is typically significantly less than the "available" current.

Short-Circuit Current Rating of the PV SPD (I_{scpv})
Maximum prospective short-circuit current from the power system for which the PV SPD, in conjunction with the disconnector specified, is rated.

Degree of Protection of Enclosure (IP)
Classification preceded by the symbol IP indicating the extent of protection provided by an enclosure against access to hazardous parts, against ingress of solid foreign objects and possibly harmful ingress of water.

Enclosure Rating NEMA
Ensures that the NEMA rating of the enclosure matches the environmental conditions at the location where the device is to be installed.

Residual Current (I_{PE})
Current flowing through the PE terminal of the SPD while energized at the reference test voltage (U_{REF}) when connected according to the manufacturer's instructions

Continuous Current for PV Application (I_{CPV})
The current flowing through the plus and minus terminals of the SPD while energized at U_{CPV}

Return Loss
Modulus of the reciprocal of the reflection factor, generally expressed in decibels (dB). When impedances can be defined, the return loss in dB is given by the formula: 20 log10 MOD [(Z1+Z2)/(Z1–Z2)

Insertion Loss
Loss resulting from the insertion of an SPD into a transmission system. It is the ratio of the power delivered to that part of the system following the SPD, before insertion of the SPD, to the power delivered to that same part after insertion of the SPD.

DIN-rail SPD for AC Power Supply (IEC Standard)

Class I SPD

Class II SPD

Class III SPD

Single Pole SPD

▪ ESG Technology

G50/…-S

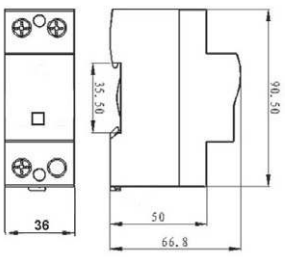
- Non-pluggable T1+2 SPD with Encapsulated Spark Gap (ESG) technology to guarantee reliability in rugged environment and high exposure location.
- High lightning current discharge capacity up to I_{imp} 50kA 10/350μs
- Degradation indication & optional remote signal contact
- Low voltage protection level
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

CE RoHS

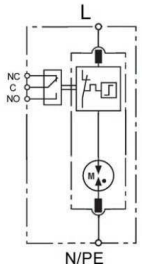
Model		G50/150-S	G50/175-S	G50/275-S	G50/320-S	G50/385-S	G50/420-S
Compliance		EN/IEC 61643-11					
Category IEC/EN		Class I+II /T1+2					
Max. Continuous Operating Voltage (AC)	U_c	150V	175V	275V	320V	385V	420V
Technology		ESG technology Thermal disconnector					
Ports/Protection Mode		1 / L-PE or L-N or N-PE					
Lightning Impulse Current (10/350μs)	I_{imp}	50kA					
Nominal Discharge Current (8/20μs)	I_n	50kA					
Max. Discharge Current (8/20μs)	I_{max}	150kA					
Voltage Protection Level	U_p	≤1.2kV	≤1.2kV	≤1.5kV	≤1.6kV	≤1.8kV	≤2.0kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	228V/120min	228V/120min	442V/120min	442V/120min	529V/120min	585V/120min
Residual Current	I_{PE}	No					
Follow Current Interrupt Rating	I_{fi}	25kA					
Short-Circuit Current Rating per IEC 61643-11	I_{sc}	25kA					
Response Time	t_A	≤100ns					
Backup Fuse (only required if not already provided in mains)		500A gL/gG					
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m					
Cross-Section of Connection Wire		Single-strand 35mm²; multi-strand 25mm²					
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3					
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0					
Degree of Protection		IP20					
Installation Width		2 modules, DIN 43880					
Failure Indication /Status		RED- Failure					
Remote Alarm Contact		Yes					
Approvals, certification		CE					
Additional Data for Remote Alarm Contacts							
Remote Alarm Contact Type		Isolated Form C					
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A					
Max. Size of Connecting Wire		Max. 1.5mm² (or # 16AWG)					

Note: Please see Page 13 for prewired multi-pole combination.

■ Dimension Drawing



■ Basic Circuit Diagram



Single Pole SPD

▪ NPE Module

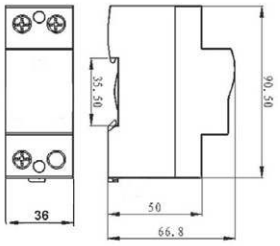
G…/255NPE

- T1+2 SPD with Encapsulated Spark Gap (ESG) technology to guarantee reliability in rugged environment and high exposure location
- High lightning current discharge capacity up to I_{imp} 100kA 10/350
- Low voltage protection level
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

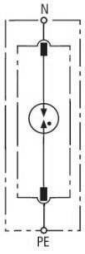
Model		G100/255NPE	G50/255NPE	G25/255NPE
Compliance		EN/IEC 61643-11		
Category IEC/EN		Class I+II /T1+2		
Max. Continuous Operating Voltage (AC)	U_c	255V		
Technology		ESG technology		
Ports/Protection Mode		1 / N-PE		
Lightning Impulse Current (10/350μs)	I_{imp}	100kA	50kA	25kA
Nominal Discharge Current (8/20μs)	I_n	100kA	50kA	25kA
Max. Discharge Current (8/20μs)	I_{max}	200kA	150kA	100kA
Voltage Protection Level (1.2/50μs)	U_p	≤1.5kV		
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	1200V/200ms		
Residual Current	I_{PE}	No		
Follow Current Interrupt Rating	I_{fi}	200A@255Vac		
Response Time	t_A	≤100ns		
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m		
Cross-Section of Connection Wire		Single-strand 35mm²; multi-strand 25mm²		
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3		
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0		
Degree of Protection		IP20		
Installation Width		2 modules, DIN 43880		
Approvals, certification		CE		

Note: Please see Page 13 for prewired multi-pole combination.

Dimension Drawing

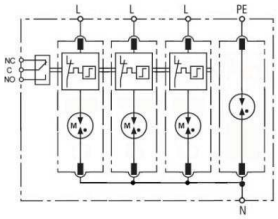
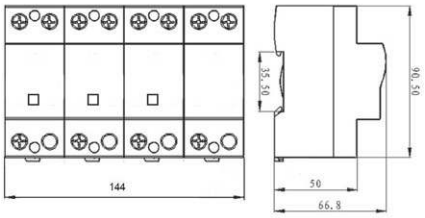
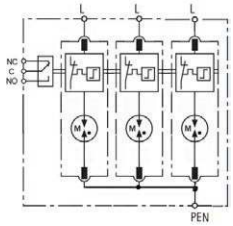
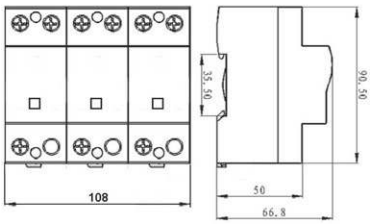
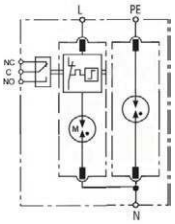
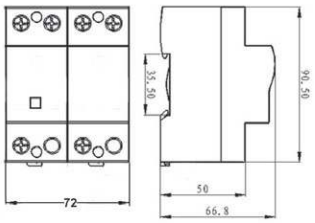
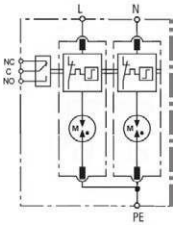
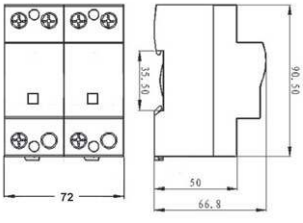


Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Combination	Power System	Max. Operating Voltage U_c	Lightning Impulse Current (10/350μs) I_{imp}	Voltage Protection Level U_p	Diagram
G50/150-S/2P	2	2 x G50/150-S	Single phase 2W+G	150Vac	50kA	L/N-G: 1.2kV	4
G50/175-S/2P	2	2 x G50/175-S	Single phase 2W+G	175Vac	50kA	L/N-G: 1.2kV	4
G50/275-S/2P	2	2 x G50/275-S	Single phase 2W+G	275Vac	50kA	L/N-G: 1.5kV	4
G50/320-S/2P	2	2 x G50/320-S	Single phase 2W+G	320Vac	50kA	L/N-G: 1.6kV	4
G50/385-S/2P	2	2 x G50/385-S	Single phase 2W+G	385Vac	50kA	L/N-G: 1.8kV	4
G50/420-S/2P	2	2 x G50/420-S	Single phase 2W+G	420Vac	50kA	L/N-G: 2.0kV	4
G50/150-S/PN50	2	G50/150-S + G50/255NPE	Single phase 2W+G	150Vac	50kA	L-N: 1.2kV, N-PE: 1.5kV	3
G50/175-S/PN50	2	G50/175-S + G50/255NPE	Single phase 2W+G	175Vac	50kA	L-N: 1.2kV, N-PE: 1.5kV	3
G50/275-S/PN50	2	G50/275-S + G50/255NPE	Single phase 2W+G	275Vac	50kA	L-N: 1.5kV, N-PE: 1.5kV	3
G50/320-S/PN50	2	G50/320-S + G50/255NPE	Single phase 2W+G	320Vac	50kA	L-N: 1.6kV, N-PE: 1.5kV	3
G50/385-S/PN50	2	G50/385-S + G50/255NPE	Single phase 2W+G	385Vac	50kA	L-N: 1.8kV, N-PE: 1.5kV	3
G50/420-S/PN50	2	G50/420-S + G50/255NPE	Single phase 2W+G	420Vac	50kA	L-N: 2.0kV, N-PE: 1.5kV	3
G50/150-S/3P	3	3 x G50/150-S	Three phase 3W+G	150Vac	50kA	L-G: 1.2kV	2
G50/175-S/3P	3	3 x G50/175-S	Three phase 3W+G	175Vac	50kA	L-G: 1.2kV	2
G50/275-S/3P	3	3 x G50/275-S	Three phase 3W+G	275Vac	50kA	L-G: 1.5kV	2
G50/320-S/3P	3	3 x G50/320-S	Three phase 3W+G	320Vac	50kA	L-G: 1.6kV	2
G50/385-S/3P	3	3 x G50/385-S	Three phase 3W+G	385Vac	50kA	L-G: 1.8kV	2
G50/420-S/3P	3	3 x G50/420-S	Three phase 3W+G	420Vac	50kA	L-G: 2.0kV	2
G50/150-S/3PN100	4	3 x G50/150-S + G100/255NPE	Three phase 4W+G	150Vac	50kA / 100kA(NPE)	L-N: 1.2kV, N-PE: 1.5kV	1
G50/175-S/3PN100	4	3 x G50/175-S + G100/255NPE	Three phase 4W+G	175Vac	50kA / 100kA(NPE)	L-N: 1.2kV, N-PE: 1.5kV	1
G50/275-S/3PN100	4	3 x G50/275-S + G100/255NPE	Three phase 4W+G	275Vac	50kA / 100kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	1
G50/320-S/3PN100	4	3 x G50/320-S + G100/255NPE	Three phase 4W+G	320Vac	50kA / 100kA(NPE)	L-N: 1.6kV, N-PE: 1.5kV	1
G50/385-S/3PN100	4	3 x G50/385-S + G100/255NPE	Three phase 4W+G	385Vac	50kA / 100kA(NPE)	L-N: 1.8kV, N-PE: 1.5kV	1
G50/420-S/3PN100	4	3 x G50/420-S + G100/255NPE	Three phase 4W+G	420Vac	50kA / 100kA(NPE)	L-N: 2.0kV, N-PE: 1.5kV	1

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 3+1		
2) 3+0		
3) 1+1		
4) 2+0		

Single Pole SPD

▪ Pluggable ▪ ESG Technology

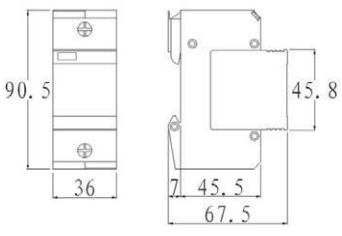
G35P/…-S

- T1+2 SPD with Encapsulated Spark Gap (ESG) technology to guarantee reliability in rugged environment and high exposure location
- Pluggable module for easy replacement
- High lightning current discharge capacity up to I_{imp} 35kA 10/350
- Degradation indication & optional remote signal contact.
- Low voltage protection level
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

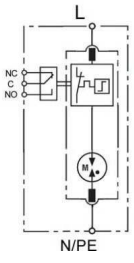
Model		G35P/150-S	G35P/175-S	G35P/275-S	G35P/320-S	G35P/385-S	G35P/420-S
Compliance		EN/IEC 61643-11					
Category IEC/EN		Class I+II /T1+2					
Max. Continuous Operating Voltage (AC)	U_c	150V	175V	275V	320V	385V	420V
Technology		ESG technology Thermal disconnector					
Ports/Protection Mode		1 / L-PE or L-N or N-PE					
Lightning Impulse Current (10/350μs)	I_{imp}	35kA					
Nominal Discharge Current (8/20μs)	I_n	35kA					
Max. Discharge Current (8/20μs)	I_{max}	120kA					
Voltage Protection Level	U_p	≤1.4kV	≤1.4kV	≤1.8kV	≤2.0kV	≤2.2kV	≤2.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	228V/120min	228V/120min	442V/120min	442V/120min	529V/120min	585V/120min
Residual Current	I_{PE}	No					
Follow Current Interrupt Rating	I_{fi}	25kA					
Short-Circuit Current Rating per IEC 61643	I_{sc}	25kA					
Response Time	t_A	≤100ns					
Backup Fuse (only required if not already provided in mains)		315A gL/gG					
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m					
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2					
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3					
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0					
Degree of Protection		IP20					
Installation Width		2 modules, DIN 43880					
Failure Indication /Status		RED- Failure					
Remote Alarm Contact		Yes					
Approvals, certification		CE					
Additional Data for Remote Alarm Contacts							
Remote Alarm Contact Type		Isolated Form C					
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A					
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)					

Note: Please see Page 16 and 17 for prewired multi-pole combination.

Dimension Drawing



Basic Circuit Diagram



Single Pole SPD

▪ Pluggable ▪ ESG Technology

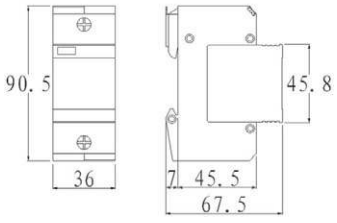
G25P/…-S

- T1+2 SPD with Encapsulated Spark Gap (ESG) technology to guarantee reliability in rugged environment and high exposure location
- Pluggable module for easy replacement
- High lightning current discharge capacity up to I_{imp} 25kA 10/350
- Degradation indication & optional remote signal contact.
- Low voltage protection level
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

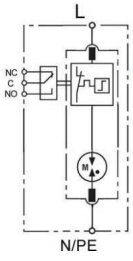
Model		G25P/150-S	G25P/175-S	G25P/275-S	G25P/320-S	G25P/385-S	G25P/420-S
Compliance		EN/IEC 61643-11					
Category IEC/EN		Class I+II /T1+2					
Max. Continuous Operating Voltage (AC)	U_c	150V	175V	275V	320V	385V	420V
Technology		ESG technology Thermal disconnector					
Ports/Protection Mode		1 / L-PE or L-N or N-PE					
Lightning Impulse Current (10/350μs)	I_{imp}	25kA					
Nominal Discharge Current (8/20μs)	I_n	25kA					
Max. Discharge Current (8/20μs)	I_{max}	100kA					
Voltage Protection Level	U_p	≤1.2kV	≤1.2kV	≤1.5kV	≤1.6kV	≤1.8kV	≤2.0kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	228V/120min	228V/120min	442V/120min	442V/120min	529V/120min	585V/120min
Residual Current	I_{PE}	No					
Follow Current Interrupt Rating	I_{fi}	25kA					
Short-Circuit Current Rating per IEC 61643	I_{sc}	25kA					
Response Time	t_A	≤100ns					
Backup Fuse (only required if not already provided in mains)		250A gL/gG					
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m					
Cross-Section of Connection Wire		Single-strand 35mm²; multi-strand 25mm²					
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3					
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0					
Degree of Protection		IP20					
Installation Width		2 modules, DIN 43880					
Failure Indication /Status		RED- Failure					
Remote Alarm Contact		Yes					
Approvals, certification		CE					
Additional Data for Remote Alarm Contacts							
Remote Alarm Contact Type		Isolated Form C					
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A					
Max. Size of Connecting Wire		Max. 1.5mm² (or # 16AWG)					

Note: Please see Page 16 and 17 for prewired multi-pole combination.

Dimension Drawing

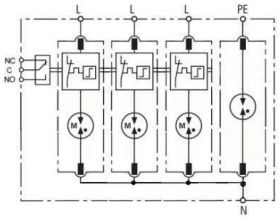
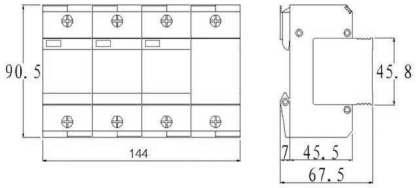
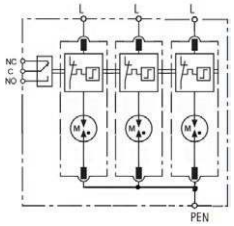
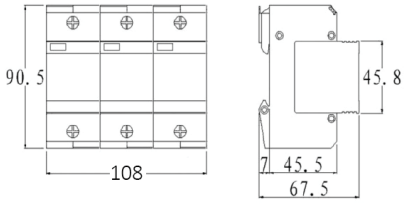
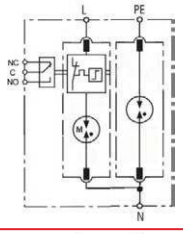
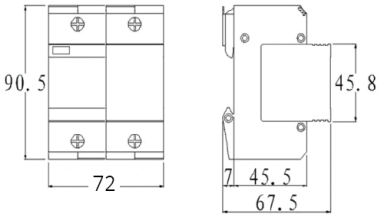
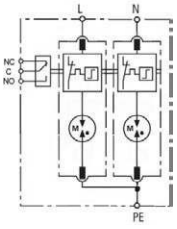
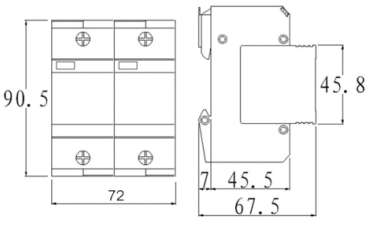


Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Combination	Power System	Max. Operating Voltage U_c	Lightning Impulse Current (10 / 350µs) I_{imp}	Voltage Protection Level U_p	Diagram
G35P/150-S/2P	2	2 x G35P/150-S	Single phase 2W+G	150Vac	35kA	L / N-G: 1.4kV	4
G35P/175-S/2P	2	2 x G35P/175-S	Single phase 2W+G	175Vac	35kA	L / N-G: 1.4kV	4
G35P/275-S/2P	2	2 x G35P/275-S	Single phase 2W+G	275Vac	35kA	L / N-G: 1.8kV	4
G35P/320-S/2P	2	2 x G35P/320-S	Single phase 2W+G	320Vac	35kA	L / N-G: 2.0kV	4
G35P/385-S/2P	2	2 x G35P/385-S	Single phase 2W+G	385Vac	35kA	L / N-G: 2.2kV	4
G35P/420-S/2P	2	2 x G35P/420-S	Single phase 2W+G	420Vac	35kA	L / N-G: 2.5kV	4
G35P/150-S/PN50	2	G35P/150-S + G50P/255NPE	Single phase 2W+G	150Vac	35kA / 50kA(NPE)	L-N: 1.4kV, N-PE: 1.5kV	3
G35P/175-S/PN50	2	G35P/175-S + G50P/255NPE	Single phase 2W+G	175Vac	35kA / 50kA(NPE)	L-N: 1.4kV, N-PE: 1.5kV	3
G35P/275-S/PN50	2	G35P/275-S + G50P/255NPE	Single phase 2W+G	275Vac	35kA / 50kA(NPE)	L-N: 1.8kV, N-PE: 1.5kV	3
G35P/320-S/PN50	2	G35P/320-S + G50P/255NPE	Single phase 2W+G	320Vac	35kA / 50kA(NPE)	L-N: 2.0kV, N-PE: 1.5kV	3
G35P/385-S/PN50	2	G35P/385-S + G50P/255NPE	Single phase 2W+G	385Vac	35kA / 50kA(NPE)	L-N: 2.2kV, N-PE: 1.5kV	3
G35P/420-S/PN50	2	G35P/420-S + G50P/255NPE	Single phase 2W+G	420Vac	35kA / 50kA(NPE)	L-N: 2.5kV, N-PE: 1.5kV	3
G35P/150-S/3P	3	3 x G35P/150-S	Three phase 3W+G	150Vac	35kA	L-G: 1.4kV	2
G35P/175-S/3P	3	3 x G35P/175-S	Three phase 3W+G	175Vac	35kA	L-G: 1.4kV	2
G35P/275-S/3P	3	3 x G35P/275-S	Three phase 3W+G	275Vac	35kA	L-G: 1.8kV	2
G35P/320-S/3P	3	3 x G35P/320-S	Three phase 3W+G	320Vac	35kA	L-G: 2.0kV	2
G35P/385-S/3P	3	3 x G35P/385-S	Three phase 3W+G	385Vac	35kA	L-G: 2.2kV	2
G35P/420-S/3P	3	3 x G35P/420-S	Three phase 3W+G	420Vac	35kA	L-G: 2.5kV	2
G35P/150-S/3PN100	4	3 x G35P/150-S + G100P/255NPE	Three phase 4W+G	150Vac	35kA / 100kA(NPE)	L-N: 1.4kV, N-PE: 1.5kV	1
G35P/175-S/3PN100	4	3 x G35P/175-S + G100P/255NPE	Three phase 4W+G	175Vac	35kA / 100kA(NPE)	L-N: 1.4kV, N-PE: 1.5kV	1
G35P/275-S/3PN100	4	3 x G35P/275-S + G100P/255NPE	Three phase 4W+G	275Vac	35kA / 100kA(NPE)	L-N: 1.8kV, N-PE: 1.5kV	1
G35P/320-S/3PN100	4	3 x G35P/320-S + G100P/255NPE	Three phase 4W+G	320Vac	35kA / 100kA(NPE)	L-N: 2.0kV, N-PE: 1.5kV	1
G35P/385-S/3PN100	4	3 x G35P/385-S + G100P/255NPE	Three phase 4W+G	385Vac	35kA / 100kA(NPE)	L-N: 2.2kV, N-PE: 1.5kV	1
G35P/420-S/3PN100	4	3 x G35P/420-S + G100P/255NPE	Three phase 4W+G	420Vac	35kA / 100kA(NPE)	L-N: 2.5kV, N-PE: 1.5kV	1
G25P/150-S/2P	2	2 x G25P/150-S	Single phase 2W+G	150Vac	25kA	L / N-G: 1.2kV	4
G25P/175-S/2P	2	2 x G25P/175-S	Single phase 2W+G	175Vac	25kA	L / N-G: 1.2kV	4
G25P/275-S/2P	2	2 x G25P/275-S	Single phase 2W+G	275Vac	25kA	L / N-G: 1.5kV	4
G25P/320-S/2P	2	2 x G25P/320-S	Single phase 2W+G	320Vac	25kA	L / N-G: 1.6kV	4
G25P/385-S/2P	2	2 x G25P/385-S	Single phase 2W+G	385Vac	25kA	L / N-G: 1.8kV	4
G25P/420-S/2P	2	2 x G25P/420-S	Single phase 2W+G	420Vac	25kA	L / N-G: 2.0kV	4
G25P/150-S/PN50	2	G25P/150-S + G50P/255NPE	Single phase 2W+G	150Vac	25kA / 50kA(NPE)	L-N: 1.2kV, N-PE: 1.5kV	3
G25P/175-S/PN50	2	G25P/175-S + G50P/255NPE	Single phase 2W+G	175Vac	25kA / 50kA(NPE)	L-N: 1.2kV, N-PE: 1.5kV	3
G25P/275-S/PN50	2	G25P/275-S + G50P/255NPE	Single phase 2W+G	275Vac	25kA / 50kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	3
G25P/320-S/PN50	2	G25P/320-S + G50P/255NPE	Single phase 2W+G	320Vac	25kA / 50kA(NPE)	L-N: 1.6kV, N-PE: 1.5kV	3
G25P/385-S/PN50	2	G25P/385-S + G50P/255NPE	Single phase 2W+G	385Vac	25kA / 50kA(NPE)	L-N: 1.8kV, N-PE: 1.5kV	3
G25P/420-S/PN50	2	G25P/420-S + G50P/255NPE	Single phase 2W+G	420Vac	25kA / 50kA(NPE)	L-N: 2.0kV, N-PE: 1.5kV	3
G25P/150-S/3P	3	3 x G25P/150-S	Three phase 3W+G	150Vac	25kA	L-G: 1.2kV	2
G25P/175-S/3P	3	3 x G25P/175-S	Three phase 3W+G	175Vac	25kA	L-G: 1.2kV	2
G25P/275-S/3P	3	3 x G25P/275-S	Three phase 3W+G	275Vac	25kA	L-G: 1.5kV	2
G25P/320-S/3P	3	3 x G25P/320-S	Three phase 3W+G	320Vac	25kA	L-G: 1.6kV	2
G25P/385-S/3P	3	3 x G25P/385-S	Three phase 3W+G	385Vac	25kA	L-G:1.8kV	2
G25P/420-S/3P	3	3 x G25P/420-S	Three phase 3W+G	420Vac	25kA	L-G:2.0kV	2
G25P/150-S/3PN100	4	3 x G25P/150-S + G100P/255NPE	Three phase 4W+G	150Vac	25kA / 100kA(NPE)	L-N: 1.2kV, N-PE: 1.5kV	1
G25P/175-S/3PN100	4	3 x G25P/175-S + G100P/255NPE	Three phase 4W+G	175Vac	25kA / 100kA(NPE)	L-N: 1.2kV, N-PE: 1.5kV	1
G25P/275-S/3PN100	4	3 x G25P/275-S + G100P/255NPE	Three phase 4W+G	275Vac	25kA / 100kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	1
G25P/320-S/3PN100	4	3 x G25P/320-S + G100P/255NPE	Three phase 4W+G	320Vac	25kA / 100kA(NPE)	L-N: 1.6kV, N-PE: 1.5kV	1
G25P/385-S/3PN100	4	3 x G25P/385-S + G100P/255NPE	Three phase 4W+G	385Vac	25kA / 100kA(NPE)	L-N: 1.8kV, N-PE: 1.5kV	1
G25P/420-S/3PN100	4	3 x G25P/420-S + G100P/255NPE	Three phase 4W+G	420Vac	25kA / 100kA(NPE)	L-N: 2.0kV, N-PE: 1.5kV	1

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 3+1 		
2) 3+0 		
3) 1+1 		
4) 2+0 		

Single Pole SPD

▪ MOV Technology

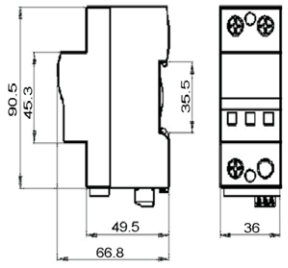
B25V/…-S

- Non-pluggable T1+2 SPD with high energy MOV technology
- High lightning current discharge capacity up to I_{imp} 25kA 10/350
- Degradation indication & optional remote signal contact
- Lower voltage protection level
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

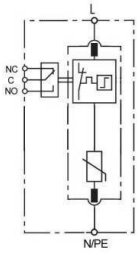
CE RoHS

Model		B25V/150-S	B25V/175-S	B25V/275-S	B25V/320-S
Compliance		EN/IEC 61643-11			
Category IEC/EN		Class I+II /T1+2			
Max. Continuous Operating Voltage (AC)	U_c	150V	175V	275V	320V
Technology		High energy MOV Technology Thermal disconnector			
Ports/Protection Mode		1 / L-PE or L-N or N-PE			
Lightning Impulse Current (10/350μs)	I_{imp}	25kA			
Nominal Discharge Current (8/20μs)	I_n	25kA			
Max. Discharge Current (8/20μs)	I_{max}	120kA			
Voltage Protection Level	U_p	≤0.8kV	≤0.8kV	≤1.2kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	175V/5s	228V/5s	335V/5s	335V/5s
Residual Current	I_{PE}	<0.1mA			
Follow Current	I_f	No			
Short-Circuit Current Rating per IEC 61643	I_{sc}	25kA			
Response Time	t_A	≤25ns			
Backup Fuse (only required if not already provided in mains)		315A gL/gG			
Environment		Temperature Range: -40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		2 modules, DIN 43880			
Failure Indication /Status		RED- Failure			
Remote Alarm Contact		Yes			
Approvals, certification		CE			
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

Dimension Drawing

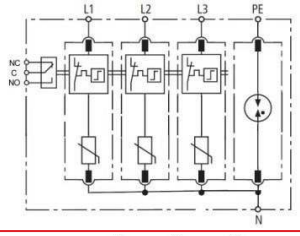
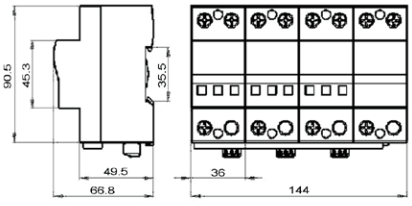
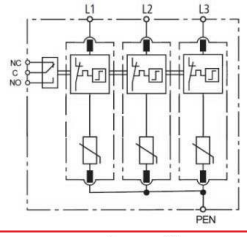
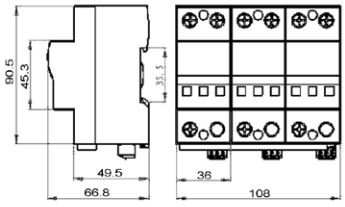
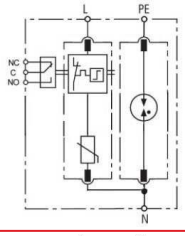
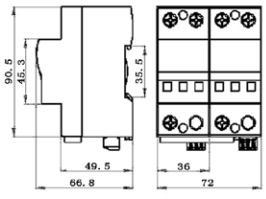
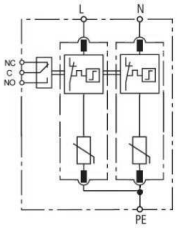
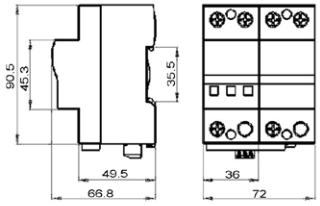


Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Combination	Power System	Max. Operating Voltage U_c	Lightning Impulse Current (10/350μs) I_{imp}	Voltage Protection Level U_p	Diagram
B25V/150-S/2P	2	2 x B25V/150-S	Single phase 2W+G	150Vac	25kA	L/N-G:1.0kV	4
B25V/175-S/2P	2	2 x B25V/175-S	Single phase 2W+G	175Vac	25kA	L/N-G: 1.0kV	4
B25V/275-S/2P	2	2 x B25V/275-S	Single phase 2W+G	275Vac	25kA	L/N-G: 1.4kV	4
B25V/320-S/2P	2	2 x B25V/320-S	Single phase 2W+G	320Vac	25kA	L/N-G: 1.5kV	4
B25V/150-S/PN50	2	B25V/150-S + G50/255NPE	Single phase 2W+G	150Vac	25kA / 50kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	3
B25V/175-S/PN50	2	B25V/175-S + G50/255NPE	Single phase 2W+G	175Vac	25kA / 50kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	3
B25V/275-S/PN50	2	B25V/275-S + G50/255NPE	Single phase 2W+G	275Vac	25kA / 50kA(NPE)	L-N: 1.4kV, N-PE: 1.5kV	3
B25V/320-S/PN50	2	B25V/320-S + G50/255NPE	Single phase 2W+G	320Vac	25kA / 50kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	3
B25V/150-S/3P	3	3 x B25V/150-S	Three phase 3W+G	150Vac	25kA	L-G: 1.0kV	2
B25V/175-S/3P	3	3 x B25V/175-S	Three phase 3W+G	175Vac	25kA	L-G: 1.0kV	2
B25V/275-S/3P	3	3 x B25V/275-S	Three phase 3W+G	275Vac	25kA	L-G: 1.4kV	2
B25V/320-S/3P	3	3 x B25V/320-S	Three phase 3W+G	320Vac	25kA	L-G: 1.5kV	2
B25V/150-S/3PN100	4	3 x B25V/150-S + G100/255NPE	Three phase 4W+G	150Vac	25kA / 100kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	1
B25V/175-S/3PN100	4	3 x B25V/175-S + G100/255NPE	Three phase 4W+G	175Vac	25kA / 100kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	1
B25V/275-S/3PN100	4	3 x B25V/275-S + G100/255NPE	Three phase 4W+G	275Vac	25kA / 100kA(NPE)	L-N: 1.4kV, N-PE: 1.5kV	1
B25V/320-S/3PN100	4	3 x B25V/320-S + G100/255NPE	Three phase 4W+G	320Vac	25kA / 100kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	1

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 3+1 		 All Dimension in mm
2) 3+0 		 All Dimension in mm
3) 1+1 		 All dimension in mm
4) 2+0 		 All Dimension in mm

Single Pole SPD

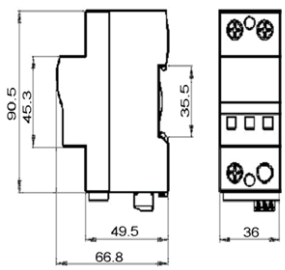
▪ VT Technology

B25VT/...-S

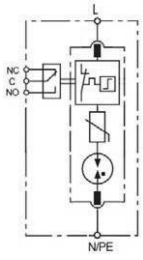
- T1+2+3 SPD with VT technology to eliminate leakage current & follow current.
- High lightning current discharge capacity up to I_{imp} 25kA
- Lower voltage protection level
- Better reliability and robustness & TOV (temporary over-voltage) withstand performance
- Degradation indication & optional remote signal contact
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		B25VT/150-S	B25VT/175-S	B25VT/275-S	B25VT/320-S	B25VT/385-S
Compliance		EN/IEC 61643-11				
Category IEC/EN		Class I+II+III /T1+2+3				
Max. Continuous Operating Voltage (AC)	U_c	150V	175V	275V	320V	385V
Technology		VT technology Thermal disconnector				
Ports/Protection Mode		1 / L-PE or L-N or N-PE				
Lightning Impulse Current (10/350μs)	I_{imp}	25kA				
Nominal Discharge Current (8/20μs)	I_n	25kA				
Max. Discharge Current (8/20μs)	I_{max}	120kA				
Voltage Protection Level	U_p	≤0.8kV	≤0.8kV	≤1.0kV	≤1.2kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	228V/120min	228V/120min	442V/120min	442V/120min	580V/120min
Residual Current	I_{PE}	No				
Follow Current	I_f	No				
Short-Circuit Current Rating per IEC 61643	I_{sc}	25kA				
Response Time	t_A	≤100ns				
Backup Fuse (only required if not already provided in mains)		315A gL/gG				
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m				
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2				
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3				
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0				
Degree of Protection		IP20				
Installation Width		2 modules, DIN 43880				
Failure Indication /Status		RED- Failure				
Remote Alarm Contact		Yes				
Approvals, certification		CE				
Additional Data for Remote Alarm Contacts						
Remote Alarm Contact Type		Isolated Form C				
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A				
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)				

Dimension Drawing

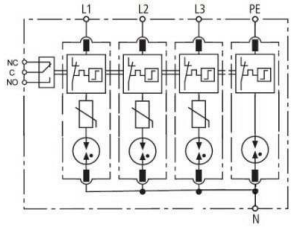
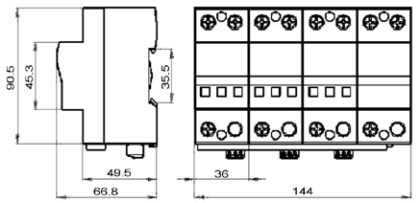
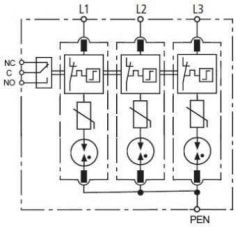
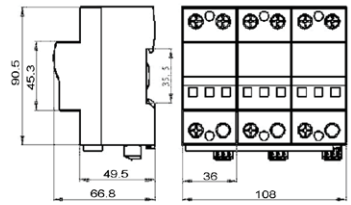
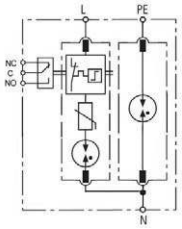
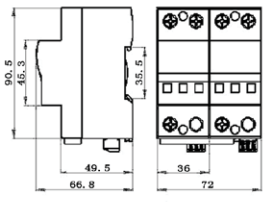
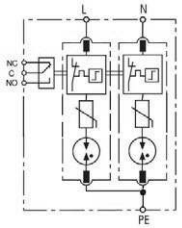
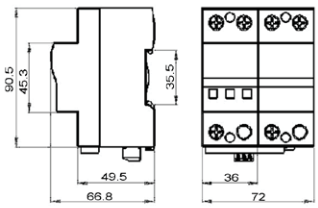


Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Combination	Power System	Ma x . Operating Voltage U_c	Lightning Impulse Current (10/350μs) I_{imp}	Voltage Protection Level U_p	Diagram
B25VT/150-S/2P	2	2 x B25VT/250-S	Single phase 2W+G	150Vac	25kA	L/N-G: 0.8kV	4
B25VT/175-S/2P	2	2 x B25VT175-S	Single phase 2W+G	175Vac	25kA	L/N-G: 0.8kV	4
B25VT/275-S/2P	2	2 x B25VT/275-S	Single phase 2W+G	275Vac	25kA	L/N-G: 1.0kV	4
B25VT/320-S/2P	2	2 x B25VT/320-S	Single phase 2W+G	320Vac	25kA	L/N-G: 1.2kV	4
B25VT/385-S//2P	2	2 x B25VT/385-S	Single phase 2W+G	385Vac	25kA	L/N-G: 1.5kV	4
B25VT/150-S/PN50	2	B25VT/150-S + G50/255NPE	Single phase 2W+G	150Vac	25kA / 50kA(NPE)	L-N: 0.8kV, N-PE: 1.5kV	3
B25VT/175-S/PN50	2	B25VT/175-S + G50/255NPE	Single phase 2W+G	175Vac	25kA / 50kA(NPE)	L-N: 0.8kV, N-PE: 1.5kV	3
B25VT/275-S/PN50	2	B25V/T275-S + G50/255NPE	Single phase 2W+G	275Vac	25kA / 50kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	3
B25VT/320-S/PN50	2	B25VT/320-S + G50/255NPE	Single phase 2W+G	320Vac	25kA / 50kA(NPE)	L-N: 1.2kV, N-PE: 1.5kV	3
B25VT/385-S/PN50	2	B25VT/385-S + G50/255NPE	Single phase 2W+G	385Vac	25kA / 50kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	3
B25VT/150-S/3P	3	3 x B25VT/150-S	Three phase 3W+G	150Vac	25kA	L-G: 0.8kV	2
B25VT/175-S/3P	3	3 x B25VT/175-S	Three phase 3W+G	175Vac	25kA	L-G: 0.8kV	2
B25VT/275-S/3P	3	3 x B25VT/275-S	Three phase 3W+G	275Vac	25kA	L-G: 1.0kV	2
B25VT/320-S/3P	3	3 x B25VT/320-S	Three phase 3W+G	320Vac	25kA	L-G: 1.2kV	2
B25VT/385-S/3P	3	3 x B25VT/385-S	Three phase 3W+G	385Vac	25kA	L-G: 1.5kV	2
B25VT/150-S/3PN100	4	3 x B25VT/150-S + G100/255NPE	Three phase 4W+G	150Vac	25kA / 100kA(NPE)	L-N: 0.8kV, N-PE: 1.5kV	1
B25VT/175-S/3PN100	4	3 x B25VT/175-S + G100/255NPE	Three phase 4W+G	175Vac	25kA / 100kA(NPE)	L-N: 0.8kV, N-PE: 1.5kV	1
B25VT/275-S/3PN100	4	3 x B25VT/275-S + G100/255NPE	Three phase 4W+G	275Vac	25kA / 100kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	1
B25VT/320-S/3PN100	4	3 x B25VT/320-S + G100/255NPE	Three phase 4W+G	320Vac	25kA / 100kA(NPE)	L-N: 1.2kV, N-PE: 1.5kV	1
B25VT/385-S/3PN100	4	3 x B25VT/385-S + G100/255NPE	Three phase 4W+G	385Vac	25kA / 100kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	1

Diagram	Basic Circuit diagram	Dimension Drawing
1) 3+1		
2) 3+0		
3) 1+1		
4) 2+0		

All Dimension in mm

All Dimension in mm

All dimension in mm

All Dimension in mm

Single Pole SPD

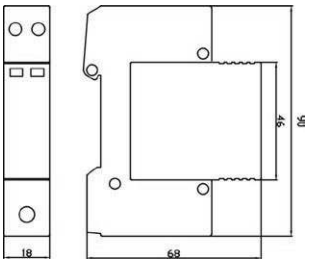
▪ MOV Technology ▪ 18mm

BPS12.5V/…-S

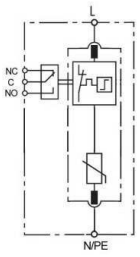
- Compact T1+2 SPD with high energy MOV technology
- 18mm narrow design, pluggable module for easy replacement.
- High lightning current discharge capacity up to I_{imp} 12.5kA 10/350
- Degradation indication & optional remote signal contact
- Lower voltage protection level
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		BPS12.5V/150-S	BPS12.5V/175-S	BPS12.5V/275-S	BPS12.5V/320-S
Compliance		EN/IEC 61643-11			
Category IEC/EN		Class I+II /T1+2			
Max. Continuous Operating Voltage (AC)	U_c	150V	175V	275V	320V
Technology		High energy MOV Technology Thermal disconnector			
Ports/Protection Mode		1 / L-PE or L-N or N-PE			
Lightning Impulse Current (10/350μs)	I_{imp}	12.5kA			
Nominal Discharge Current (8/20μs)	I_n	25kA			
Max. Discharge Current (8/20μs)	I_{max}	80kA			
Voltage Protection Level	U_p	≤1.0kV	≤1.0kV	≤1.3kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	175V/5s	228V/5s	335V/5s	335V/5s
Residual Current	I_{PE}	<0.1mA			
Follow Current	I_f	No			
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kA			
Response Time	t_A	≤25ns			
Backup Fuse (only required if not already provided in mains)		200A gL/gG			
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35 mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		1 module, DIN 43880			
Failure Indication /Status		RED- Failure			
Remote Alarm Contact		Yes			
Approvals, certification		CE			
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

■ Dimension Drawing

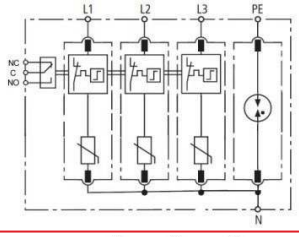
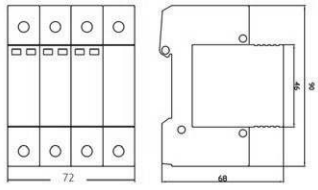
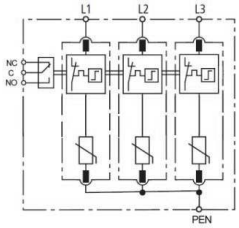
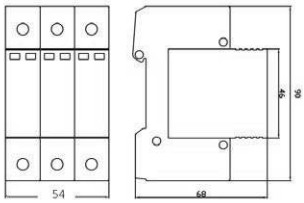
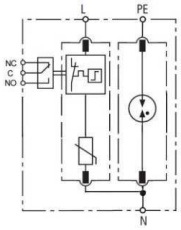
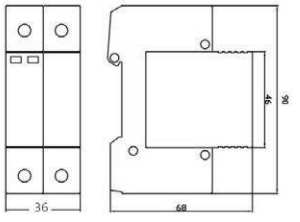
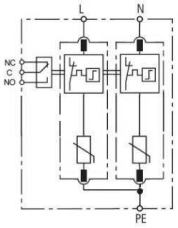
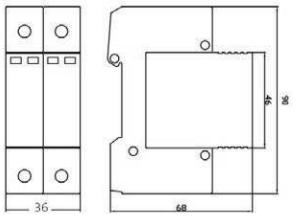


■ Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Combination	Power System	Max. Operating Voltage U_c	Lightning Impulse Current (10/350μs) I_{imp}	Voltage Protection Level U_p	Diagram
BPS12.5V/150-S/2P	2	2 x BPS12.5V/150-S	Single phase 2W+G	150Vac	12.5kA	L/N-G: 1.0kV	4
BPS12.5V/175-S/2P	2	2 x BPS12.5V/175-S	Single phase 2W+G	175Vac	12.5kA	L/N-G: 1.0kV	4
BPS12.5V/275-S/2P	2	2 x BPS12.5V/275-S	Single phase 2W+G	275Vac	12.5kA	L/N-G: 1.4kV	4
BPS12.5V/320-S/2P	2	2 x BPS12.5V/320-S	Single phase 2W+G	320Vac	12.5kA	L/N-G: 1.5kV	4
BPS12.5V/150-S/PN25	2	BPS12.5V/150-S + G25PS/255NPE	Single phase 2W+G	150Vac	12.5kA / 25kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	3
BPS12.5V/175-S/PN25	2	BPS12.5V/175-S + G25PS/255NPE	Single phase 2W+G	175Vac	12.5kA / 25kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	3
BPS12.5V/275-S/PN25	2	BPS12.5V/275-S + G25PS/255NPE	Single phase 2W+G	275Vac	12.5kA / 25kA(NPE)	L-N: 1.4kV, N-PE: 1.5kV	3
BPS12.5V/320-S/PN25	2	BPS12.5V/320-S + G25PS/255NPE	Single phase 2W+G	320Vac	12.5kA / 25kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	3
BPS12.5V/150-S/3P	3	3 x BPS12.5V/150-S	Three phase 3W+G	150Vac	12.5kA	L-G: 1.0kV	2
BPS12.5V/175-S/3P	3	3 x BPS12.5V/175-S	Three phase 3W+G	175Vac	12.5kA	L-G: 1.0kV	2
BPS12.5V/275-S/3P	3	3 x BPS12.5V/275-S	Three phase 3W+G	275Vac	12.5kA	L-G: 1.4kV	2
BPS12.5V/320-S/3P	3	3 x BPS12.5V/320-S	Three phase 3W+G	320Vac	12.5kA	L-G: 1.5kV	2
BPS12.5V/150-S/3PN50	4	3 x BPS12.5V/150-S + G50PS/255NPE	Three phase 4W+G	150Vac	12.5kA / 50kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	1
BPS12.5V/175-S/3PN50	4	3 x BPS12.5V/175-S + G50PS/255NPE	Three phase 4W+G	175Vac	12.5kA / 50kA(NPE)	L-N: 1.0kV, N-PE: 1.5kV	1
BPS12.5V/275-S/3PN50	4	3 x BPS12.5V/275-S + G50PS/255NPE	Three phase 4W+G	275Vac	12.5kA / 50kA(NPE)	L-N: 1.4kV, N-PE: 1.5kV	1
BPS12.5V/320-S/3PN50	4	3 x BPS12.5V/320-S + G50PS/255NPE	Three phase 4W+G	320Vac	12.5kA / 50kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	1

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 3+1 		
2) 3+0 		
3) 1+1 		
4) 2+0 		

Power Supply | AC | IEC | Class I+II

▸ I_{imp} 7kA

Single Pole SPD

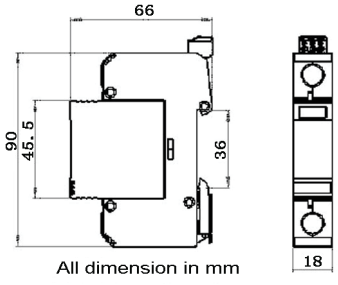
▪ 18mm ▪ MOV Technology

BPS7V/…-S

- Compact T1+2 SPD with high energy MOV technology
- 18mm narrow design, pluggable module for easy replacement.
- High lightning current discharge capacity up to I_{imp} 7kA 10/350
- Degradation indication & optional remote signal contact
- Lower voltage protection level
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

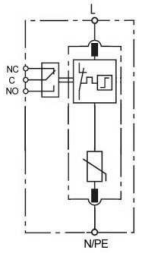
Model		BPS7V/150-S	BPS7V/175-S	BPS7V/275-S	BPS7V/320-S
Compliance		EN/IEC 61643-11			
Category IEC/EN		Class I+II /T1+2			
Max. Continuous Operating Voltage (AC)	U_c	150V	175V	275V	320V
Technology		High energy MOV Technology Thermal disconnector			
Ports/Protection Mode		1 / L-PE or L-N or N-PE			
Lightning Impulse Current (10/350μs)	I_{imp}	7kA			
Nominal Discharge Current (8/20μs)	I_n	25kA			
Max. Discharge Current (8/20μs)	I_{max}	60kA			
Voltage Protection Level	U_p	≤0.7kV	≤0.7kV	≤1.3kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	175V/5s	228V/5s	335V/5s	335V/5s
Residual Current	I_{PE}	<0.1mA			
Follow Current	I_f	No			
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kA			
Response Time	t_A	≤25ns			
Backup Fuse (only required if not already provided in mains)		160A gL/gG			
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35 mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		1 module, DIN 43880			
Failure Indication /Status		RED- Failure			
Remote Alarm Contact		Yes			
Approvals, certification		CE			
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

Dimension Drawing



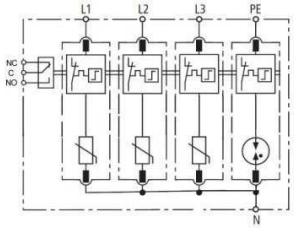
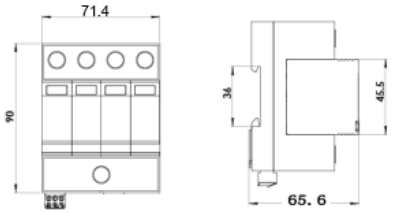
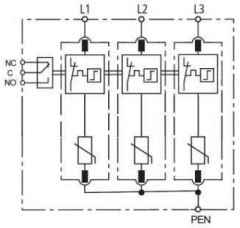
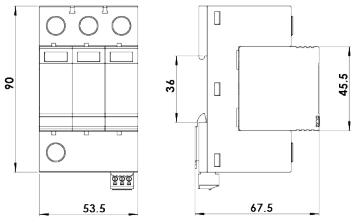
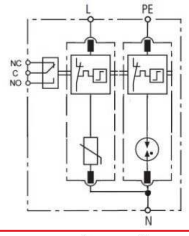
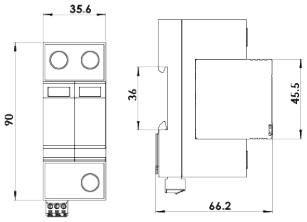
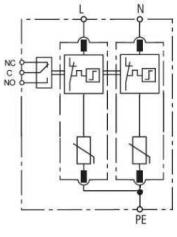
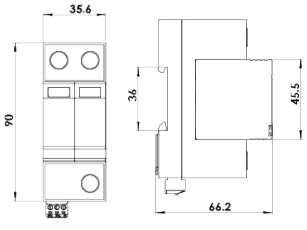
All dimension in mm

Basic Circuit Diagram



Prewired Multi-pole SPD

	Pole	Combination	Power System	Max. Operating Voltage U_c	Lightning Impulse Current (10/350μs) I_{imp}	Voltage Protection Level U_p	Diagram
BPS7V/150-S/2P	2	2 x BPS7V/150-S	Single phase 2W+G	150Vac	7kA	L/N-G: 0.7kV	4
BPS7V/175-S/2P	2	2 x BPS7V/175-S	Single phase 2W+G	175Vac	7kA	L/N-G: 0.7kV	4
BPS7V/275-S/2P	2	2 x BPS7V/275-S	Single phase 2W+G	275Vac	7kA	L/N-G: 1.3kV	4
BPS7V/320-S/2P	2	2 x BPS7V/320-S	Single phase 2W+G	320Vac	7kA	L/N-G: 1.5kV	4
BPS7V/150-S/PN25	2	BPS7V/150-S + G25PS/255NPE	Single phase 2W+G	150Vac	7kA / 25kA(NPE)	L-N: 0.7kV, N-PE: 1.5kV	3
BPS7V/175-S/PN25	2	BPS7V/175-S + G25PS/255NPE	Single phase 2W+G	175Vac	7kA / 25kA(NPE)	L-N: 0.7kV, N-PE: 1.5kV	3
BPS7V/275-S/PN25	2	BPS7V/275-S + G25PS/255NPE	Single phase 2W+G	275Vac	7kA / 25kA(NPE)	L-N: 1.3kV, N-PE: 1.5kV	3
BPS7V/320-S/PN25	2	BPS7V/320-S + G25PS/255NPE	Single phase 2W+G	320Vac	7kA / 25kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	3
BPS7V/150-S/3P	3	3 x BPS7V/150-S	Three phase 3W+G	150Vac	7kA	L-G: 0.7kV	2
BPS7V/175-S/3P	3	3 x BPS7V/175-S	Three phase 3W+G	175Vac	7kA	L-G: 0.7kV	2
BPS7V/275-S/3P	3	3 x BPS7V/275-S	Three phase 3W+G	275Vac	7kA	L-G: 1.3kV	2
BPS7V/320-S/3P	3	3 x BPS7V/320-S	Three phase 3W+G	320Vac	7kA	L-G: 1.5kV	2
BPS7V/150-S/3PN25	4	3 x BPS7V/150-S + G25PS/255NPE	Three phase 4W+G	150Vac	7kA / 25kA(NPE)	L-N: 0.7kV, N-PE: 1.5kV	1
BPS7V/175-S/3PN25	4	3 x BPS7V/175-S + G25PS/255NPE	Three phase 4W+G	175Vac	7kA / 25kA(NPE)	L-N: 0.7kV, N-PE: 1.5kV	1
BPS7V/275-S/3PN25	4	3 x BPS7V/275-S + G25PS/255NPE	Three phase 4W+G	275Vac	7kA / 25kA(NPE)	L-N: 1.3kV, N-PE: 1.5kV	1
BPS7V/320-S/3PN25	4	3 x BPS7V/320-S + G25PS/255NPE	Three phase 4W+G	320Vac	7kA / 25kA(NPE)	L-N: 1.5kV, N-PE: 1.5kV	1

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 3+1 		
2) 3+0 		
3) 1+1 		
4) 2+0 		

Single Pole SPD

▪ TPAE Patent

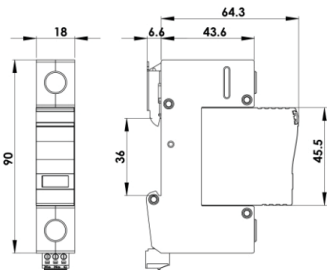
SP…-S

- KEMA certified T2 SPD with high energy MOV technology
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology).
- High surge current discharge capacity up to 40kA 8/20
- Pluggable module for easy replacement
- Degradation indication & optional remote signal contact.
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

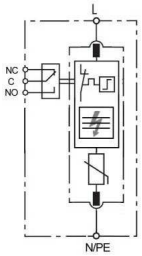
Model		SP150-S	SP275-S	SP320-S	SP385-S
Compliance		EN/IEC 61643-11, UL 1449 4th			
Category IEC/EN/UL		Class II / T2 / Type 1ca			
Max. Continuous Operating Voltage (AC/DC)	U_c	150V / 200V	275V / 350V	320V / 420V	385V / 505V
Technology		High energy MOV technology TPAE technology (patented)			
Ports/Protection Mode		1 / L-PE or L-N or N-PE			
Nominal Discharge Current (8/20μs)	I_n	20kA			
Max. Discharge Current (8/20μs)	I_{max}	40kA			
Voltage Protection Rating 6kV/3kA UL 1449	VPR	≤0.7kV	≤1.0kV	≤1.2kV	≤1.5kV
Voltage Protection Level @I_n IEC61643	U_p	≤0.8kV	≤1.4kV	≤1.5kV	≤1.8kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	174V/5s	337V/5s	337V/5s	403V/5s
Residual Current	I_{PE}	<0.1mA			
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms			
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kArms			
Response Time	t_A	≤25ns			
Backup Fuse (only required if not already provided in mains)		125A gL/gG			
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		1 module, DIN 43880			
Failure Indication /Status		RED- Failure			
Remote Alarm Contact		Yes			
Approvals, certification		KEMA, CE			
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

Note: Please see Page 29 and 30 for prewired multi-pole combination.

Dimension Drawing



Basic Circuit Diagram



Single Pole SPD

▪ TPAE Patent ▪ VT Technology

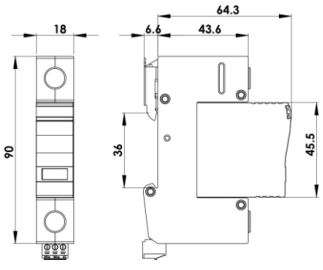
SP…VT-S

- KEMA certified T2 SPD with VT technology to eliminate leakage current & follow current
- High surge current discharge capacity up to 40kA 8/20μs
- Patented thermal-disconnector / arc-extinguish (TPAE) technology inside
- Plugable module for easy replacement
- Better reliability and robustness & TOV (temporary over-voltage) withstand performance
- Degradation indication & optional remote signal contact.
- Low voltage protection level
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

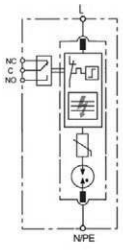
Model		SP275VT-S	SP320VT-S
Compliance		EN/IEC 61643-11, UL 1449 4th	
Category IEC/EN/UL		Class II / T2 / Type 1ca	
Max. Continuous Operating Voltage (AC/DC)	U_c	275V / 350V	320V / 420V
Technology		VT technology TPAE technology(patented)	
Ports/Protection Mode		1 / L-PE or L-N or N-PE	
Nominal Discharge Current (8/20μs)	I_n	20kA	
Max. Discharge Current (8/20μs)	I_{max}	40kA	
Voltage Protection Level @I_n IEC61643	U_p	≤1.4kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	442V/120min	442V/120min
Residual Current	I_{PE}	No	
Follow Current	I_f	No	
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kArms	
Response Time	t_A	≤25ns	
Backup Fuse (only required if not already provided in mains)		125A gL/gG	
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m	
Cross-Section of Connection Wire		Single-strand 35mm²; multi-strand 25mm²	
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3	
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0	
Degree of Protection		IP20	
Installation Width		1 module, DIN 43880	
Failure Indication /Status		RED- Failure	
Remote Alarm Contact		Yes	
Approvals, certification		KEMA, CE	
Additional Data for Remote Alarm Contacts			
Remote Alarm Contact Type		Isolated Form C	
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A	
Max. Size of Connecting Wire		Max. 1.5mm² (or # 16AWG)	

Note: Please see Page 29 and 30 for prewired multi-pole combination.

Dimension Drawing



Basic Circuit Diagram



Single Pole SPD

■ N-PE

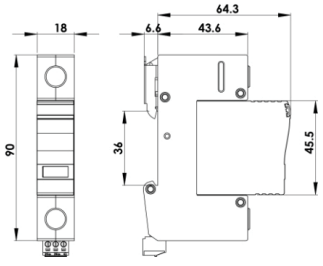
SP…T -S

- KEMA certified Class II SPD for NPE protection
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology)
- High surge current discharge capacity up to 40kA 8/20μs
- Pluggable module for easy replacement
- Degradation failure indication & optional remote signal contact
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

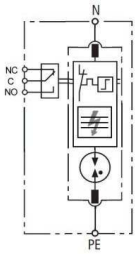
Model		SP255T-S
Compliance		EN/IEC 61643-11, UL 1449 4th
Category IEC/EN/UL		Class II / T2 / Type 1ca
Max. Continuous Operating Voltage (AC/DC)	U_c	255V
Technology		GDT technology TPAE technology (patented)
Ports/Protection Mode		1 / N-PE
Nominal Discharge Current (8/20μs)	I_n	20kA
Max. Discharge Current (8/20μs)	I_{max}	50kA
Voltage Protection Rating @6kV/3kA UL 1449	VPR	≤0.9kV
Voltage Protection Level @1.2/50μs IEC61643	U_p	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	1200V/200ms
Residual Current	I_{PE}	No
Follow Current Interrupt Rating	I_{fi}	100A@255Vac
Response Time	t_A	≤100ns
Environment		Temperature Range: -40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0
Degree of Protection		IP20
Installation Width		1 module, DIN 43880
Failure Indication /Status		RED- Failure
Remote Alarm Contact		Yes
Approvals, certification		KEMA, CE
Additional Data for Remote Alarm Contacts		
Remote Alarm Contact Type		Isolated Form C
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)

Note: Please see Page 29 and 30 for prewired multi-pole combination.

■ **Dimension Drawing**

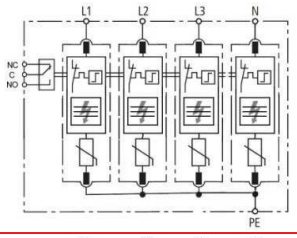
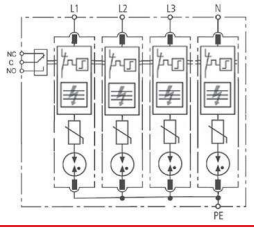
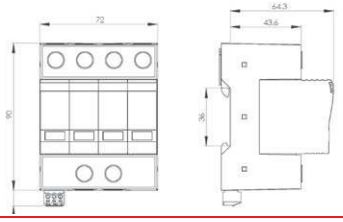
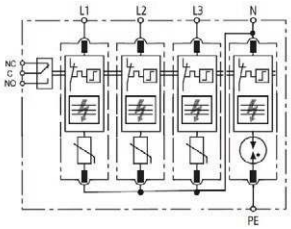
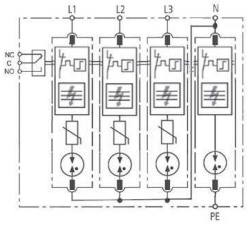
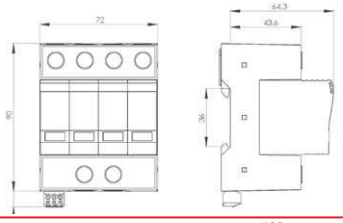
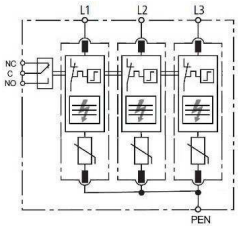
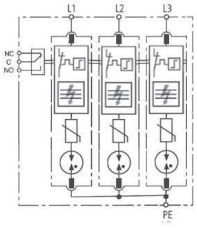
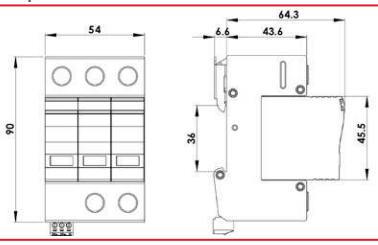
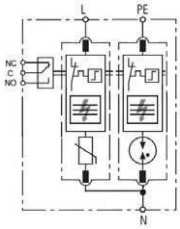
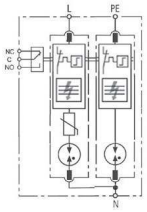
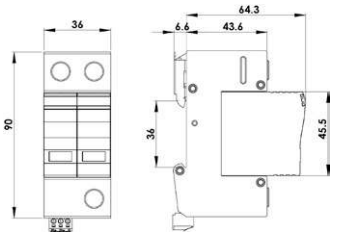
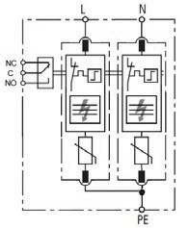
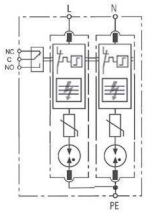
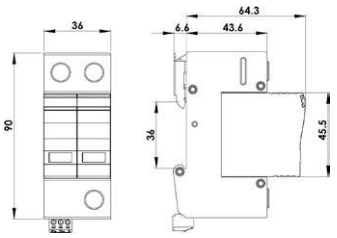


■ **Basic Circuit Diagram**



Prewired Multi-pole SPD

Part No.	Pole	Power System	Nominal Voltage (phase voltage) U_n	Max. Operating Voltage U_c	Max. Discharge Current (8/20μs) I_{max}	Voltage Protection Level U_p	Diagram
SP150/2P-S	2	Single phase 2W+G	120~127Vac	150Vac	40kA	L/N-G: 0.8kV	5
SP275/2P-S	2	Single phase 2W+G	220~230Vac	275Vac	40kA	L/N-G: 1.4kV	5
SP320/2P-S	2	Single phase 2W+G	240Vac	320Vac	40kA	L/N-G: 1.5kV	5
SP385/2P-S	2	Single phase 2W+G	240~277Vac	385Vac	40kA	L/N-G: 1.8kV	5
SP275VT/2P-S	2	Single phase 2W+G	220~230Vac	275Vac	40kA	L/N-G: 1.4kV	5
SP320VT/2P-S	2	Single phase 2W+G	240Vac	320Vac	40kA	L/N-G: 1.5kV	5
SP150/PN-S	2	Single phase 2W+G	120~127Vac	150Vac	40kA	L-N: 0.8kV, N-PE: 1.5kV	4
SP275/PN-S	2	Single phase 2W+G	220~230Vac	275Vac	40kA	L-N: 1.4kV, N-PE: 1.5kV	4
SP320/PN-S	2	Single phase 2W+G	240Vac	320Vac	40kA	L-N: 1.5kV, N-PE: 1.5kV	4
SP385/PN-S	2	Single phase 2W+G	240~277Vac	385Vac	40kA	L-N: 1.8kV, N-PE: 1.5kV	4
SP275VT/PN-S	2	Single phase 2W+G	220~230Vac	275Vac	40kA	L-N: 1.4kV, N-PE: 1.5kV	4
SP320VT/PN-S	2	Single phase 2W+G	240Vac	320Vac	40kA	L-N: 1.5kV, N-PE: 1.5kV	4
SP150/3P-S	3	Three phase 3W+G	120~127Vac	150Vac	40kA	L-G: 0.8kV	3
SP275/3P-S	3	Three phase 3W+G	220~230Vac	275Vac	40kA	L-G: 1.4kV	3
SP320/3P-S	3	Three phase 3W+G	240Vac	320Vac	40kA	L-G: 1.5kV	3
SP385/3P-S	3	Three phase 3W+G	240~277Vac	385Vac	40kA	L-G:1.8kV	3
SP275VT/3P-S	3	Three phase 3W+G	220~230Vac	275Vac	40kA	L-G: 1.4kV	3
SP320VT/3P-S	3	Three phase 3W+G	240Vac	320Vac	40kA	L-G: 1.5kV	3
SP150/3PN-S	4	Three phase 4W+G	120~127Vac	150Vac	40kA	L-N: 0.8kV, N-PE: 1.5kV	2
SP275/3PN-S	4	Three phase 4W+G	220~230Vac	275Vac	40kA	L-N: 1.4kV, N-PE: 1.5kV	2
SP320/3PN-S	4	Three phase 4W+G	240Vac	320Vac	40kA	L-N: 1.5kV, N-PE: 1.5kV	2
SP385/3PN-S	4	Three phase 4W+G	240~277Vac	385Vac	40kA	L-N: 1.8kV, N-PE: 1.5kV	2
SP275VT/3PN-S	4	Three phase 4W+G	220~230Vac	275Vac	40kA	L-N: 1.4kV, N-PE: 1.5kV	2
SP320VT/3PN-S	4	Three phase 4W+G	240Vac	320Vac	40kA	L-N: 1.5kV, N-PE: 1.5kV	2
SP150/4P-S	4	Three phase 4W+G	120~127Vac	150Vac	40kA	L/N-G: 0.8kV	1
SP275/4P-S	4	Three phase 4W+G	220~230Vac	275Vac	40kA	L/N-G: 1.4kV	1
SP320/4P-S	4	Three phase 4W+G	240Vac	320Vac	40kA	L/N-G: 1.5kV	1
SP385/4P-S	4	Three phase 4W+G	240~277Vac	385Vac	40kA	L/N-G:1.8kV	1
SP275VT/4P-S	4	Three phase 4W+G	220~230Vac	275Vac	40kA	L/N-G: 1.4kV	1
SP320VT/4P-S	4	Three phase 4W+G	240Vac	320Vac	40kA	L/N-G: 1.5kV	1

Diagram	Basic Circuit Diagram (MOV/GDT technology)	Basic Circuit Diagram (VT technology)	Dimension Drawing
1) 4+0			
2) 3+1			
3) 3+0			
4) 1+1			
5) 2+0			

Single Pole SPD

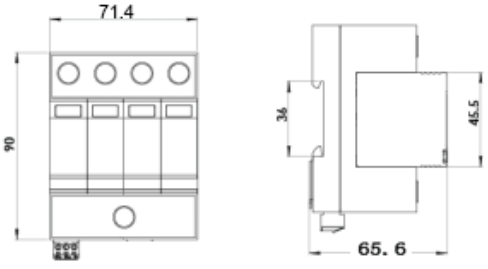
▪ Integrated Fuse

DT25/…-4VF-S

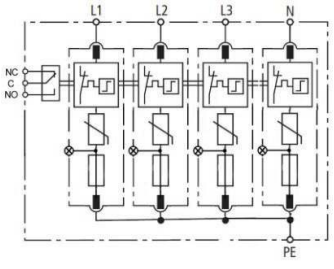
- T2 SPD with built-in fault current protection
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology)
- Surge current discharge capacity up to 25kA 8/20μs
- Pluggable module for easy replacement
- Failure indicators on both MOV and internal fuse & optional for remote signal contact
- 4+0 protection circuit for TN/TT system
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		DT25/150-4VF-S	DT25/275-4VF-S	DT25/320-4VF-S	DT25/385-4VF-S
Compliance		EN/IEC 61643-11, UL 1449 4th			
Category IEC/EN/UL		Class II / T2 / Type 1ca			
Max. Continuous Operating Voltage (AC/DC)	U_c	150V / 200V	275V / 350V	320V / 420V	385V / 505V
Technology		High energy MOV technology TPAE technology (patented) Integrated fuse			
Ports/Protection Mode		1 / L-PE , N-PE			
Nominal Discharge Current (8/20μs)	I_n	15kA			
Max. Discharge Current (8/20μs)	I_{max}	25kA			
Voltage Protection Rating 6kV/3kA UL 1449	VPR	≤0.7kV	≤1.0kV	≤1.2kV	≤1.5kV
Voltage Protection Level @I_n IEC61643	U_p	≤0.8kV	≤1.4kV	≤1.5kV	≤1.8kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	174V/5s	335V/5s	335V/5s	403V/5s
Residual Current	I_{PE}	<0.1mA			
Response Time	t_A	≤25ns			
Backup Fuse (only required if not already provided in mains)		If short circuit rating≤3kA, not required; If short circuit rating>3kA, 63A gL/gG			
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		4 modules, DIN 43880			
Failure Indication /Status		Internal MOV (green – normal; red – failure); Fuse (LED on-normal, led off-failure)			
Remote Alarm Contact		Yes			
Approvals, certification		CE			
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

Dimension Drawing

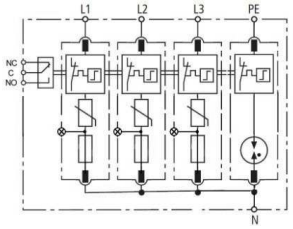
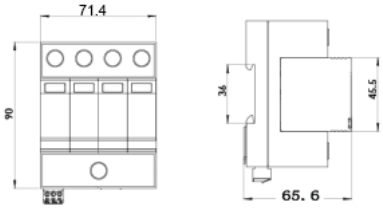
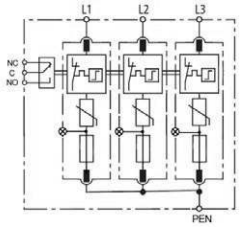
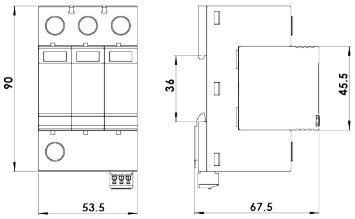
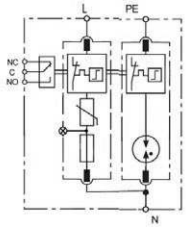
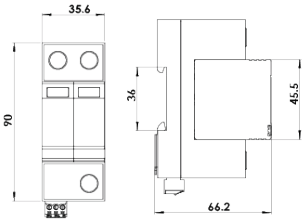
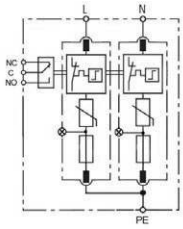
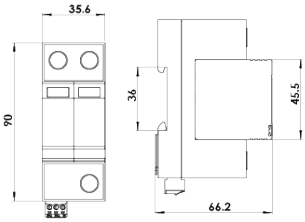


Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Power System	Nominal Voltage (phase voltage) U_n	Max. Operating Voltage U_c	Max. Discharge Current (8/20μs) I_{max}	Voltage Protection Level U_p	Diagram
DS25/150-2VF-S	2	Single phase 2W+G	120~127Vac	150Vac	25kA	L/N-G: 0.8kV	4
DS25/275-2VF-S	2	Single phase 2W+G	220~230Vac	275Vac	25kA	L/N-G: 1.4kV	4
DS25/320-2VF-S	2	Single phase 2W+G	240Vac	320Vac	25kA	L/N-G: 1.5kV	4
DS25/385-2VF-S	2	Single phase 2W+G	240~277Vac	385Vac	25kA	L/N-G:1.8kV	4
DS25/150-(VF+T)-S	2	Single phase 2W+G	120~127Vac	150Vac	25kA	L-N: 0.8kV, N-PE: 1.5kV	3
DS25/275-(VF+T)-S	2	Single phase 2W+G	220~230Vac	275Vac	25kA	L-N: 1.4kV, N-PE: 1.5kV	3
DS25/320-(VF+T)-S	2	Single phase 2W+G	240Vac	320Vac	25kA	L-N: 1.5kV, N-PE: 1.5kV	3
DS25/385-(VF+T)-S	2	Single phase 2W+G	240~277Vac	385Vac	25kA	L-N: 1.8kV, N-PE: 1.5kV	3
DT25/150-3VF-S	3	Three phase 3W+G	120~127Vac	150Vac	25kA	L-G: 0.8kV	2
DT25/275-3VF-S	3	Three phase 3W+G	220~230Vac	275Vac	25kA	L-G: 1.4kV	2
DT25/320-3VF-S	3	Three phase 3W+G	240Vac	320Vac	25kA	L-G: 1.5kV	2
DT25/385-3VF-S	3	Three phase 3W+G	240~277Vac	385Vac	25kA	L-G:1.8kV	2
DT25/150-(3VF+T)-S	4	Three phase 4W+G	120~127Vac	150Vac	25kA	L-N: 0.8kV, N-PE: 1.5kV	1
DT25/275-(3VF+T)-S	4	Three phase 4W+G	220~230Vac	275Vac	25kA	L-N: 1.4kV, N-PE: 1.5kV	1
DT25/320-(3VF+T)-S	4	Three phase 4W+G	240Vac	320Vac	25kA	L-N: 1.5kV, N-PE: 1.5kV	1
DT25/385-(3VF+T)-S	4	Three phase 4W+G	240~277Vac	385Vac	25kA	L-N: 1.8kV, N-PE: 1.5kV	1

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 3+1		
2) 3+0		
3) 1+1		
4) 2+0		

Single Pole SPD

U_{oc} 20kV

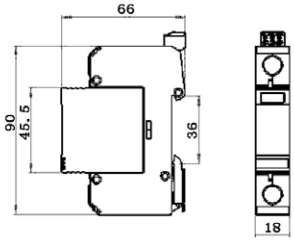
V20…-S

- T3 SPD with high energy MOV technology
- Max discharge current up to 20kA 8/20μs and open circuit voltage U_{oc} to 20kV.
- Pluggable module for easy replacement
- Reliable thermal disconnector to be fail-safe.
- Degradation failure indication & optional remote signal contact.
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

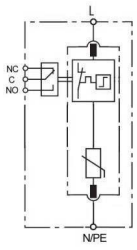
Model		V20/75-S	V20/150-S	V20/275-S	V20/320-S	V20/385-S	V20/420-S	V20/440-S	V20/550-S
Compliance		EN/IEC 61643-11/ UL 1449 4th							
Category IEC/EN/UL		Class III / T3 / Type 1ca							
Max. Continuous Operating Voltage (AC/DC)	U_c	75V / 100V	150V / 200V	275V / 370V	320V / 420V	385V / 500V	420V / 560V	440V / 585V	550V / 710V
Technology		MOV Technology Thermal disconnector							
Ports/Protection Mode		1 / L-PE or L-N or N-PE							
Nominal Discharge Current (8/20μs)	I_n	10kA							
Max. Discharge Current (8/20μs)	I_{max}	20kA							
Open Circuit Voltage (1.2/50μs)	U_{oc}	20kV							
Voltage Protection Rating 6kV/3kA UL 1449	VPR	≤0.4kV	≤0.7kV	≤1.0kV	≤1.0kV	≤1.2kV	≤1.3kV	≤1.4kV	≤1.8kV
Voltage Protection Level @I_n IEC 61643-11	U_p	≤0.4kV	≤0.7kV	≤1.2kV	≤1.3kV	≤1.4kV	≤1.6kV	≤1.6kV	≤2.0kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	92V/5s	175V/5s	335V/5s	335V/5s	403V/5s	504V/5s	580V/5s	697V/5s
Residual Current	I_{PE}	<0.1mA							
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms							
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kArms							
Response Time	t_A	≤25ns							
Backup Fuse (only required if not already provided in mains)		100A gL/gG							
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m							
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2							
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3							
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0							
Degree of Protection		IP20							
Installation Width		1 module, DIN 43880							
Failure Indication /Status		RED- Failure							
Remote Alarm Contact		Yes							
Approvals, certification		CE							
Additional Data for Remote Alarm Contacts									
Remote Alarm Contact Type		Isolated Form C							
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A							
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)							

Note: Please see Page 35 and 36 for prewired multi-pole combination.

Dimension Drawing



Basic Circuit Diagram



Single Pole SPD

▪ N-PE Module ▪ U_{oc} 20kV

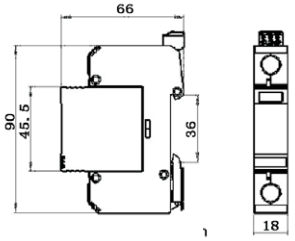
T20… -S

- T3 SPD for NPE mode protection with high energy GDT technology
- Max discharge current up to 20kA 8/20μs and open circuit voltage U_{oc} to 20kV.
- Pluggable module for easy replacement
- Reliable thermal disconnector to be fail-safe.
- Degradation failure indication & optional remote signal contact.
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41

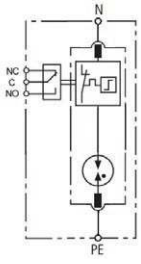
Model		T20/150-S	T20/255-S
Compliance		EN/IEC 61643-11, UL 1449 4th	
Category IEC/EN/UL		Class III / T3 / Type 1ca	
Max. Continuous Operating Voltage (AC)	U_c	150V	255V
Technology		GDT technology Thermal disconnector	
Ports/Protection Mode		1 / N-PE	
Nominal Discharge Current (8/20μs)	I_n	10kA	
Max. Discharge Current (8/20μs)	I_{max}	20kA	
Open Circuit Voltage (1.2/50μs)	U_{oc}	20kV	
Voltage Protection Rating @6kV/3kA UL 1449	VPR	≤0.8kV	≤1.0kV
Voltage Protection Level @1.2/50μs IEC 61643-11	U_p	≤0.8kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	1200V/200ms	1200V/200ms
Residual Current	I_{PE}	No	
Follow Current Interrupt Rating	I_{fi}	100A@255Vac	
Response Time	t_A	≤100ns	
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m	
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2	
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3	
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0	
Degree of Protection		IP20	
Installation Width		1 module, DIN 43880	
Failure Indication /Status		RED- Failure	
Remote Alarm Contact		Yes	
Approvals, certification		CE	
Additional Data for Remote Alarm Contacts			
Remote Alarm Contact Type		Isolated Form C	
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A	
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)	

Note: Please see Page 35 and 36 for prewired multi-pole combination.

Dimension Drawing

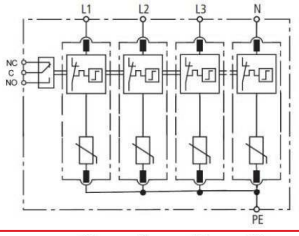
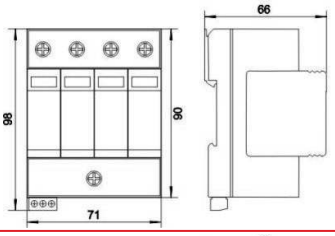
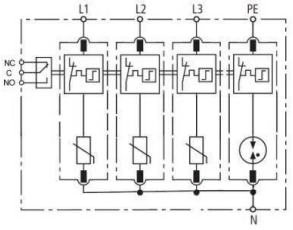
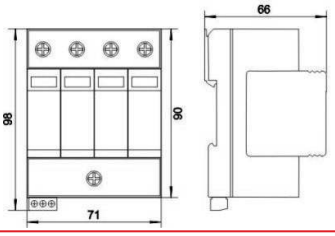
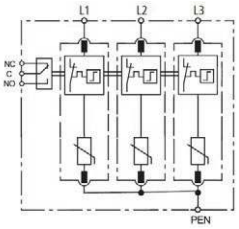
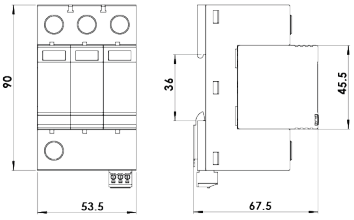
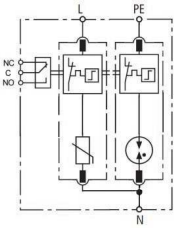
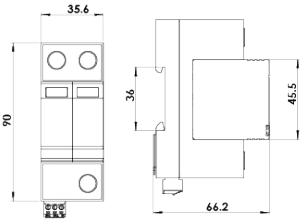
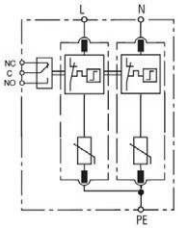
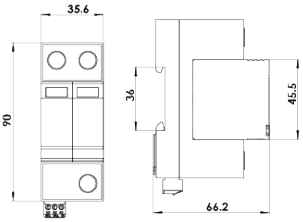


Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Power System	Nominal Voltage (phase voltage) U_n	Max. Operating Voltage U_c	Open Circuit Voltage (1.2/50μs) U_{oc}	Voltage Protection Level U_p	Diagram
DS20/75-2V-S	2	Single phase 2W+G	60Vac	75Vac	20kV	L/N-G: 0.4kV	5
DS20/150-2V-S	2	Single phase 2W+G	120~127Vac	150Vac	20kV	L/N-G: 0.7kV	5
DS20/275-2V-S	2	Single phase 2W+G	220~230Vac	275Vac	20kV	L/N-G: 1.2kV	5
DS20/320-2V-S	2	Single phase 2W+G	240~277Vac	320Vac	20kV	L/N-G: 1.3kV	5
DS20/385-2V-S	2	Single phase 2W+G	240~277Vac	385Vac	20kV	L/N-G:1.4kV	5
DS20/440-2V-S	2	Single phase 2W+G	347~400Vac	440Vac	20kV	L/N-G:1.6kV	5
DS20/550-2V-S	2	Single phase 2W+G	480Vac	550Vac	20kV	L/N-G:2.0kV	5
DS20/150-(V+T)-S	2	Single phase 2W+G	120~127Vac	150Vac	20kV	L-N: 0.7kV, N-PE: 0.8kV	4
DS20/275-(V+T)-S	2	Single phase 2W+G	220~230Vac	275Vac	20kV	L-N: 1.2kV, N-PE: 1.5kV	4
DS20/320-(V+T)-S	2	Single phase 2W+G	240~277Vac	320Vac	20kV	L-N: 1.3kV, N-PE: 1.5kV	4
DS20/385-(V+T)-S	2	Single phase 2W+G	240~277Vac	385Vac	20kV	L-N: 1.4kV, N-PE: 1.5kV	4
DS20/420-(V+T)-S	2	Single phase 2W+G	347Vac	420Vac	20kV	L-N: 1.6kV, N-PE: 1.5kV	4
DT20/75-3V-S	3	Three phase 3W+G	60Vac	75Vac	20kV	L-G: 0.4kV	3
DT20/150-3V-S	3	Three phase 3W+G	120~127Vac	150Vac	20kV	L-G: 0.7kV	3
DT20/275-3V-S	3	Three phase 3W+G	220~230Vac	275Vac	20kV	L-G: 1.2kV	3
DT20/320-3V-S	3	Three phase 3W+G	240~277Vac	320Vac	20kV	L-G: 1.3kV	3
DT20/385-3V-S	3	Three phase 3W+G	240~277Vac	385Vac	20kV	L-G: 1.4kV	3
DT20/440-3V-S	3	Three phase 3W+G	347~400Vac	440Vac	20kV	L-G: 1.6kV	3
DT20/550-3V-S	3	Three phase 3W+G	480Vac	550Vac	20kV	L-G: 2.0kV	3
DT20/150-(3V+T)-S	4	Three phase 4W+G	120~127Vac	150Vac	20kV	L-N: 0.7kV, N-PE: 0.8kV	2
DT20/275-(3V+T)-S	4	Three phase 4W+G	220~230Vac	275Vac	20kV	L-N: 1.2kV, N-PE: 1.5kV	2
DT20/320-(3V+T)-S	4	Three phase 4W+G	240~277Vac	320Vac	20kV	L-N: 1.3kV, N-PE: 1.5kV	2
DT20/385-(3V+T)-S	4	Three phase 4W+G	240~277Vac	385Vac	20kV	L-N: 1.4kV, N-PE: 1.5kV	2
DT20/420-(3V+T)-S	4	Three phase 4W+G	347Vac	420Vac	20kV	L-N: 1.6kV, N-PE: 1.5kV	2
DT20/75-4V-S	4	Three phase 4W+G	60Vac	75Vac	20kV	L/N-G: 0.4kV	1
DT20/150-4V-S	4	Three phase 4W+G	120~127Vac	150Vac	20kV	L/N-G: 0.7kV	1
DT20/275-4V-S	4	Three phase 4W+G	220~230Vac	275Vac	20kV	L/N-G: 1.2kV	1
DT20/320-4V-S	4	Three phase 4W+G	240~277Vac	320Vac	20kV	L/N-G: 1.3kV	1
DT20/385-4V-S	4	Three phase 4W+G	240~277Vac	385Vac	20kV	L/N-G: 1.4kV	1
DT20/440-4V-S	4	Three phase 4W+G	347~400Vac	440Vac	20kV	L/N-G: 1.6kV	1
DT20/550-4V-S	4	Three phase 4W+G	480Vac	550Vac	20kV	L/N-G: 2.0kV	1

Diagram	Basic Circuit diagram	Dimension Drawing
1) 4+0		
2) 3+1		
3) 3+0		
4) 1+1		
5) 2+0		

Single Pole SPD

- 18mm Single Phase
- U_{oc} 20kV

MDSS 20/...

- 18mm compact T3 SPD for single phase or two hot lines protection.
- Max discharge current up to 20kA 8/20μs and open circuit voltage U_{oc} to 20kV.
- Pluggable module for easy replacement
- Reliable thermal disconnector to be fail-safe.
- Degradation failure indication & optional remote signal contact.
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

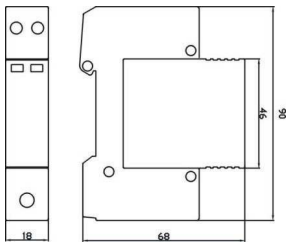
Model		MDSS10/12-2V-S	MDSS10/24-2V-S	MDSS20/36-2V-S	MDSS20/48-2V-S	MDSS20/60-2V-S	MDSS20/110-2V-S
Compliance		EN/IEC 61643-11, UL 1449 4th					
Category IEC/EN/UL		Class III / T3 / Type 1ca					
Max. Continuous Operating Voltage (AC/DC)	U_c	30V / 38V	35V / 45V	50V / 65V	60V / 81V	75V / 100V	130V / 170V
Technology		MOV Technology Thermal disconnector					
Ports/Protection Mode		1 / L-PE, N-PE					
Nominal Discharge Current (8/20μs)	I_n	5kA	5kA	10kA	10kA	10kA	10kA
Max. Discharge Current (8/20μs)	I_{max}	10kA	10kA	20kA	20kA	20kA	20kA
Open Circuit Voltage (1.2/50μs)	U_{oc}	10kV	10kV	20kV	20kV	20kV	20kV
Voltage Protection Level	U_p	≤160V	≤180V	≤330V	≤370V	≤460V	≤700V
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	34V/5s	40V/5s	70V/5s	78V/5s	90V/5s	160V/5s
Residual Current	I_{PE}	<0.1mA					
Response Time	t_A	≤25ns					
Backup Fuse (only required if not already provided in mains)		32A gL/gG					
Environment		Temperature Range: -40°C ~ +80°C; Humidity: ≤95%; Altitude: ≤2000m					
Cross-Section of Connection Wire		Single-strand 10mm^2; multi-strand 6mm^2					
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3					
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0					
Degree of Protection		IP20					
Installation Width		1 module, DIN 43880					
Failure Indication /Status		RED- Failure					
Remote Alarm Contact		Yes					
Approvals, certification		CE					
Additional Data for Remote Alarm Contacts							
Remote Alarm Contact Type		Isolated Form C					
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A					
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)					

(more models in next page...)

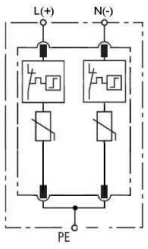
(more models of MDSS 20/...)

Model		MDSS20/150-2V-S	MDSS20/175-2V-S	MDSS20/275-2V-S	MDSS20/320-2V-S	MDSS20/385-2V-S	MDSS20/420-2V-S
Compliance		EN/IEC 61643-11, UL 1449 4th					
Category IEC/EN/UL		Class III / T3 / Type 1ca					
Max. Continuous Operating Voltage (AC/DC)	U_c	150V / 200V	175V / 225V	275V / 350V	320V / 420V	385V / 505V	420V / 560V
Technology		MOV Technology Thermal disconnector					
Ports/Protection Mode		1 / L-PE , N-PE					
Nominal Discharge Current (8/20μs)	I_n	10kA	10kA	10kA	10kA	10kA	10kA
Max. Discharge Current (8/20μs)	I_{max}	20kA	20kA	20kA	20kA	20kA	20kA
Open Circuit Voltage (1.2/50μs)	U_{oc}	20kV	20kV	20kV	20kV	20kV	20kV
Voltage Protection Level	U_p	≤0.8kV	≤0.9kV	≤1.2kV	≤1.3kV	≤1.4kV	≤1.6kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	175V/5s	228V/5s	335V/5s	335V/5s	403V/5s	504V/5s
Residual Current	I_{PE}	<0.1mA					
Response Time	t_A	≤25ns					
Backup Fuse (only required if not already provided in mains)		32A gL/gG					
Environment		Temperature Range: -40°C ~ +80°C; Humidity: ≤95%; Altitude: ≤2000m					
Cross-Section of Connection Wire		Single-strand 10mm^2; multi-strand 6mm^2					
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3					
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0					
Degree of Protection		IP20					
Installation Width		1 module, DIN 43880					
Failure Indication /Status		RED- Failure					
Remote Alarm Contact		Yes					
Approvals, certification		CE					
Additional Data for Remote Alarm Contacts							
Remote Alarm Contact Type		Isolated Form C					
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A					
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)					

■ **Dimension Drawing**



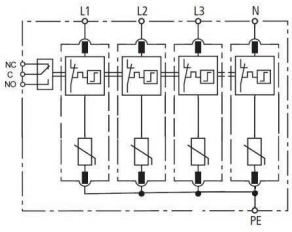
■ **Basic Circuit Diagram**



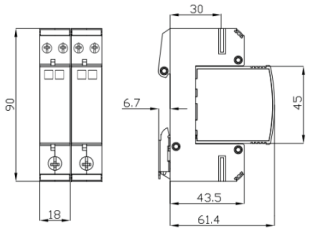
Prewired Multi-pole SPD

1) 4+0

■ **Dimension Drawing**



■ **Basic Circuit Diagram**



Single Pole SPD

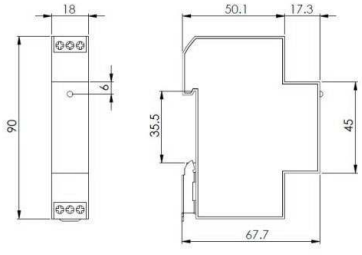
▪ 18mm Single Phase ▪ U_{oc} 10kV

MDS10/...-F

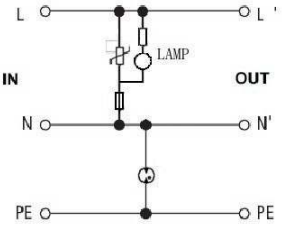
- 18mm monoblock T3 SPD for single phase protection.
- "1+1" protection circuit for TN-S and TT network systems
- Rated nominal current 10A
- Max discharge current up to 20kA 8/20μs and open circuit voltage U_{oc} to 10kV
- Terminal connection module.
- Thermal protection & LED failure indicator.
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		MDS10/150-(V+T)-F	MDS10/175-(V+T)-F	MDS10/275-(V+T)-F	MDS10/300-(V+T)-F	MDS10/320-(V+T)-F
Compliance		EN/IEC 61643-11, UL 1449 4th				
Category IEC/EN/UL		Class III / T3 / Type 1ca				
Max. Continuous Operating Voltage (AC/DC)	U_c	150V / 200V	175V / 225V	275V / 350V	300V / 385V	320V / 420V
Technology		MOV+GDT technology Thermally protected				
Ports/Protection Mode		1 / L-N, N-PE				
Nominal Discharge Current (8/20μs)	I_n	5kA				
Max. Discharge Current (8/20μs)	I_{max}	10kA				
Open Circuit Voltage (1.2/50μs)	U_{oc}	10kV				
Voltage Protection Level @I_n L-N	U_p	≤0.8kV	≤0.8kV	≤1.3kV	≤1.4kV	≤1.5kV
Voltage Protection Level @1.2/50μs N-PE	U_p	≤0.8kV	≤0.8kV	≤1.5kV	≤1.5kV	≤1.5kV
Temporary Overvoltage TOV L-N —Withstand Mode	U_{tov}	175V/5s	228V/5s	335V/5s	335V/5s	335V/5s
Temporary Overvoltage TOV N-PE —Withstand Mode	U_{tov}	1200V/200ms	1200V/200ms	1200V/200ms	1200V/200ms	1200V/200ms
Residual Current	I_{PE}	<0.1mA				
Nominal Load current	I_L	10A				
Short-Circuit Current Rating per IEC 61643	I_{sc}	6kArms				
Response Time	t_A	≤25ns				
Environment		Temperature Range: - 40°C ~ +70°C; Humidity: ≤95%; wAltitude: ≤2000m				
Cross-Section of Connection Wire		Single-strand 4mm²; multi-strand 2.5 mm²				
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3				
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0				
Degree of Protection		IP20				
Installation Width		1 module, DIN 43880				
Failure Indication /Status		RED- Failure				
Approvals, certification		CE				

Dimension Drawing



Basic Circuit Diagram



DIN-rail SPD for AC Power Supply (UL Standard)

Single Pole SPD

▪ TPAE Patent ▪ I_{max} 50kA

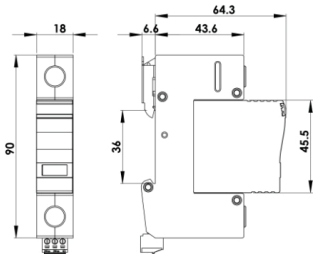
SP…-S

- UL recognized Type 1ca (UL1449 4th), Type 2ca (CSA C22.2) SPD with high energy MOV technology
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology)
- High surge current discharge capacity up to 50kA 8/20
- Short circuit current rating (UL 1449, SCCR) 200kA tested without external fuse or CB
- Pluggable module for easy replacement
- Degradation failure indication & optional remote signal contact
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

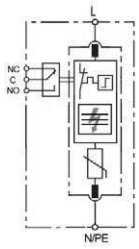
Model		SP150-S	SP180-S	SP275A-S	SP320-S	SP385-S	SP420-S	SP550-S	SP690-S
Compliance		UL1449 4th; EN/IEC 61643-11							
Category UL/EN/IEC		Type 1ca / T2 / Class II							
Max. Continuous Operating Voltage (AC/DC)	U_c	150V / 200V	180V / 230V	275V / 350V	320V / 420V	385V / 505V	420V / 560V	550V / 745V	690V / 895V
Product Technologies		MOV technology TPAE technology (patented)							
Ports/Protection Mode		1 / L-PE or L-N or N-PE							
Nominal Discharge Current (8/20μs)	I_n	20kA							
Max. Discharge Current (8/20μs)	I_{max}	50kA							40kA
Voltage Protection Rating @6kV/3kA UL 1449	VPR	≤0.7kV	≤1.0kV	≤1.0kV	≤1.2kV	≤1.5kV	≤1.5kV	≤1.8kV	≤2.5kV
Voltage Protection Level @I_n IEC 61643	U_p	≤0.8kV	≤1.0kV	≤1.4kV	≤1.5kV	≤1.8kV	≤2.0kV	≤2.5kV	≤3.2kV
Temporary Overvoltage TOV —Withstand mode	U_{tov}	175V/5s	228V/5s	335V/5s	335V/5s	403V/5s	504V/5s	697V/5s	872V/5s
Residual Current	I_{PE}	<0.1mA							
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms							
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kArms							
Response Time	t_A	≤25ns							
Backup Fuse(only required if not already provided in mains)		125A gL/gG							
Work Environment		Temperature Range: -40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m							
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2							
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3							
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0							
Degree of Protection		IP20							
Installation Width		1 module, DIN 43880							
Failure Indication /Status		RED- Failure							
Remote Alarm Contact		Yes							
Approvals, certification		UL, CE							
Additional Data for Remote Alarm Contacts									
Remote Alarm Contact Type		Isolated Form C							
Switching Capability	U_n/I_n	AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A							
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)							

Note: Please see Page 44 and 45 for prewired multi-pole combination.

Dimension Drawing



Basic Circuit Diagram



Pluggable Module for SP series

Part No		Module Type	Max. Discharge Current, Imax (8/20μs) (kA)	Nominal Discharge Current, In (8/20μs) (kA)	Max. Continuous Operating Voltage, MCOV (VAC)	Voltage Protection Rating, VPR (kV)	SCCR Rating (kArms)
Type 1ca	Type 2ca						
MSP150	MSP150C	MOV	50	20	150	0.7	200
MSP180	MSP180C	MOV	50	20	180	1.0	200
MSP275A	MSP275AC	MOV	50	20	275	1.0	200
MSP320	MSP320C	MOV	50	20	320	1.2	200
MSP385	MSP385C	MOV	50	20	385	1.5	200
MSP420	MSP420C	MOV	50	20	420	1.5	200
MSP550	MSP550C	MOV	50	20	550	1.8	200
MSP690	MSP690C	MOV	40	20	690	2.5	200
MSP150T	MSP150TC	GDT	50	20	150	0.9	200
MSP255T	MSP255TC	GDT	50	20	255	0.9	200

Single Pole SPD

▪ N-PE Module ▪ TAPE Patent ▪ I_{max} 50kA

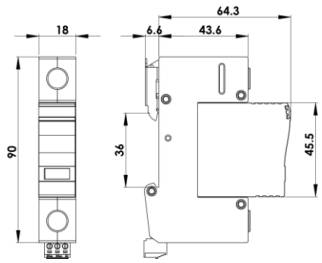
SP…T-S

- UL recognized Type 1ca SPD (UL1449 4th), Type 2ca (CSA C22.2) with high energy GDT technology for NPE protection
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology).
- High surge current discharge capacity up to 50kA 8/20
- Pluggable module for easy replacement
- Degradation failure indication & optional remote signal contact.
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

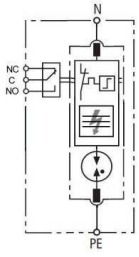
Model		SP150T-S	SP255T-S
Compliance		EN/IEC 61643-11, UL 1449 4th	
Category UL/EN/IEC		Type 1ca / T2 / Class II	
Max. Continuous Operating Voltage (AC)	U_c	150V	255V
Technology		GDT technology TPAE technology (patented)	
Ports/Protection Mode		1 / N-PE	
Nominal Discharge Current (8/20μs)	I_n	20kA	
Max. Discharge Current (8/20μs)	I_{max}	50kA	
Voltage Protection Rating @6kV/3kA UL 1449	VPR	≤0.9kV	≤0.9kV
Voltage Protection Level @1.2/50μs IEC61643	U_p	≤1.5kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	1200V/200ms	1200V/200ms
Residual Current	I_{PE}	No	
Follow Current Interrupt Rating	I_{fi}	200A@255Vac	
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kArms	
Response Time	t_A	≤100ns	
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m	
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2	
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3	
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0	
Degree of Protection		IP20	
Installation Width		1 module, DIN 43880	
Failure Indication /Status		RED- Failure	
Remote Alarm Contact		Yes	
Approvals, certification		UL, CE	
Additional Data for Remote Alarm Contacts			
Remote Alarm Contact Type		Isolated Form C	
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A	
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)	

Note: Please see Page 44 and 45 for prewired multi-pole combination.

Dimension Drawing

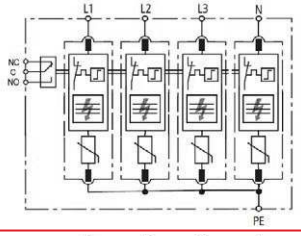
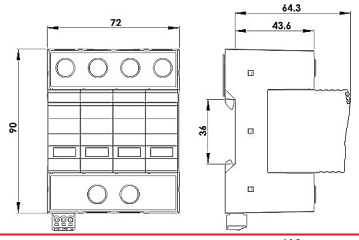
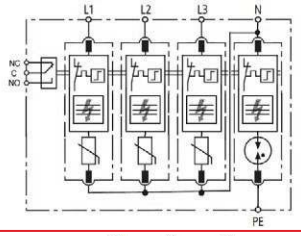
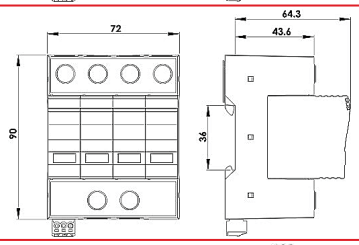
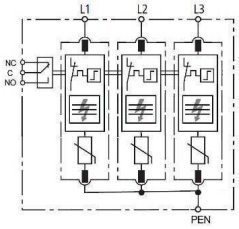
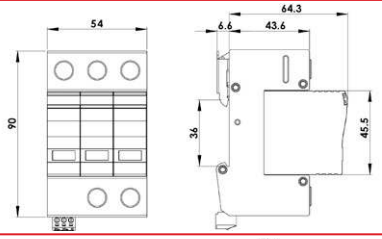
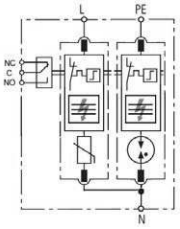
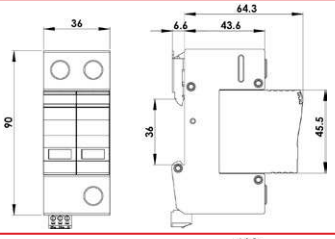
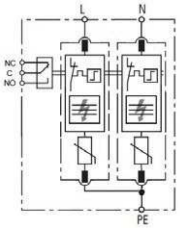
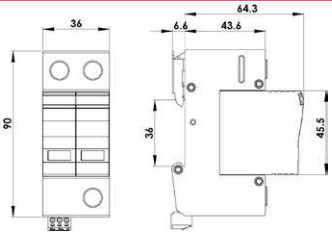


Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Power System	Nominal Voltage (phase voltage) U_n	Max. Operating Voltage U_c	Max. Discharge Current (8/20μs) I_{max}	Voltage Protection Rating VPR	Diagram
SP150/2P-S	2	Single phase 2W+G	120~127Vac	150Vac	50kA	L/N-G: 0.7kV	5
SP180/2P-S	2	Single phase 2W+G	120~127Vac	175Vac	50kA	L/N-G: 1.0kV	5
SP275A/2P-S	2	Single phase 2W+G	220~230Vac	275Vac	50kA	L/N-G: 1.0kV	5
SP320/2P-S	2	Single phase 2W+G	240~277Vac	320Vac	50kA	L/N-G: 1.2kV	5
SP385/2P-S	2	Single phase 2W+G	240~277Vac	385Vac	50kA	L/N-G: 1.5kV	5
SP420/2P-S	2	Single phase 2W+G	277~347Vac	420Vac	50kA	L/N-G: 1.5kV	5
SP550/2P-S	2	Single phase 2W+G	480Vac	550Vac	50kA	L/N-G: 1.8kV	5
SP690/2P-S	2	Single phase 2W+G	600Vac	690Vac	40kA	L/N-G: 2.5kV	5
SP150/PN-S	2	Single phase 2W+G	120~127Vac	150Vac	50kA	L-N: 0.7kV, N-PE: 0.9kV	4
SP180/PN-S	2	Single phase 2W+G	120~127Vac	175Vac	50kA	L-N: 1.0kV, N-PE: 0.9kV	4
SP275A/PN-S	2	Single phase 2W+G	220~230Vac	275Vac	50kA	L-N: 1.0kV, N-PE: 0.9kV	4
SP320/PN-S	2	Single phase 2W+G	240~277Vac	320Vac	50kA	L-N: 1.2kV, N-PE: 0.9kV	4
SP385/PN-S	2	Single phase 2W+G	240~277Vac	385Vac	50kA	L-N: 1.5kV, N-PE: 0.9kV	4
SP420/PN-S	2	Single phase 2W+G	277~347Vac	420Vac	50kA	L-N: 1.5kV, N-PE: 0.9kV	4
SP150/3P-S	3	Three phase 3W+G	120~127Vac	150Vac	50kA	L-G: 0.7kV	3
SP180/3P-S	3	Three phase 3W+G	120~127Vac	175Vac	50kA	L-G: 1.0kV	3
SP275A/3P-S	3	Three phase 3W+G	220~230Vac	275Vac	50kA	L-G: 1.0kV	3
SP320/3P-S	3	Three phase 3W+G	240~277Vac	320Vac	50kA	L-G: 1.2kV	3
SP385/3P-S	3	Three phase 3W+G	240~277Vac	385Vac	50kA	L-G: 1.5kV	3
SP420/3P-S	3	Three phase 3W+G	277~347Vac	420Vac	50kA	L-G: 1.5kV	3
SP550/3P-S	3	Three phase 3W+G	480Vac	550Vac	50kA	L-G: 1.8kV	3
SP690/3P-S	3	Three phase 3W+G	600Vac	690Vac	40kA	L-G: 2.5kV	3
SP150/3PN-S	4	Three phase 4W+G	120~127Vac	150Vac	50kA	L-N: 0.7kV, N-PE: 0.9kV	2
SP180/3PN-S	4	Three phase 4W+G	120~127Vac	175Vac	50kA	L-N: 1.0kV, N-PE: 0.9kV	2
SP275A/3PN-S	4	Three phase 4W+G	220~230Vac	275Vac	50kA	L-N: 1.0kV, N-PE: 0.9kV	2
SP320/3PN-S	4	Three phase 4W+G	240~277Vac	320Vac	50kA	L-N: 1.2kV, N-PE: 0.9kV	2
SP385/3PN-S	4	Three phase 4W+G	240~277Vac	385Vac	50kA	L-N: 1.5kV, N-PE: 0.9kV	2
SP420/3PN-S	4	Three phase 4W+G	277~347Vac	420Vac	50kA	L-N: 1.5kV, N-PE: 0.9kV	2
SP150/4P-S	4	Three phase 4W+G	120~127Vac	150Vac	50kA	L/N-G: 0.7kV	1
SP180/4P-S	4	Three phase 4W+G	120~127Vac	175Vac	50kA	L/N-G: 1.0kV	1
SP275A/4P-S	4	Three phase 4W+G	220~230Vac	275Vac	50kA	L/N-G: 1.0kV	1
SP320/4P-S	4	Three phase 4W+G	240~277Vac	320Vac	50kA	L/N-G: 1.2kV	1
SP385/4P-S	4	Three phase 4W+G	240~277Vac	385Vac	50kA	L/N-G: 1.5kV	1
SP420/4P-S	4	Three phase 4W+G	277~347Vac	420Vac	50kA	L/N-G: 1.5kV	1
SP550/4P-S	4	Three phase 4W+G	347Vac	550Vac	50kA	L/N-G: 1.8kV	1
SP690/4P-S	4	Three phase 4W+G	347Vac	690Vac	40kA	L/N-G: 2.5kV	1

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 4+0 		
2) 3+1 		
3) 3+0 		
4) 1+1 		
5) 2+0 		

Single Pole SPD

▪ TPAE Patent ▪ I_{max} 50kA

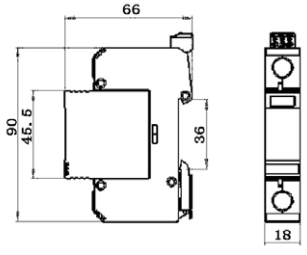
V50… -S

- ETL certified Type 1ca (UL1449 4th), Type 2ca (CSA C22.2) SPD with high energy MOV technology
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology)
- High surge current discharge capacity up to 50kA 8/20
- Short circuit current rating (UL1449, SCCR) 200kA tested without external fuse or CB
- Pluggable module for easy replacement
- Degradation failure indication & optional remote signal contact
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

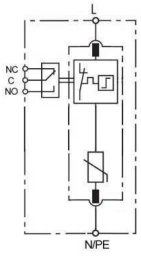
Model		V50/150-S	V50/180-S	V50/250-S	V50/275-S	V50/320-S	V50/420-S	V50/510-S	V50/550-S
Compliance		UL 1449 4th; EN/IEC 61643-11							
Category UL/EN/IEC		Type 1ca / T2 / Class II							
Max. Continuous Operating Voltage (AC/DC)	U_c	150V / 200V	180V / 240V	250V / 330V	275V / 370V	320V / 420V	420V / 560V	510V / 670V	550V / 710V
Technology		High energy MOV technology TPAE technology (patented)							
Ports/Protection Mode		1 / L-PE or L-N or N-PE							
Nominal Discharge Current (8/20μs)	I_n	20kA							
Max. Discharge Current (8/20μs)	I_{max}	50kA							
Voltage Protection Rating 6kV/3kA UL 1449	VPR	≤0.7kV	≤0.7kV	≤1.0kV	≤1.0kV	≤1.0kV	≤1.2kV	≤1.5kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	175V/5s	228V/5s	320V/5s	335V/5s	335V/5s	504V/5s	610V/5s	697V/5s
Residual Current	I_{PE}	<0.1mA							
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms							
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kArms							
Response Time	t_A	≤25ns							
Backup Fuse (only required if not already provided in mains)		125A gL/gG							
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m							
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2							
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3							
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0							
Degree of Protection		IP20							
Installation Width		1 module, DIN 43880							
Failure Indication /Status		RED- Failure							
Remote Alarm Contact		Yes							
Approvals, certification		ETL, CE							
Additional Data for Remote Alarm Contacts									
Remote Alarm Contact Type		Isolated Form C							
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A							
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)							

Note: Please see Page 48 and 49 for prewired multi-pole combination.

Dimension Drawing



Basic Circuit Diagram



Single Pole SPD

▪ N-PE ▪ I_{max} 50kA

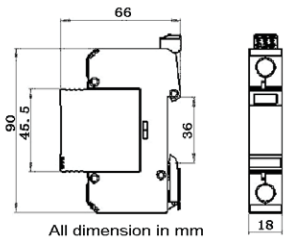
T50… -S

- ETL certified Type 1ca SPD (UL1449 4th), Type 2ca (CSA C22.2) with high energy GDT technology for NPE protection
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology).
- High surge current discharge capacity up to 50kA 8/20
- Pluggable module for easy replacement
- Degradation failure indication & optional remote signal contact.
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

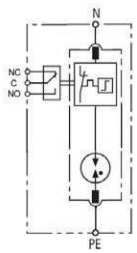
Model		T50/150-S	T50/255-S	T50/350-S	T50/440-S
Compliance		EN/IEC 61643-11, UL 1449 4th			
Category UL/EN/IEC		Type 1ca / T2 / Class II			
Max. Continuous Operating Voltage (AC)	U_c	150V	255V	350V	440V
Technology		GDT technology TPAE technology (patented)			
Ports/Protection Mode		1 / N-PE			
Nominal Discharge Current (8/20μs)	I_n	20kA			
Max. Discharge Current (8/20μs)	I_{max}	50kA			
Voltage Protection Rating @6kV/3kA UL 1449	VPR	≤0.8kV	≤1.0kV	≤1.2kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	1200V/200ms	1200V/200ms	1200V/200ms	1200V/200ms
Residual Current	I_{PE}	No			
Follow Current Interrupt Rating	I_{fi}	200A@255Vac			
Response Time	t_A	≤100ns			
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		1 module, DIN 43880			
Failure Indication /Status		RED- Failure			
Remote Alarm Contact		Yes			
Approvals, certification		ETL, CE			
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

Note: Please see Page 48 and 49 for prewired multi-pole combination.

Dimension Drawing

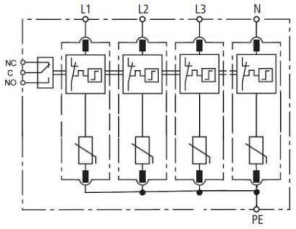
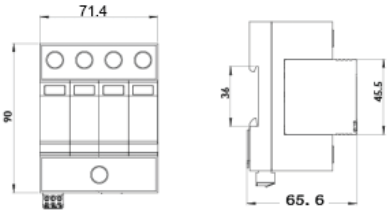
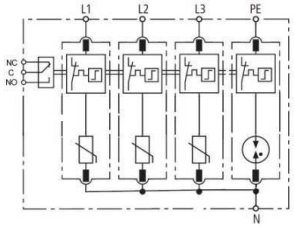
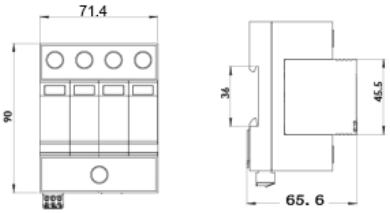
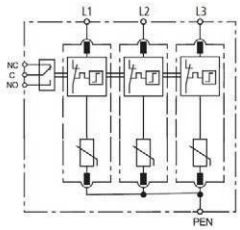
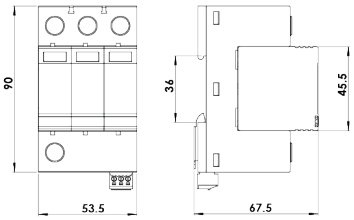
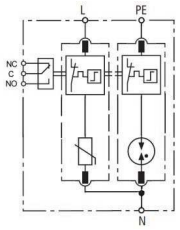
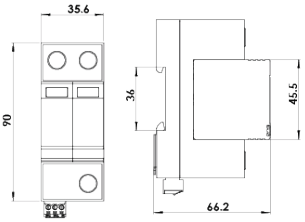
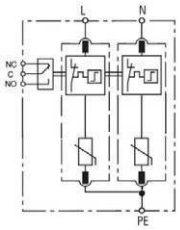
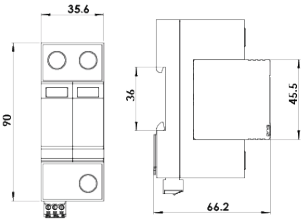


Basic Circuit Diagram



Prewired Multi-pole SPD

Part No.	Pole	Power System	Nominal Voltage (phase voltage) U_n	Max. Operating Voltage U_c	Max. Discharge Current (8/20μs) I_{max}	Voltage protection Rating VPR	Diagram
DS50/150-2V-S	2	Single phase 2W+G	120~127Vac	150Vac	50kA	L/N-G: 0.7kV	5
DS50/180-2V-S	2	Single phase 2W+G	120~127Vac	180Vac	50kA	L/N-G: 0.7kV	5
DS50/250-2V-S	2	Single phase 2W+G	220Vac	250Vac	50kA	L/N-G: 1.0kV	5
DS50/275-2V-S	2	Single phase 2W+G	220~230Vac	275Vac	50kA	L/N-G: 1.0kV	5
DS50/320-2V-S	2	Single phase 2W+G	240~277Vac	320Vac	50kA	L/N-G: 1.0kV	5
DS50/420-2V-S	2	Single phase 2W+G	277~347Vac	420Vac	50kA	L/N-G: 1.2kV	5
DS50/510-2V-S	2	Single phase 2W+G	400Vac	510Vac	50kA	L/N-G: 1.5kV	5
DS50/550-2V-S	2	Single phase 2W+G	480Vac	550Vac	50kA	L/N-G: 1.5kV	5
DS50/150-(V+T)-S	2	Single phase 2W+G	120~127Vac	150Vac	50kA	L-N: 0.7kV, N-PE: 0.8kV	4
DS50/180-(V+T)-S	2	Single phase 2W+G	120~127Vac	180Vac	50kA	L-N: 0.7kV, N-PE: 0.8kV	4
DS50/250-(V+T)-S	2	Single phase 2W+G	220Vac	250Vac	50kA	L-N: 1.0kV, N-PE: 1.0kV	4
DS50/275-(V+T)-S	2	Single phase 2W+G	220~230Vac	275Vac	50kA	L-N: 1.0kV, N-PE: 1.0kV	4
DS50/320-(V+T)-S	2	Single phase 2W+G	240~277Vac	320Vac	50kA	L-N: 1.0kV, N-PE: 1.0kV	4
DS50/420-(V+T)-S	2	Single phase 2W+G	277~347Vac	420Vac	50kA	L-N: 1.2kV, N-PE: 1.2kV	4
DT50/150-3V-S	3	Three phase 3W+G	120~127Vac	150Vac	50kA	L-G: 0.7kV	3
DT50/180-3V-S	3	Three phase 3W+G	120~127Vac	180Vac	50kA	L-G: 0.7kV	3
DT50/250-3V-S	3	Three phase 3W+G	220Vac	250Vac	50kA	L-G: 1.0kV	3
DT50/275-3V-S	3	Three phase 3W+G	220~230Vac	275Vac	50kA	L-G: 1.0kV	3
DT50/320-3V-S	3	Three phase 3W+G	240~277Vac	320Vac	50kA	L-G: 1.0kV	3
DT50/420-3V-S	3	Three phase 3W+G	277~347Vac	420Vac	50kA	L-G: 1.2kV	3
DT50/510-3V-S	3	Three phase 3W+G	400Vac	510Vac	50kA	L-G: 1.5kV	3
DT50/550-3V-S	3	Three phase 3W+G	480Vac	550Vac	50kA	L-G: 1.5kV	3
DT50/150-(3V+T)-S	4	Three phase 4W+G	120~127Vac	150Vac	50kA	L-N: 0.7kV, N-PE: 0.8kV	2
DT50/180-(3V+T)-S	4	Three phase 4W+G	120~127Vac	180Vac	50kA	L-N: 0.7kV, N-PE: 0.8kV	2
DT50/250-(3V+T)-S	4	Three phase 4W+G	220Vac	250Vac	50kA	L-N: 1.0kV, N-PE: 1.0kV	2
DT50/275-(3V+T)-S	4	Three phase 4W+G	220~230Vac	275Vac	50kA	L-N: 1.0kV, N-PE: 1.0kV	2
DT50/320-(3V+T)-S	4	Three phase 4W+G	240~277Vac	320Vac	50kA	L-N: 1.0kV, N-PE: 1.0kV	2
DT50/420-(3V+T)-S	4	Three phase 4W+G	277~347Vac	420Vac	50kA	L-N: 1.2kV, N-PE: 1.2kV	2
DT50/150-4V-S	4	Three phase 4W+G	120~127Vac	150Vac	50kA	L/N-G: 0.7kV	1
DT50/180-4V-S	4	Three phase 4W+G	120~127Vac	180Vac	50kA	L/N-G: 0.7kV	1
DT50/250-4V-S	4	Three phase 4W+G	220Vac	250Vac	50kA	L/N-G: 1.0kV	1
DT50/275-4V-S	4	Three phase 4W+G	220~230Vac	275Vac	50kA	L/N-G: 1.0kV	1
DT50/320-4V-S	4	Three phase 4W+G	240~277Vac	320Vac	50kA	L/N-G: 1.0kV	1
DT50/420-4V-S	4	Three phase 4W+G	277~347Vac	420Vac	50kA	L/N-G: 1.2kV	1
DT50/510-4V-S	4	Three phase 4W+G	400Vac	510Vac	50kA	L/N-G: 1.5kV	1
DT50/550-4V-S	4	Three phase 4W+G	480Vac	550Vac	50kA	L/N-G: 1.5kV	1

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 4+0 		
2) 3+1 		
3) 3+0 		
4) 1+1 		
5) 2+0 		

Single Pole SPD

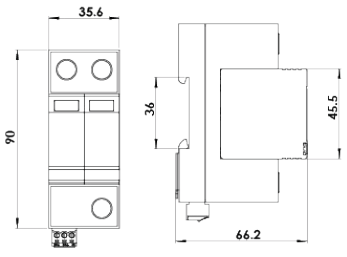
▪ Redudant Design ▪ TPAE Patent ▪ I_{max} 100kA

V100E...-S

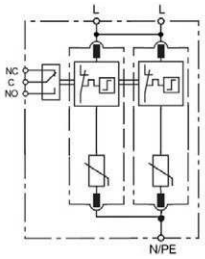
- ETL certified Type 1ca (UL1449 4th), Type 2ca (CSA C22.2) SPD with high energy MOV technology
- Redundant module design, protection will not be interrupted while one overload model need replace
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology)
- High surge current discharge capacity up to 100kA 8/20μs
- Short circuit current rating 200kArms
- Pluggable module for easy replacement
- Degradation failure indication & optional remote signal contact
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		V100E/150-S	V100E/180-S	V100E/250-S	V100E/275-S	V100E/320-S	V100E/420-S	V100E/510-S	V100E/550-S
Compliance		UL 1449 4th; EN/IEC 61643-11							
Category UL/EN/IEC		Type 1ca / T2 / Class II							
Max. Continuous Operating Voltage (AC/DC)	U_c	150V / 200V	180V / 240V	250V / 330V	275V / 370V	320V / 420V	420V / 560V	510V / 670V	550V / 710V
Technology		High energy MOV technology; TPAE technology (patented); Two-modules/redundant design							
Ports/Protection Mode		1 / L-PE or L-N or N-PE							
Nominal Discharge Current (8/20μs)	I_n	20kA							
Max. Discharge Current (8/20μs)	I_{max}	100kA							
Voltage Protection Rating 6kV/3kA UL 1449	VPR	≤0.7kV	≤0.7kV	≤1.0kV	≤1.0kV	≤1.0kV	≤1.2kV	≤1.5kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	175V/5s	228V/5s	320V/5s	335V/5s	335V/5s	504V/5s	610V/5s	697V/5s
Residual Current	I_{PE}	<0.1mA							
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms							
Short-Circuit Current Rating per IEC 61643	I_{sc}	10kArms							
Response Time	t_A	≤25ns							
Backup Fuse (only required if not already provided in mains)		125A gL/gG							
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m							
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2							
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3							
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0							
Degree of Protection		IP20							
Installation Width		2 modules, DIN 43880							
Failure Indication /Status		RED- Failure							
Remote Alarm Contact		Yes							
Approvals, certification		ETL, CE							
Additional Data for Remote Alarm Contacts									
Remote Alarm Contact Type		Isolated Form C							
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A							
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)							

■ Dimension Drawing



■ Basic Circuit Diagram



Single Pole SPD

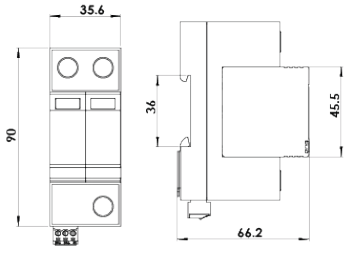
▪ Redudant Design ▪ N-PE ▪ I_{max} 100kA

G100E...-S

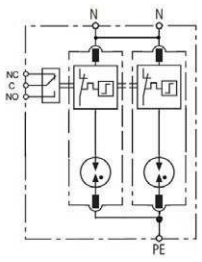
- ETL certified Type 1ca SPD (UL1449 4th), Type 2ca (CSA C22.2) with high energy GDT technology for NPE protection
- Redundant module design, protection will not be interrupted while one overload model need replace
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology).
- High surge current discharge capacity up to 100kA 8/20
- Pluggable module for easy replacement
- Degradation failure indication & optional remote signal contact
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		G100E/150-S	G100E/255-S	G100E/350-S	G100E/440-S
Compliance		EN/IEC 61643-11, UL 1449 4th			
Category UL/EN/IEC		Type 1ca / T2 /Class II			
Max. Continuous Operating Voltage (AC)	U_c	150V	255V	350V	440V
Technology		GDT technology TPAE technology (patented) Two-module / redundant design			
Ports/Protection Mode		1 / N-PE			
Nominal Discharge Current (8/20μs)	I_n	20kA			
Max. Discharge Current (8/20μs)	I_{max}	100kA			
Voltage Protection Rating @6kV/3kA UL 1449	VPR	≤0.8kV	≤1.0kV	≤1.2kV	≤1.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	1200V/200ms	1200V/200ms	1200V/200ms	1200V/200ms
Residual Current	I_{PE}	No			
Follow Current Interrupt Rating	I_{fi}	200A@255Vac			
Response Time	t_A	≤100ns			
Environment		Temperature Range: -40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		2 modules, DIN 43880			
Failure Indication /Status		RED- Failure			
Remote Alarm Contact		Yes			
Approvals, certification		ETL, CE			
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

Dimension Drawing



Basic Circuit Diagram



Panel SPD

One-Port Panel SPD

Two-Port Surge Filter

Prosurge's one-port Panel SPD can be classified into 2 series:

1) PSP Series Panel SPD

PSP E
25~50kA | Single Phase

PSP B
50kA | Multi Phase

PSP C
100~300kA | Multi Phase

PTMOV / 20PTMOV as Key Component

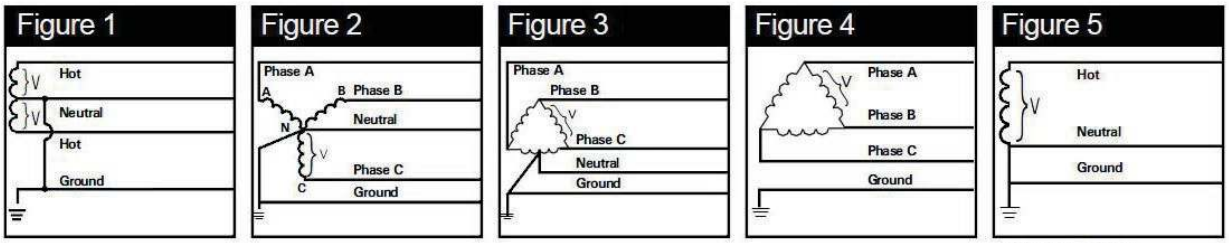
2) PS Series Panel SPD

PS series
400~900kA | Multi Phase

SMTMOV / HSMTMOV as Key Component

Voltage Code for Power Distribution System

- 120SP, 240SP = 120/240V; 240/480V .....Split-phase three-wire +ground (Figure 1)
- 120Y, 127Y, 240Y, 277Y, 347Y = 208Y120V, 220Y127V, 380Y220V&400Y230V&415Y240V, 480Y277V, 600Y347V .....Three-phase wye (star) four-wire +ground (Figure 2)
- 120H, 240H = 120/240V, 240V/480V .....Three-phase high leg delta (Figure 3)
- 240D, 480D, 600D = 240V, 480V, 600V.....Three-phase delta three-wire +ground (Figure 4)
- 120S, 127S, 240S, 277S, 347S =120V,127V, 220V&230V&240V, 277V, 347V.....Single-phase two-wire +ground (Figure 5)



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

PSP Series Panel SPD

▪ TPAE Patent ▪ PTMOV Inside ▪ 25~300kA ▪ Single & Multi Phase

Prosurge PSP series surge panels are defined as one-stop high performance surge protection solution for most commercial and industrial environments with critical operations, include Type 1 and Type 2 Surge Protective Devices that protect against the risk of 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

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
- Prosurge patented SCCR 200kArms thermally protected MOV technology (PTMOV/20PTMOV) as key component
- Full modes protection & High surge energy capability in compact size
- Low voltage protection rating
- NEMA 4/4X enclosure to resist dirt, dust and water
- Degradation failure indication
- Surge event counter optional
- Floating changeover contact for remote alarm
- Threaded NPT

Typical Applications:

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

PTMOV / 20PTMOV as Key Component

Configure & Ordering Information

PSP Model	277Y Voltage and system configuration	C Protection mode	42 Surge capacity	M Enclosure	/ T1 SPD Category	CTA Addtional function
PSP	*120SP*: 120/240V split *240SP*: 240/480V split *120Y*: 120/208V WYE *277Y*: 277/480V WYE *120H*: 120/240V high-leg delta *240D*: 240V delta *120S*: 120V 1ph, 2W+G …	*C*: Delete N-G protection mode	*11*: 25kA/phase *12*: 50kA/phase *22*: 100kA/phase *32*: 150kA/phase *42*: 200kA/phase *52*: 250kA/phase *62*: 300kA/phase	*M*: metal enclosure (Only C2 type) *Part No. without M means plastic enclosure (E, B, C1 type)	*T1*: UL type 1 SPD *T2F*: UL type 2 SPD with sine wave tracking	*C*: surge event counter *T*: failure pretest *A*: remote alarm

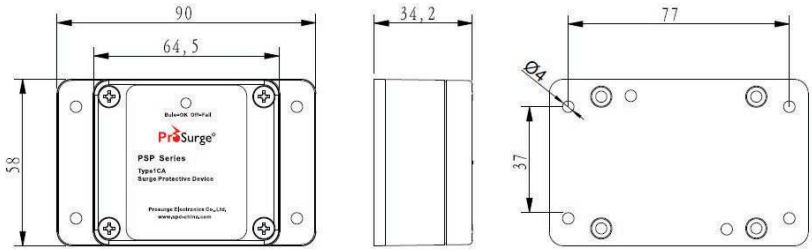
PSP E Series

▪ 25~50kA ▪ Single Phase

- UL listed Type 1 single-phase compact panel SPD
- Full modes protection
- SCCR (Short circuit current rating) 200kArms - tested without external fuse or CB
- Surge capacity 25~50kA 8/20μs per phase
- Patented PTMOV / 20PTMOV as key component
- Degradation indication
- NEMA 4X enclosure
- Comply with UL1449 4th, IEEE C62.41, CSA C22.2, IEC/EN 61643-11

PSP category		E
Compliance		ANSI / UL 1449 4th, CSA C22.2
Connection Type		Parallel Connected
Ports		1
Surge Capacity per Phase		25~50kA
Nominal Discharge Current	I_n	10kA
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms
Power Status Indication		Normal= LED ON
Working Status Indication		Fail=LED Off
Power Connecting		#12 AWG, 450mm (17.72") length L=black ; N=white; PE=green
Environment		Temperature: –40°C ~+75°C; Humidity: relative 5~95% (25°C); Altitude: ≤3km
Dimensions, W x D x H		90 x 58 x 41mm
Enclosure		Plastic enclosure, NEMA 4X
Approvals, certification		UL

Dimension Drawing

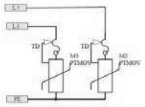
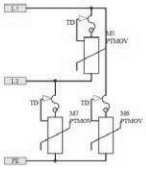
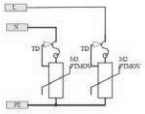
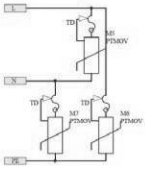


PSP E Series - Technical Data

Model No.	System Voltage (50/60Hz)	In (kA)	Protected Mode				Voltage Protection Ratings (VPR @6kV/ 3kA), V				Surge Capability per phase	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L		
PSPE120SP11/T1	120/240V split-phase	10	×	√	×	√	-	700	-	1500	25kA	150/300
PSPE120SP12/T1			×	√	×	√	-	700	-	1200	50kA	150/320
PSPE240SP11/T1	240/480V split-phase	10	×	√	×	√	-	1200	-	2500	25kA	320/640
PSPE240SP12/T1			×	√	×	√	-	1200	-	1800	50kA	320/550
PSPE127S11/T1	127V Single-phase	10	√	√	√	×	1400	700	700	-	25kA	150
PSPE127S12/T1			√	√	√	×	700	700	700	-	50kA	150
PSPE277S11/T1	277V Single-phase	10	√	√	√	×	2500	1200	1200	-	25kA	320
PSPE277S12/T1			√	√	√	×	1200	1200	1200	-	50kA	320
PSPE347S11/T1	347V Single-phase	10	√	√	√	×	3000	1500	1500	-	25kA	420
PSPE347S12/T1			√	√	√	×	1500	1500	1500	-	50kA	420

Note: "*" MCOV for L1-L2

PSP E Series - Basic Circuit Diagram

PSP…	PSP…SP11…	PSP…SP12…	PSP…S11…	PSP...S12…
Un/ Power System (50/60Hz)	120/240VAC Split phase 240/480VAC Split phase	120/240VAC Split phase 240/480VAC Split phase …	120VAC single phase 127VAC single phase 240VAC single phase 277VAC single phase 347VAC single phase …	120VAC single phase 127VAC single phase 240VAC single phase 277VAC single phase 347VAC single phase …
				

PSP B Series

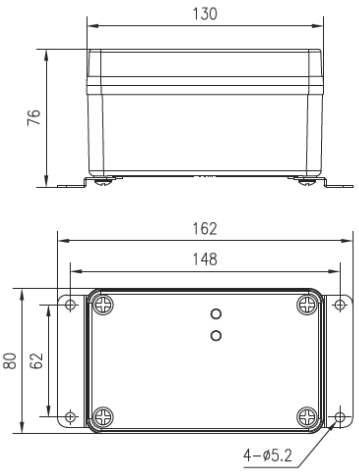
▪ 50kA ▪ Multi Phase

PSP category		B
Compliance		ANSI / UL 1449 4th, CSA C22.2
Connection Type		Parallel Connected
Ports		1
Surge Capacity per phase		50kA
Nominal Discharge Current	I_n	10kA / 20kA
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms
EMI/RFI filtering *		Sine wave tracking (for Type 2)
Power Status Indication		Normal=Blue LED ON
Working Status Indication		Fail=Surge Protection LED on
Power Connecting		#12 AWG, 450mm (17.72") length A(L1)=black; B(L2)=red; C(L3)=blue; N=white; PE=green
Signal Cable (Remote Alarm)*		#16 AWG, 45mm (17.72") length C=red; NC=blue; NO=brown
Environment		Temperature Range: -40°C~+75°C; Humidity: relative 5~95% (25°C); Altitude: ≤3km
Dimensions, W x D x H		162 x 80 x 76 mm
Threaded NPT		1/2"NPT
Enclosure		Plastic enclosure, NEMA 4X

Note: * Optional

- UL Listed Type 1/2 compact panel SPD
- Sine wave tracking function optional (for UL Type 2 listed)
- Full modes protection
- Short circuit current rating 200kArms tested without external fuse or CB
- Surge capacity 50kA 8/20μs per phase
- Patented PTMOV technology inside
- NEMA 4X enclosure
- Degradation indication
- Remote Alarm optional
- Comply with UL1449 4th, IEEE C62.41, CSA C22.2, IEC/EN 61643-11

■ **Dimension Drawing**



PSP B Series - Technical Data

Model No.	System Voltage (50/60Hz)	In (kA)	Protected Mode				Voltage Protection Ratings (VPR @6kV/ 3kA), V				Surge Capacity per phase	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L		
In: 10kA												
PSP120SP12/*A	120/240V Split-phase	10	✓	✓	✓	✓	700	700	700	1200	50kA	150/300
PSP120SPC12/*A	120/240V Split-phase No neutral	10	×	✓	×	✓	-	700	-	1200	50kA	150/300
PSP240SP12/*A	240/480V Split-phase	10	✓	✓	✓	✓	1200	1200	1200	2000	50kA	320/640
PSP240SPC12/*A	240/480V Split-phase No neutral	10	×	✓	×	✓	-	1200	-	2000	50kA	320/640
PSP120Y12/*A	208Y120V Three-phase wye	10	✓	✓	✓	✓	700	700	700	1200	50kA	150
PSP120YC12/*A	208Y120V Three-phase wye No neutral	10	×	✓	×	✓	-	700	-	1200	50kA	150

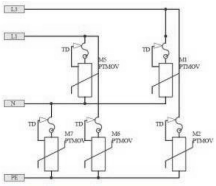
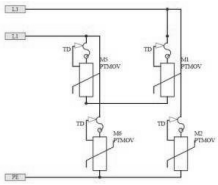
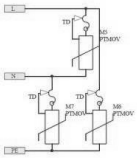
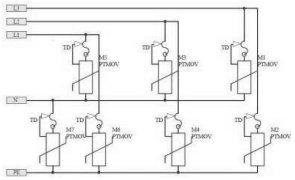
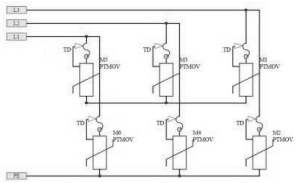
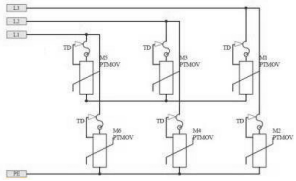
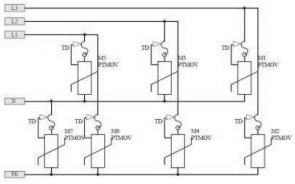
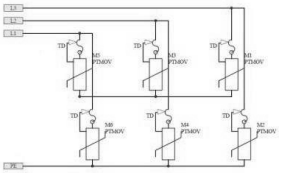
PSP B Series - Technical Data

Model No.	System Voltage (50/60Hz)	In (kA)	Protected Mode				Voltage Protection Ratings (VPR @6kV/ 3kA), V				Surge Capacity per phase	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L		
PSP127Y12/*A	220Y127V Three-phase wye	10	✓	✓	✓	✓	700	700	700	1200	50kA	150
PSP127YC12/*A	220Y127V Three-phase wye No neutral	10	×	✓	×	✓	-	700	-	1200	50kA	150
PSP240Y12/*A	415Y240V Three-phase wye	10	✓	✓	✓	✓	1200	1200	1200	2000	50kA	320
PSP240YC12/*A	415Y240V Three-phase wye No neutral	10	×	✓	×	✓	-	1200	-	2000	50kA	320
PSP277Y12/*A	480Y277V Three-phase wye	10	✓	✓	✓	✓	1200	1200	1200	2000	50kA	320
PSP277YC12/*A	480Y277V Three-phase wye No neutral	10	×	✓	×	✓	-	1200	-	2000	50kA	320
PSP347Y12/*A	600Y347V Three-phase wye	10	✓	✓	✓	✓	1500	1500	1500	2500	50kA	420
PSP347YC12/*A	600Y347V Three-phase wye No neutral	10	×	✓	×	✓	-	1500	-	2500	50kA	420
PSP120H12/*A	120/240V High-leg delta	10	✓	✓	✓	✓	700-1200HL	700-1200HL	700	1200-2000HL	50kA	150/320(HL)
PSP120HC12/*A	120/240V High-leg delta No neutral	10	×	✓	×	✓	-	700-1200HL	-	1200-2000HL	50kA	150/320(HL)
PSP240H12/*A	240/480V High-leg delta	10	✓	✓	✓	✓	1200-1800HL	1200-1800HL	1200	2000-3000HL	50kA	320/550(HL)
PSP240HC12/*A	240/480V High-leg delta No neutral	10	×	✓	×	✓	-	1200-1800HL	-	2000-3000HL	50kA	320/550(HL)
PSP240D12/*A	240V Three-phase delta	10	×	✓	×	✓	-	1200	-	1200	50kA	320
PSP480D12/*A	480V Three-phase delta	10	×	✓	×	✓	-	1800	-	3000	50kA	550
PSP600D12/*A	600V Three-phase delta	10	×	✓	×	✓	-	2000	-	4000	50kA	690
PSP120S12/*A	120V Single-phase	10	✓	✓	✓	×	700	700	700	-	50kA	150
PSP127S12/*A	127V Single-phase	10	✓	✓	✓	×	700	700	700	-	50kA	150
PSP240S12/*A	240V Single-phase	10	✓	✓	✓	×	1200	1200	1200	-	50kA	320
PSP277S12/*A	277V Single-phase	10	✓	✓	✓	×	1200	1200	1200	-	50kA	320
PSP347S12/*A	347V Single-phase	10	✓	✓	✓	×	1500	1500	1500	-	50kA	420
In: 20kA												
20PSP120SP12/*A	120/240V Split-phase	20	✓	✓	✓	✓	700	700	700	1200	50kA	150/300
20PSP120SPC12/*A	120/240V Split-phase No neutral	20	×	✓	×	✓	-	700	-	1200	50kA	150/300
20PSP240SP12/*A	240/480V Split-phase	20	✓	✓	✓	✓	1200	1200	1200	2000	50kA	320/640
20PSP240SPC12/*A	240/480V Split-phase No neutral	20	×	✓	×	✓	-	1200	-	2000	50kA	320/640
20PSP120Y12/*A	208Y120V Three-phase wye	20	✓	✓	✓	✓	700	700	700	1200	50kA	150
20PSP120YC12/*A	208Y120V Three-phase wye No neutral	20	×	✓	×	✓	-	700	-	1200	50kA	150

PSP B Series - Technical Data

Model No.	System Voltage (50/60Hz)	In (kA)	Protected Mode				Voltage Protection Ratings (VPR @6kV/ 3kA), V				Surge Capacity per phase	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L		
20PSP127Y12/*A	220Y127V Three-phase wye	20	✓	✓	✓	✓	700	700	700	1200	50kA	150
20PSP127YC12/*A	220Y127V Three-phase wye No neutral	20	×	✓	×	✓	-	700	-	1200	50kA	150
20PSP240Y12/*A	415Y240V Three-phase wye	20	✓	✓	✓	✓	1200	1200	1200	2000	50kA	320
20PSP240YC12/*A	415Y240V Three-phase wye No neutral	20	×	✓	×	✓	-	1200	-	2000	50kA	320
20PSP277Y12/*#	480Y277V Three-phase wye	20	✓	✓	✓	✓	1200	1200	1200	2000	50kA	320
20PSP277YC12/*#	480Y277V Three-phase wye No neutral	20	×	✓	×	✓	-	1200	-	2000	50kA	320

PSP B Series - Basic Circuit Diagram

Un/ Power System (50/60 HZ)	Basic Circuit Diagram of surge protection circuit	
	Power System with Neutral Line	Power System without Neutral Line
120/240VAC Split phase 240/480VAC Split phase …	PSP…SP12…(3W+G) 	PSP…SPC12…(2W+G) 
120VAC single phase 127VAC single phase 220VAC single phase 230VAC single phase 240VAC single phase 277VAC single phase 347VAC single phase …	PSP…S12…(2W+G) 	
120/208VAC WYE 127/220VAC WYE 220/380VAC WYE 230/400VAC WYE 240/415VAC WYE 277/480VAC WYE 347/600VAC WYE …	PSP…Y12…(4W+G) 	PSP…YC12…(3W+G) 
240VAC Delta 480VAC Delta 600VAC Delta …		PSP...D12…(3W+G) 
120/240VAC High-leg delta 240/480VAC High-leg delta …	PSP...H12…(4W+G, L2 is High-leg) 	PSP...HC12…(3W+G, L2 is High-leg) 

One-Port Panel SPD

PSP C Series

▪ 100~300kA ▪ Multi Phase

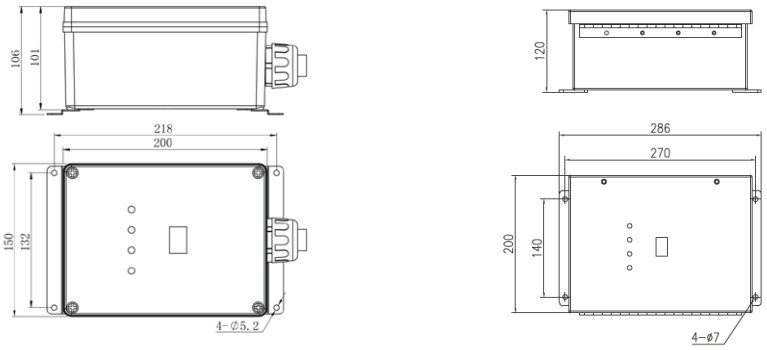
C1: NEMA 4X Plastic Enclosure

C2: NEMA 4 Metal Enclosure

- UL Listed Type 1/2 compact panel SPD
- Sine wave tracking function optional (for UL Type 2 listed)
- Full modes protection
- SCCR (Short circuit current rating) 200kArms tested without external fuse or CB
- Surge capacity 100~300kA 8/20μs per phase
- Patented PTMOV technology inside
- Two type enclosure, NEMA 4X plastic and NEMA 4 metal enclosure
- Degradation indication.
- Surge event counter optional
- Remote Alarm optional
- Comply with UL1449 4th, IEEE C62.41, CSA C22.2, IEC/EN 61643-11

PSP category		C
Compliance		ANSI / UL 1449 4th, CSA C22.2
Connection Type		Parallel Connected
Ports		1
Surge Capacity per Phase		100~300kA
Nominal Discharge Current	I_n	20kA
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms
EMI/RFI filtering *		Sine wave tracking (for Type 2)
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
Power Connecting		#10 AWG, 450mm (17.72") length A(L1)=black; B(L2)=red; C(L3)=blue; N=white; PE=green
Signal Cable (Remote Alarm)*		#16 AWG, 450mm (17.72") length C=red; NC=blue; NO=brown
Environment		Temperature: –40°C~+75°C; Humidity: relative 5~95% (25°C); Altitude: ≤3km
Dimensions, W x D x H		232 x 150 x 106 mm (C1) 286 x 200 x 120 mm (C2)
Threaded NPT		3/4"NPT
Enclosure		Plastic enclosure, NEMA 4X (C1) Metal enclosure, NEMA 4 (C2)
Approvals, certification		UL

■ Dimension Drawing

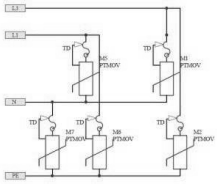
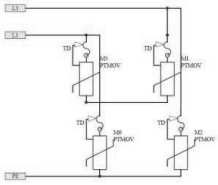
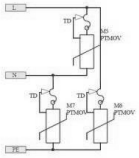
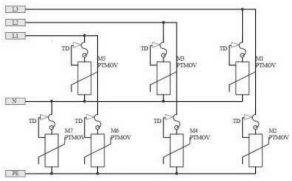
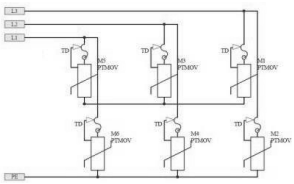
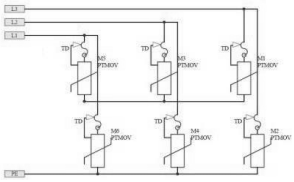
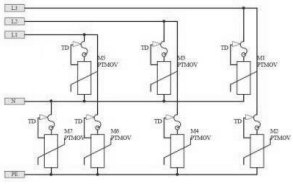
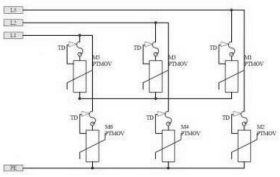


PSP C Series - Technical Data

Note: "%" means 2~6 (Surge capacity 100kA~300kA per phase)

Model No.	System Voltage (50/60Hz)	In (kA)	Protected Mode				Voltage Protection Ratings (VPR @6kV/ 3kA)				Surge Capacity per phase	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L		
PSP120SP%2/*CTA	120/240V Split-phase	20	✓	✓	✓	✓	700	800	800	1200	100~300kA	150/300
PSP120SPC%2/*CTA	120/240V Split-phase No neutral	20	×	✓	×	✓	-	800	-	1200	100~300kA	150/300
PSP240SP%2/*CTA	240/480V Split-phase	20	✓	✓	✓	✓	1200	1200	1200	2000	100~300kA	320/640
PSP240SPC%2/*CTA	240/480V Split-phase, No neutral	20	×	✓	×	✓	-	1200	-	2000	100~300kA	320/640
PSP120Y%2/*CTA	208Y120V Three-phase wye	20	✓	✓	✓	✓	700	800	800	1200	100~300kA	150
PSP120YC%2/*CTA	208Y120V Three-phase wye No neutral	20	×	✓	×	✓	-	800	-	1200	100~300kA	150
PSP127Y%2/*CTA	220Y127V Three-phase wye	20	✓	✓	✓	✓	700	800	800	1200	100~300kA	150
PSP127YC%2/*CTA	220Y127V Three-phase wye, No neutral	20	×	✓	×	✓	-	800	-	1200	100~300kA	150
PSP240Y%2/*CTA	415Y240V Three-phase wye	20	✓	✓	✓	✓	1200	1200	1200	2000	100~300kA	320
PSP240YC%2/*CTA	415Y240V Three-phase wye, No neutral	20	×	✓	×	✓	-	1200	-	2000	100~300kA	320
PSP277Y%2/*CTA	480Y277V Three-phase wye	20	✓	✓	✓	✓	1200	1200	1200	2000	100~300kA	320
PSP277YC%2/*CTA	480Y277V Three-phase wye, No neutral	20	×	✓	×	✓	-	1200	-	2000	100~300kA	320
PSP347Y%2/*CTA	600Y347V Three-phase wye	20	✓	✓	✓	✓	1500	1500	1500	2500	100~300kA	420
PSP347YC%2/*CTA	600Y347V Three-phase wye, No neutral	20	×	✓	×	✓	-	1500	-	2500	100~300kA	420
PSP120H%2/*CTA	120/240V High-leg delta	20	✓	✓	✓	✓	700-1200HL	800-1200HL	800	1200-2000HL	100~300kA	150/320(HL)
PSP120HC%2/*CTA	120/240V High-leg delta, No neutral	20	×	✓	×	✓	-	800-1200HL	-	1200-2000HL	100~300kA	150/320(HL)
PSP240H%2/*CTA	240/480V High-leg delta	20	✓	✓	✓	✓	1200-1800HL	1200-1800HL	1200	2000-3000HL	100~300kA	320/550(HL)
PSP240HC%2/*CTA	240/480V High-leg delta, No neutral	20	×	✓	×	✓	-	1200-1800HL	-	2000-3000HL	100~300kA	320/550(HL)
PSP240D%2/*CTA	240V Three-phase delta	20	×	✓	×	✓	-	1200	-	1200	100~300kA	320
PSP480D%2/*CTA	480V Three-phase delta	20	×	✓	×	✓	-	1800	-	2000	100~300kA	550
PSP600D%2/*CTA	600V Three-phase delta	20	×	✓	×	✓	-	2000	-	2500	100~300kA	690
PSP120S%2/*CTA	120V Single-phase	20	✓	✓	✓	×	700	800	800	-	100~300kA	150
PSP127S%2/*CTA	127V Single-phase	20	✓	✓	✓	×	700	800	800	-	100~300kA	150
PSP240S%2/*CTA	240V Single-phase	20	✓	✓	✓	×	1200	1200	1200	-	100~300kA	320
PSP277S%2/*CTA	277V Single-phase	20	✓	✓	✓	×	1200	1200	1200	-	100~300kA	320
PSP347S%2/*CTA	347V Single-phase	20	✓	✓	✓	×	1500	1500	1500	-	100~300kA	420

PSP C Series - Basic Circuit Diagram

Un/ Power System (50/60 HZ)	Basic Surge Protection Circuit Diagram	
	Power System with Neutral Line	Power System without Neutral Line
120/240VAC Split phase 240/480VAC Split phase …	PSP…SP%2…(3W+G) 	PSP…SPC%2…(2W+G) 
120VAC single phase 127VAC single phase 220VAC single phase 230VAC single phase 240VAC single phase 277VAC single phase 347VAC single phase …	PSP…S%2…(2W+G) 	
120/208VAC WYE 127/220VAC WYE 220/380VAC WYE 230/400VAC WYE 240/415VAC WYE 277/480VAC WYE 347/600VAC WYE …	PSP…Y%2…(4W+G) 	PSP…YC%2…(3W+G) 
240VAC Delta 480VAC Delta 600VAC Delta …		PSP...D%2…(3W+G) 
120/240VAC High-leg delta 240/480VAC High-leg delta …	PSP...H%2…(4W+G, L2 is High-leg) 	PSP...HC%2…(3W+G, L2 is High-leg) 

PS Series Panel SPD

▪ TPAE Patent ▪ SMTMOV Inside ▪ 400~900kA ▪ Multi Phase

SMTMOV / HSMTMOV as Key Component

PS Category		D
Compliance		ANSI / UL 1449 4th, CSA C22.2
Connection Type		Parallel Connected
Ports		1
Surge Capacity per phase		150~900kA
Nominal Discharge Current	I_n	20kA
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms
EMI/RFI Filtering *		Sine wave tracking (for Type 2)
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
Power Connecting		#8 AWG, 450mm (17.72") length A(L1)=black; B(L2)=red; C(L3)=blue; N=white; PE=green
Signal Cable (Remote Alarm)*		#16 AWG, 450mm (17.72") length C=red; NC=blue; NO=brown
Environment		Temperature Range: -40°C~+75°C; Humidity: relative 5~95% (25°C); Altitude: ≤3km
Dimensions, W x D x H		350 x 370 x 224mm
Threaded NPT		3/4"NPT
Enclosure		Metal enclosure, NEMA 4
Approvals, certification		UL

Note: * Optional

Features

- UL listed Type 1/2 heavy duty panel SPD
- Sine wave tracking function optional (for UL Type 2 listed)
- Full modes protection
- Short circuit current rating 200kArms tested without external fuse or CB
- Surge capacity 150~900kA 8/20μs per phase
- Patented SMTMOV technology inside
- NEMA 4 metal enclosure
- Degradation indication. Anticipatory Failure Monitoring (AFM) technology to ensure permanent surge protection
- Surge event counter optional
- Remote Alarm optional
- Comply with UL1449 4th, IEEE C62.41, CSA C22.2, IEC/EN 61643-11

Typical Applications

In high exposure locations

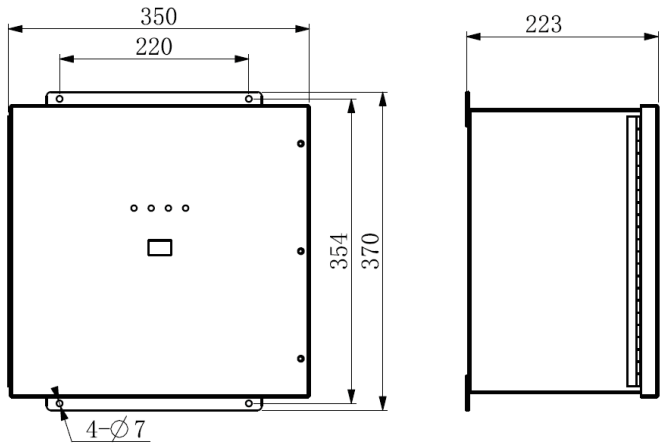
- All power circuit
- Telecommunication application (cell towers, base station, data center, transfer center, etc.
- Industrial
- Commercial
- Renewable energy
- Oil or mineral

Configure & Ordering Information

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

(1) The model with higher surge capacity are built with HSMTMOV (Uc range: 150~320)

■ **Dimension Drawing**



PS series - Technical Data

Note: % means 3 to 6 (Surge capacity 150kA~450kA per mode)

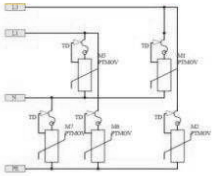
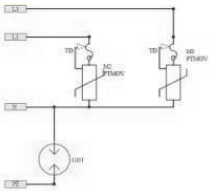
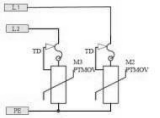
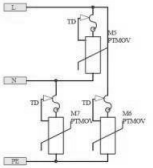
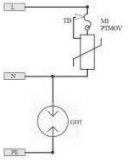
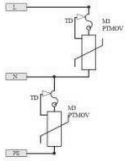
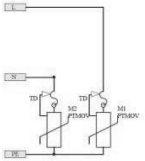
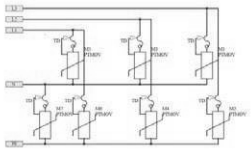
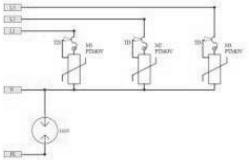
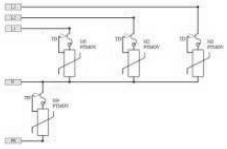
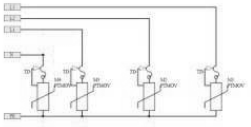
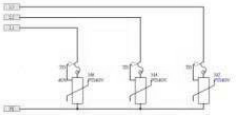
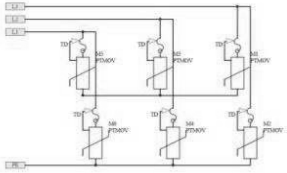
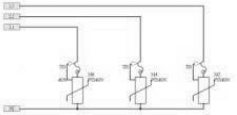
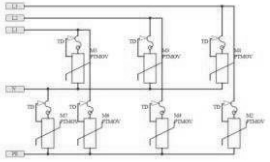
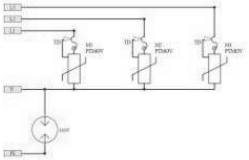
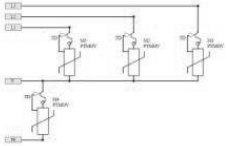
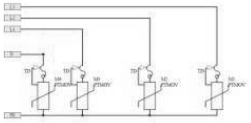
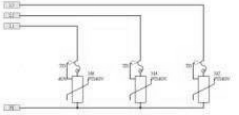
(2) lightning capacity of NPE mode is 100kA 10/350μs

Model No.	System Voltage (50/60Hz)	In (kA)	Protected Mode				Voltage Protection Ratings (VPR @6kV/ 3kA), V				Surge Capacity per phase (8/20μs)	Lightning Capacity per phase (10/350μs)	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L			
PS120SP%2/*CA	120/240V Split-phase	20	✓	✓	✓	×	700	700	700	1200	300~900kA	25~80kA	150
PS120SPC%1/*CA			×	✓	×	×	-	700	-	1200	150~450kA	12.5~40kA	150
PS120SPN%1T/*CA			✓	×	✓	×	700	1500	1500	1200	150~450kA	12.5~40kA(2)	150
PS240SP%2/*CA	240/480V Split-phase	20	✓	✓	✓	×	1200	1200	1200	2000	300~900kA	25~80kA	320
PS240SPC%1/*CA			×	✓	×	×	-	1200	-	2000	150~450kA	12.5~40kA	320
PS240SPN%1T/*CA			✓	×	✓	×	1200	2000	1500	2000	150~450kA	12.5~40kA(2)	320
PS120Y%2/*CA	208Y120V Three-phase wye	20	✓	✓	✓	×	700	700	700	1200	300~900kA	25~80kA	150
PS120YN%1T/*CA			✓	×	✓	×	700	1500	1500	1200	150~450kA	12.5~40kA(2)	150
PS120YN%1/*CA			✓	×	✓	×	700	1200	700	1200	150~450kA	12.5~40kA	150
PS120YG%1/*CA			×	✓	✓	×	1200	700	700	1200	150~450kA	12.5~40kA	150
PS120YC%1/*CA			×	✓	×	×	-	700	-	1200	150~450kA	12.5~40kA	150
PS127Y%2/*CA	220Y127V Three-phase wye	20	✓	✓	✓	×	700	700	700	1200	300~900kA	25~80kA	150
PS127YN%1T/*CA			✓	×	✓	×	700	1500	1500	1200	150~450kA	12.5~40kA(2)	150
PS127YN%1/*CA			✓	×	✓	×	700	1200	700	1200	150~450kA	12.5~40kA	150
PS127YG%1/*CA			×	✓	✓	×	1200	700	700	1200	150~450kA	12.5~40kA	150
PS127YC%1/*CA			×	✓	×	×	-	700	-	1200	150~450kA	12.5~40kA	150
PS230Y%2/*CA	400Y230V Three-phase wye	20	✓	✓	✓	×	1200	1200	1200	2000	300~900kA	25~80kA	320
PS230YN%1T/*CA			✓	×	✓	×	1200	1500	1500	2000	150~450kA	12.5~40kA(2)	320
PS230YN%1/*CA			✓	×	✓	×	1200	2000	1200	2000	150~450kA	12.5~40kA	320
PS230YG%1/*CA			×	✓	✓	×	2000	1200	1200	2000	150~450kA	12.5~40kA	320
PS230YC%1/*CA			×	✓	×	×	-	1200	-	2000	150~450kA	12.5~40kA	320
PS240Y%2/*CA	415Y240V Three-phase wye	20	✓	✓	✓	×	1200	1200	1200	2000	300~900kA	25~80kA	320
PS240YN%1T/*CA			✓	×	✓	×	1200	1500	1500	2000	150~450kA	12.5~40kA(2)	320
PS240YN%1/*CA			✓	×	✓	×	1200	2000	1200	2000	150~450kA	12.5~40kA	320
PS240YG%1/*CA			×	✓	✓	×	2000	1200	1200	2000	150~450kA	12.5~40kA	320
PS240YC%1/*CA			×	✓	×	×	-	1200	-	2000	150~450kA	12.5~40kA	320
PS277Y%2/*CA	480Y277V Three-phase wye	20	✓	✓	✓	×	1200	1200	1200	2000	300~900kA	25~80kA	320
PS277YN%1/*CA			✓	×	✓	×	1200	2000	1200	2000	150~450kA	12.5~40kA	320
PS277YG%1/*CA			×	✓	✓	×	2000	1200	1200	2000	150~450kA	12.5~40kA	320
PS277YC%1/*CA			×	✓	×	×	-	1200	-	2000	150~450kA	12.5~40kA	320

PS series - Technical Data

Model No.	System Voltage (50/60Hz)	In (kA)	Protected Mode				Voltage Protection Ratings (VPR @6kV/ 3kA), V				Surge Capacity per phase (8/20μs)	Lightning Capacity per phase (10/350μs)	MCOV (Vac)
			L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L			
PS347Y%2/*CA	600Y347V Three-phase wye	20	✓	✓	✓	×	1500	1500	1500	2500	300~600kA	25~80kA	420
PS347YN%1/*CA			✓	×	✓	×	1500	2500	1500	2500	150~300kA	12.5~40kA	420
PS347YG%1/*CA			×	✓	✓	×	2500	1500	1500	2500	150~300kA	12.5~40kA	420
PS347YC%1/*CA			×	✓	×	×	-	1500	-	2500	150~300kA	12.5~40kA	420
PS120H%2/*CA	120/240V High-leg delta	20	✓	✓	✓	×	700-1200HL	700-1200HL	700	1200-2000HL	300~900kA	25~80kA	150/320HL
PS120HN%1T/*CA			✓	×	✓	×	700-1200HL	1500-2000HL	1500	1200-2000HL	150~450kA	12.5~40kA(2)	150/320HL
PS120HN%1/*CA			✓	×	✓	×	700-1200HL	1200-2000HL	700	1200-2000HL	150~450kA	12.5~40kA	150/320HL
PS120HG%1/*CA			×	✓	✓	×	1200-2000HL	700-1200HL	700	1200-2000HL	150~450kA	12.5~40kA	150/320HL
PS120HC%1/*CA			×	✓	×	×	-	700-1200HL	-	1200-2000HL	150~450kA	12.5~40kA	150/320HL
PS240H%2/*CA	240/480V High-leg delta	20	✓	✓	✓	×	1200-2000HL	1200-2000HL	1200	2000-3000HL	300~600kA	25~50kA	320/550HL
PS240HN%1T/*CA			✓	×	✓	×	1200-2000HL	1500-3000HL	1500	2000-3000HL	150~300kA	12.5~25kA(2)	320/550HL
PS240HN%1/*CA			✓	×	✓	×	1200-2000HL	2000-3000HL	1200	2000-3000HL	150~300kA	12.5~25kA	320/550HL
PS240HG%1/*CA			×	✓	✓	×	2000-3000HL	1200-2000HL	1200	2000-3000HL	150~300kA	12.5~25kA	320/550HL
PS240HC%1/*CA			×	✓	×	×	-	1200-2000HL	-	2000-3000HL	150~300kA	12.5~25kA	320/550HL
PS240D%2/*CA	240V Three-phase delta	20	×	✓	×	✓	-	1200	-	1200	300~900kA	25~80kA	320
PS240DG%1/*CA			×	✓	×	×	-	1200	-	1500	150~450kA	12.5~40kA	320
PS480D%N2/*CA	480V Three-phase delta	20	×	✓	×	✓	-	1800	-	1800	300~600kA	25~50kA	550
PS480DGx1/*CA			×	✓	×	×	-	1800	-	3000	150~300kA	12.5~25kA	550
PS600D%2/*CA	600V Three-phase delta	20	×	✓	×	✓	-	2000	-	2000	300~600kA	25~50kA	690
PS600DG%1/*CA			×	✓	×	×	-	2000	-	4000	150~300kA	12.5~25kA	690
PS120S%2/*CA	120V Single-phase	20	✓	✓	✓	×	700	700	700	-	300~900kA	25~40kA	150
PS120SN%1T/*CA			✓	×	✓	×	700	1500	1500	-	150~450kA	12.5~40kA(2)	150
PS120SN%1/*CA			✓	×	✓	×	700	1200	700	-	150~450kA	12.5~40kA	150
PS120SG%1/*CA			×	✓	✓	×	1200	700	700	-	150~450kA	12.5~40kA	150
PS127S%2/*CA	127V Single-phase	20	✓	✓	✓	×	700	700	700	-	300~900kA	25~40kA	150
PS127SN%1T/*CA			✓	×	✓	×	700	1500	1500	-	150~450kA	12.5~40kA(2)	150
PS127SN%1/*CA			✓	×	✓	×	700	1200	700	-	150~450kA	12.5~40kA	150
PS127SG%1/*CA			×	✓	✓	×	1200	700	700	-	150~450kA	12.5~40kA	150
PS230S%2/*CA	230V Single-phase	20	✓	✓	✓	×	1200	1200	1200	-	300~900kA	25~40kA	320
PS230SN%1T/*CA			✓	×	✓	×	1200	1500	1500	-	150~450kA	12.5~40kA(2)	320
PS230SN%1/*CA			✓	×	✓	×	1200	2000	1200	-	150~450kA	12.5~40kA	320
PS230SG%1/*CA			×	✓	✓	×	2000	1200	1200	-	150~450kA	12.5~40kA	320
PS240S%2/*CA	240V Single-phase	20	✓	✓	✓	×	1200	1200	1200	-	300~900kA	25~40kA	320
PS240SN%1T/*CA			✓	×	✓	×	1200	1500	1500	-	150~450kA	12.5~40kA(2)	320
PS240SN%1/*CA			✓	×	✓	×	1200	2000	1200	-	150~450kA	12.5~40kA	320
PS240SG%1/*CA			×	✓	✓	×	2000	1200	1200	-	150~450kA	12.5~40kA	320
PS277S%2/*CA	277V Single-phase	20	✓	✓	✓	×	1200	1200	1200	-	300~600kA	25~50kA	420
PS277SN%1/*CA			✓	×	✓	×	1200	2000	1200	-	150~300kA	12.5~25kA	420
PS277SG%1/*CA			×	✓	✓	×	2000	1200	1200	-	150~300kA	12.5~25kA	420
PS347S%2/*CA	347V Single-phase	20	✓	✓	✓	×	1500	1500	1500	-	300~600kA	25~50kA	420
PS347SN%1/*CA			✓	×	✓	×	1500	2500	1500	-	150~300kA	12.5~25kA	420
PS347SG%1/*CA			×	✓	✓	×	2500	1500	1500	-	150~300kA	12.5~25kA	420

PS Series - Basic Circuit Diagram

Un/ Power system (50/60 HZ)	Basic Surge Protection Circuit Diagram		Basic Surge Protection Circuit Diagram		
	Normal model	N-G mode use GDT, Delete L-G mode (if present)	Delete L-G mode (if present)	Delete L-N or L-L mode (if present)	Delete N-G mode (if present)
120/240VAC Split phase 240/480VAC Split phase …	PS…SP%2…(3W+G) 	PS..SPN%1T…(3W+G) 			PS…SPC%1…(2W+G) 
120VAC single phase 127VAC single phase 220VAC single phase 230VAC single phase 240VAC single phase 277VAC single phase 347VAC single phase …	PS…S%2…(2W+G) 	PS…SN%1T…(2W+G) 	PS…SN%1…(2W+G) 	PS…SG%1…(2W+G) 	
120/208VAC WYE 127/220VAC WYE 220/380VAC WYE 230/400VAC WYE 240/415VAC WYE 277/480VAC WYE 347/600VAC WYE …	PS…Y%2…(4W+G) 	PS…YN%1T…(4W+G) 	PS…YN%1…(4W+G) 	PS…YG%1…(4W+G) 	PS…YC%1…(3W+G) 
240VAC Delta 480VAC Delta 600VAC Delta …	PS...D%2…(3W+G) 			PS...DG%1…(3W+G) 	
120/240VAC High-leg delta 240/480VAC High-leg delta …	PS...H%2… (4W+G, L2 is High-leg) 	PS...HN%1T…(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) 

Two-Port Surge Filter

Prosurge's surge filter is used to protect single/three phase electrical distribution systems, especially to protect sensitive electronics 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

It's found that electronic equipment is sensitive to both the absolute magnitude of the impulse voltage and its rise rate. The radical changes in dv/dt and di/dt, rather than the peak voltage, is the major source of electronic circuit damages.

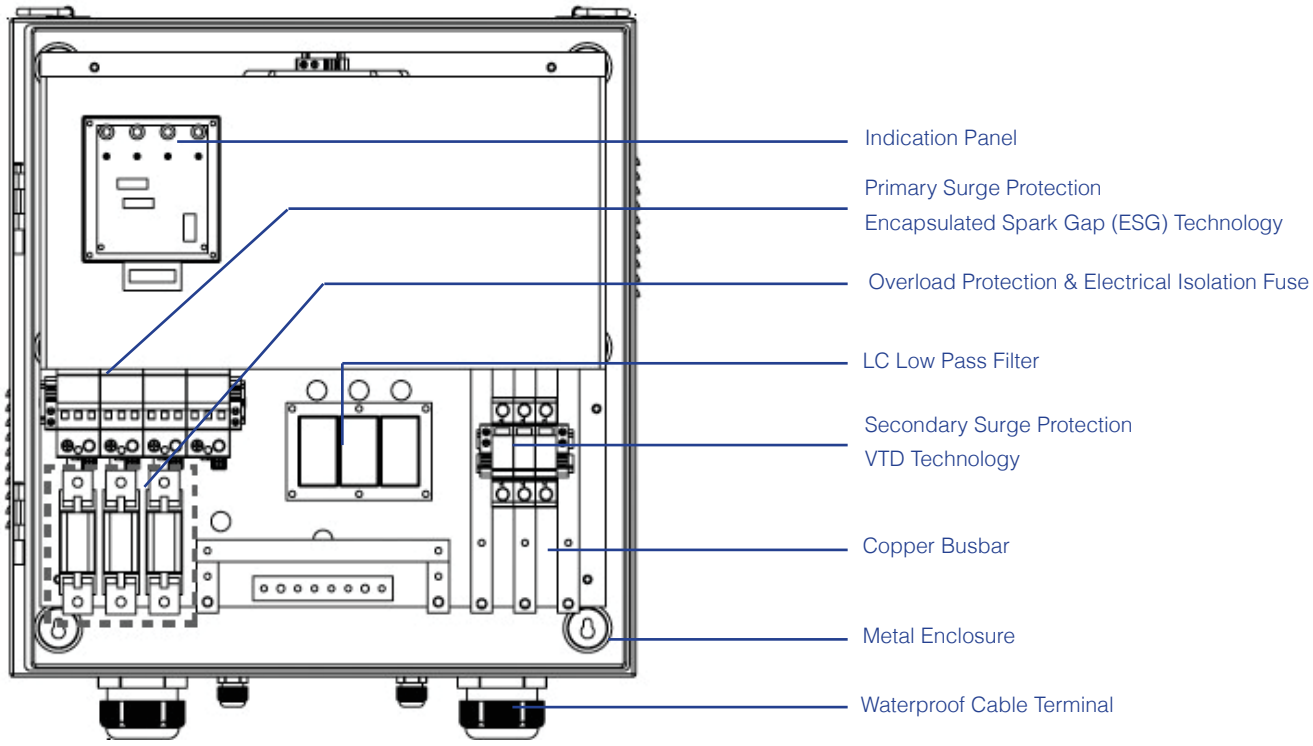
Prosurge's surge filter is designed as a 3-stage protection system which consists of primary protection & secondary protection and with a well-designed LC filter in series. The LC filter is used to slow down the inherently fast rise rate of voltage and current. The primary protection module is used to divert the strong lightning/ surge current, while the secondary protection module & LC filter will limit the let-through voltage to a very low level.

The surge filter should be installed in series with the supply powering the equipment.

Features

- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Provides extensive high frequency & RF filtering
- High Surge capacity: up to 50kA 10/350μs or 10kA~ 200kA 8/20μs per mode available
- Surge capacity of N-PE mode up to 100kA 10/350 μs
- Different load current: 10A ~ 800A available for single phase or 3 phase
- Built-in fuse in series for overload /short circuit protection
- All mode protection
- LED failure indication
- Remote alarm function available
- Surge counter optional

Product Internal Design



▸ Two-Port Surge Filter

BSF200-3/…-400A-3PN-VTD-S

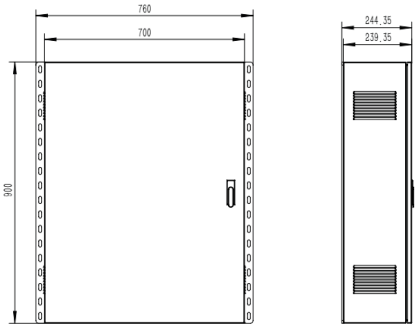
▪ Three Phase ▪ 400A (200A ~ 800A Available)

(Product Picture for Reference Only)

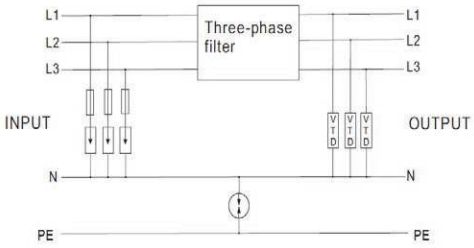
- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Prosugre ESG+VTD technology to further improve voltage clamping performance
- Application for 120~127V, 220~277V (L-N) TT/TN, or any three phase system with a grounded neutral
- Surge capacity: 25~50kA 10/350 μs or 100~200kA 8/20 μs (per mode)
- Surge capacity of N-PE mode up to 100kA 10/350 μs
- Load current rating 400A. 200A~800A is available on request
- Built in backup fuse for fault current protection
- LED failure indication & remote alarm function available
- Surge counter optional

Model			BSF200-3/180-400A-3PN-VTD-S	BSF200-3/320-400A-3PN-VTD-S
Compliance			IEC61643-11; UL1449 4th; IEC61000-6; ANSI/IEEE C62.41; AS1768-1991; AS3100	
Category IEC/EN/UL			Class I+II/ Type 1+2 / Type 2	
Ports/Protection Mode			2 / All mode protection	
Protection Technology			ESG (primary) + VTD (secondary) technology; GDT technology for NPE mode; LC filter; thermal disconnector; built-in backup fuse	
Power System		U_n	120/208V to 127/220V three phase (TN/TT)	220/380V to 277/480V three phase (TN/TT)
Max. Continuous Operating Voltage (AC/DC)		U_c	180V / 230V	320V / 420V
Rated Load Current		I_L	400A	
Nominal Discharge Current		I_n	50kA (8/20μs)	
Primary Surge Protection Rating	L-N		I_{imp}: 50kA (10/350μs), I_{max}: 150kA (8/20μs)	
	N-PE		I_{imp}: 100kA (10/350μs), I_{max}: 200kA (8/20μs)	
Secondary Surge Protection Rating	L-N	I_{max}	50kA (8/20μs)	
Total Surge Capacity Per Phase		I_{max}	200kA (8/20μs)	
Voltage Protection Level	L-N@6kV/3kA	VPR	≤0.4kV	≤0.5kV
	L-N@I_n(50kA, 8/20μs)	U_p	≤0.8kV	≤1.0kV
	N-PE@1.2/50μs	U_p	≤1.0kV	≤1.5kV
Residual Current		I_{PE}	<0.1mA	
Voltage Drop			< 2V at 400A load	
Temporary Overvoltage TOV —Withstand Mode		U_{tov}	230V/120min	440V/120min
Response Time		t_A	≤1ns	
Filter Attenuation		dB	>48dB @ 1MHz	
Built In Backup Over-Current Protection (Fuse In Primary Stage)			315A gL/gG (optional)	
Recommended External Over Current Protection In Series			400A Fuse or CB	
Lightning Counter Current			≤3kA	
Protect Status Indication			4 LED display, Normal (Blue), Protection fault(Off)	
Remote Alarm			Dry contact alarm relay – 250Vac/32Vdc, 5A	
Connecting Cable			Power: 4/0 AWG(400A); Alarm: 14 -22 AWG	
Environment			Temperature Range: - 40°C ~ +70°C; Humidity: ≤95%; Altitude: ≤2000m	
Mounting			Wall mounting	
Location Category			Indoor	
Degree of Protection			IP20	
Dimension			900mm (L) x760mm (W) x 245mm (H) approx	
Weight			82kg approx	
Approvals, certification			CE	

■ **Dimension Drawing**



■ **Basic Circuit Diagram**



Other Models

Power System	Load Current	Model Recommended	Recommended External Over Current Protection In Series	Built In Backup Over-Current Protection (Fuse In Primary Stage)
TN/TT three phase 4W+G	200A	BSF200-3/…-200A-3PN-VTD-S	200A CB/Fuse	125A gL/gG
	300A	BSF200-3/…-250A-3PN-VTD-S	300A CB/Fuse	200A gL/gG
	400A	BSF200-3/…-315A-3PN-VTD-S	400A CB/Fuse	250A gL/gG
	600A	BSF200-3/…-630A-3PN-VTD-S	600A CB/Fuse	315A gL/gG
	800A	BSF200-3/…-800A-3PN-VTD-S	800A CB/Fuse	315A gL/gG

▸ Two-Port Surge Filter

BSF200-3/...-125A-3PN-VTD-S

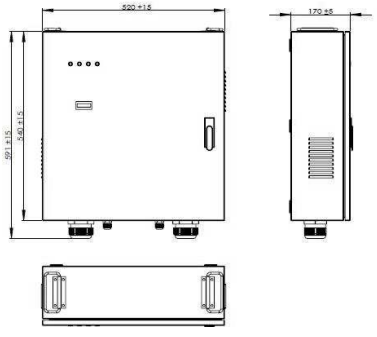
▪ Three Phase ▪ 125A

(Product Picture for Reference Only)

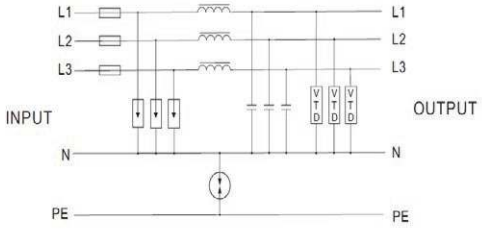
- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Prosugre ESG+VTD technology to further improve voltage clamping performance
- Application for 120~127V, 220~277V (L-N) TT/TN, or any three phase system with a grounded neutral
- Surge capacity: 50kA 10/350 μs or 150kA 8/20μs (per mode)
- Surge capacity of N-PE mode up to 100kA 10/350μs
- Load current rating 125A
- Built-in in series fuse for overload / short circuit protection available
- LED failure indication & remote alarm function available
- Surge counter optional

Model			BSF200-3/180-125A-3PN-VTD-S	BSF200-3/320-125A-3PN-VTD-S
Compliance			IEC61643-11; UL1449 4th; IEC61000-6; ANSI/IEEE C62.41; AS1768-1991; AS3100	
Category IEC/EN/UL			Class I+II/ Type 1+2 / Type 2	
Ports/Protection Mode			2 / All mode protection	
Protection Technology			ESG(primary)+ VTD(secondary) technology; GDT Technology for NPE mode LC filter; thermal disconnector; built-in over-current protection	
Power System		U_n	120/208V to 127/220V three phase (TN/TT)	220/380V to 277/480V three phase (TN/TT)
Max. Continuous Operating Voltage (AC/DC)		U_c	180V / 230V	320V / 420V
Rated load Current		I_L	125A	
Nominal Discharge Current		I_n	50kA (8/20μs)	
Primary Surge Protection Rating	L-N		I_{imp}: 50kA (10/350μs), I_{max}: 150kA (8/20μs)	
	N-PE		I_{imp}: 100kA (10/350μs), I_{max}: 200kA (8/20μs)	
Secondary Surge Protection Rating	L-N	I_{max}	50kA (8/20μs)	
Total surge capacity per phase		I_{max}	200kA (8/20μs)	
Voltage Protection Level	L-N@6kV/3kA	VPR	≤0.4kV	≤0.5kV
	L-N@ In(50kA, 8/20μs)	U_p	≤0.8kV	≤1.0kV
	N-PE@1.2/50μs	U_p	≤1.0kV	≤1.5kV
Residual Current		I_{PE}	<0.1mA	
Voltage Drop			< 2V at 125 A load	
Temporary Overvoltage TOV —Withstand Mode		U_{tov}	230V/120min	440V/120min
Response Time		t_A	≤1ns	
Filter Attenuation		dB	>48dB @ 1MHz	
Built In Over Load/ Over-Current Protection In Series			125A (optional)	
Lightning Counter Current			≤3kA	
Protect Status Indication			4 LED display, Normal (Blue), Protection fault(Off)	
Remote Alarm			Dry contact alarm relay – 250Vac/32Vdc, 5A	
Connecting Cable			Power: 2-3AWG(100A/125A); Alarm: 14 -22AWG	
Environment			Temperature Range: - 40°C ~ +70°C; Humidity: ≤95%; Altitude: ≤2000m	
Mounting			Wall mounting	
Location Category			Indoor	
Degree of Protection			IP20	
Dimension			520mm (L) x540mm (W) x 170mm (H) approx	
Weight			34kg approx	
Approvals, certification			CE	

■ Dimension Drawing



■ Basic Circuit Diagram



BSF100-3/…-63A-3PN-VTD-S

▪ Three Phase ▪ 63A

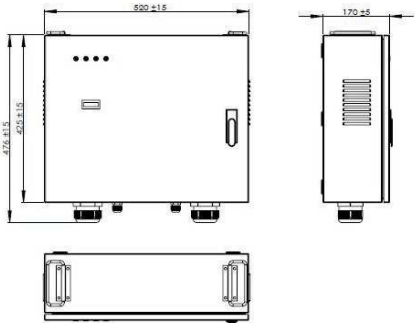
(Product Picture for Reference Only)

- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Prosugre ESG+VTD technology to further improve voltage clamping performance
- Application for 120~127V, 220~277V (L-N) TT/TN, or any three phase system with a grounded neutral
- Surge capability: 25kA 10/350 μs or 100kA 8/20μs (per mode)
- Surge capability of N-PE mode up to 100kA 10/350μs
- Load current rating 63A
- Built-in in series Fuse for overload /short circuit protection available
- LED failure indication & remote alarm function available
- Surge counter optional

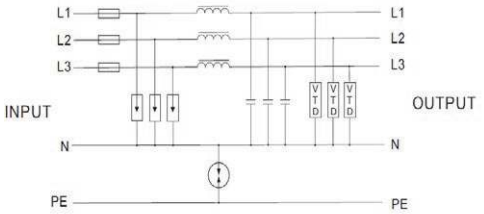
CE RoHS

Model			BSF100-3/180-63A-3PN-VTD-S	BSF100-3/320-63A-3PN-VTD-S
Compliance			IEC61643-11; UL1449 4th; IEC61000-6; ANSI/IEEE C62.41; AS1768-1991; AS3100	
Category IEC/EN/UL			Class I+II/ Type 1+2 / Type 2	
Ports/Protection Mode			2 / All mode protection	
Protection Technology			ESG (primary)+ VTD (secondary) technology; GDT technology for NPE mode; LC filter; thermal disconnector; built-in over-current protection	
Power System		U_n	120/208V to 127/220V Three phase (TN/TT)	220/380V to 277/480V Three phase (TN/TT)
Max. Continuous Operating Voltage (AC/DC)		U_c	180V / 230V	320V / 420V
Rated Load Current		I_L	63A	
Nominal Discharge Current		I_n	25kA (8/20μs)	
Primary Surge Protection Rating	L-N		I_{imp}: 25kA (10/350μs), I_{max}: 100kA (8/20μs)	
	N-PE		I_{imp}: 100kA (10/350μs), I_{max}: 200kA (8/20μs)	
Secondary Surge Protection Rating	L-N	I_{max}	50kA (8/20μs)	
Total Surge Capacity Per Line		I_{total}	150kA (8/20μs)	
Voltage Protection Level	L-N@6kV/3kA	VPR	≤0.4kV	≤0.5kV
	L-N@I_n	U_p	≤0.7kV	≤0.85kV
	N-PE@1.2/50μs	U_p	≤1.0kV	≤1.5kV
Residual Current		I_{PE}	<0.1mA	
Voltage Drop			< 2V at 63 A load	
Temporary Overvoltage TOV —Withstand Mode		U_{tov}	230V/120min	440V/120min
Response Time		t_A	≤1ns	
Filter Attenuation		dB	>48dB @ 1MHz	
Built In Over Load/ Over-Current Protection In Series			63A (optional)	
Lightning Counter Current			≤3kA	
Protect Status Indication			4 LED display, Normal (Blue), Protection fault(Off)	
Remote Alarm			Dry contact alarm relay – 250Vac/32Vdc, 5A	
Connecting Cable			Power: 6-8 AWG(50A/63A); Alarm 14 -22 AWG	
Environment			Temperature Range: - 40°C ~ +70°C; Humidity: ≤95%; Altitude: ≤2000m	
Mounting			Wall mounting	
Location Category			Indoor	
Degree of Protection			IP20	
Dimension			520mm (L) x425mm (W) x 170mm (H) approx	
Weight			30kg approx	
Approvals, certification			CE	

Dimension Drawing



Basic Circuit Diagram



▸ Two-Port Surge Filter

BSF100-1/…-63A-PN-VTD-S

▪ Single Phase ▪ 63A/125A

(Product Picture for Reference Only)

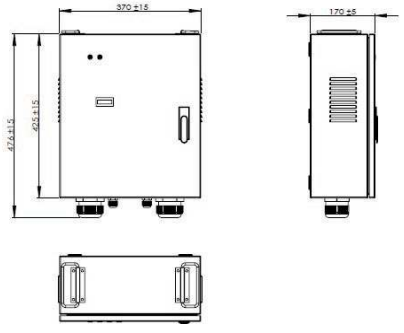
- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Prosugre ESG+VTD technology to further improve voltage clamping performance
- Application for 120~127V, 220~277V (L-N) TT/TN, or any single phase system with a grounded neutral
- Surge capacity: 25kA 10/350 μs or 100kA 8/20μs (per mode)
- Surge capacity of N-PE mode up to 100kA 10/350μs
- Load current rating 63A, 125A is available
- Built-in in series fuse for overload /short circuit protection available
- LED failure indication & remote alarm function available
- Surge counter optional

Model			BSF100-1/180-63A-PN-VTD-S	BSF100-1/320-63A-PN-VTD-S
Compliance			IEC61643-11; UL1449 4th; IEC61000-6; ANSI/IEEE C62.41; AS1768-1991; AS3100	
Category IEC/EN/UL			Class I+II / Type 1+2 / Type 2	
Ports/Protection Mode			2 / All mode protection	
Protection Technology			ESG(primary)+ VTD(secondary) technology; GDT technology for NPE mode; LC filter; thermal disconnector; built-in over-current protection	
Power System		U_n	120~127V single phase	220-277V single phase
Max. Continuous Operating Voltage (AC/DC)		U_c	180/230V	320/420V
Rated Load Current		I_L	63A	
Nominal Discharge Current		I_n	25kA (8/20μs)	
Primary Surge Protection Rating	L-N		I_{imp}: 25kA (10/350μs), I_{max}: 100kA (8/20μs)	
	N-PE		I_{imp}:100kA (10/350μs), I_{max}:200kA (8/20μs)	
Secondary Surge Protection Rating	L-N	I_{max}	50kA (8/20μs)	
Total Surge Capacity Per Line		I_{total}	150kA (8/20μs)	
Voltage Protection Level	L-N@6kV/3kA	VPR	≤0.4kV	≤0.5kV
	L-N@ In	U_p	≤0.7kV	≤0.85kV
	N-PE@1.2/50μs	U_p	≤1.0kV	≤1.5kV
Residual Current		I_{PE}	<0.1mA	
Voltage Drop			< 2V at 63 A load	
Temporary Overvoltage TOV —Withstand Mode		U_{tov}	230V/120min	440VAC/120min
Response Time		t_A	≤1ns	
Filter Attenuation		dB	>48dB @ 1MHz	
Built In Over Load/ Over-Current Protection In Series			63A (optional)	
Lightning Counter Current			≤3kA	
Protect Status Indication			2 LED display, Normal (Blue), Protection fault(Off)	
Remote Alarm			Dry contact alarm relay – 250Vac/32Vdc, 5A	
Connecting Cable			Power: 6-8 AWG(50A/63A); Alarm: 14 -22 AWG	
Environment			Temperature Range: - 40°C ~ +70°C; Humidity: ≤95%; Altitude: ≤2000m	
Mounting			Wall mounting	
Location Category			Indoor	
Degree of Protection			IP20	
Dimension			425mm (L) x370mm (W) x 170mm (H) approx	
Weight			20kg approx	
Approvals, certification			CE	

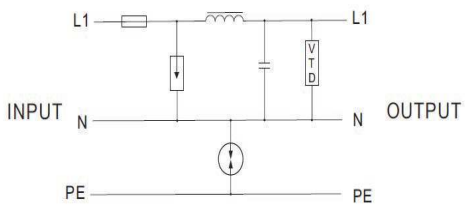
Other Models

Power System	Load Current	Model Recommended	Recommended External Over Current Protection In Series	Built In Over Load/Over-Current Protection in Series
Single phase 2W+G	125A	BSF100-1/…-125A-PN-VTD-S	\	125A gL/gG

■ Dimension Drawing



■ Basic Circuit Diagram



BSF50-1/…-45A-3P-S

▪ Single Phase ▪ 45A/32A/20A

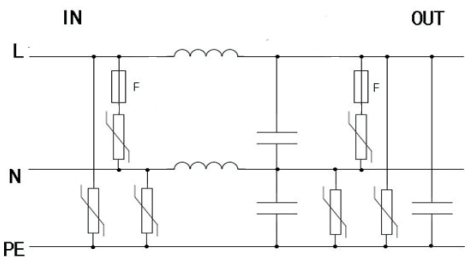
- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Application for 120~127V, 220~277V (L-N) TT/TN, or any single phase system with a grounded neutral
- Surge capacity 50kA 8/20 μs
- Load current rating 45A, 20~32A is available
- Built in backup fuse for fault current protection
- All mode protection
- LED failure indication & remote alarm function available

Model			BSF50-1/180-45A-3P-S	BSF50-1/320-45A-3P-S	BSF50-1/420-45A-3P-S	BSF50-1/550-45A-3P-S
Compliance			IEC61643-11; UL1449 4th; IEC61000-6; ANSI/IEEE C62.41; AS1768-1991; AS3100			
Category IEC/EN/UL			Class II+III / Type 2+3 / Type 2			
Ports/Protection Mode			2 / All mode protection			
Protection Technology			MOV technology; thermal protection; LC filter; built-in backup fuse			
Power System		U_n	120~127V single phase	220-277V single phase	347V single phase	480V single phase
Max. Continuous Operating Voltage (AC/DC)		U_c	180V / 230V	320V / 420V	420V / 560V	550V / 745V
Rated Load Current		I_L	45A			
Nominal Discharge Current(8/20μs)		I_n	L-N 20kA, N-E 10kA, L-E 10kA			
Max. Discharge Current(8/20μs)		I_{max}	L-N 50kA, N-E 25kA, L-E 25kA			
Voltage Impulse (1.2/50μs)		U_{oc}	20kV			
Total Surge Capacity Per Line		I_{total}	150kA (8/20μs)			
Voltage Protection Level	L-N @6kV/3kA	VPR	≤0.6kV	≤1.0kV	≤1.4kV	≤2.0kV
	L/N-PE@6kV/3kA	VPR	≤0.7kV	≤1.2kV	≤1.6kV	≤2.2kV
	L-N @I_n	U_p	≤0.8kV	≤1.2kV	≤1.6kV	≤2.3kV
	L/N-PE@I_n	U_p	≤0.9kV	≤1.4kV	≤1.8kV	≤2.5kV
Residual Current		I_{PE}	<1mA			
Voltage Drop			< 2V at rated load current			
Temporary Overvoltage TOV — Withstand Mode		U_{tov}	240V/5s	400V/5s	600V/5s	690V/5s
Response Time		t_A	<5ns			
Filter Attenuation		dB	>60dB @ 1MHz; >15dB @ 100kHz; >0.5dB @ 1kHz			
Recommended External Over Current Protection In Series			45A Fuse or CB			
Protect Status Indication			2 part display, Power OK, Protection fault			
Remote Alarm			Dry contact alarm relay – 250Vac/32Vdc, 5A			
Connecting Cable			Power: 8-10 AWG; Alarm: 14 -22 AWG			
Environment			Temperature Range: - 10°C ~ +60°C; Humidity: ≤95%; Altitude: ≤2000m			
Mounting			Wall mounting			
Location Category			Indoor			
Degree of Protection			IP20			
Dimension			220mm (L) x 143mm (W) x48 mm (H) approx			
Weight			1.2kg approx			
Approvals, certification			CE			

Other Models

Power System	Load Current	Model Recommended	Recommended External Over Current Protection In Series
Single phase 2W+G	20A	BSF50-1/…-20A-3P-S	20A CB/Fuse
	32A	BSF50-1/…-32A-3P-S	32A CB/Fuse

Basic Circuit Diagram



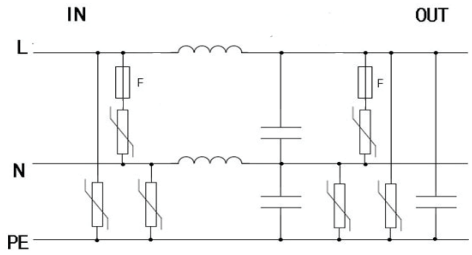
BSF40-1/320-16A (-10A)-3P

▪ Single Phase ▪ 16A/10A

- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Application for 220~277V (L-N) TT/TN, or any single phase system with a grounded neutral
- Surge capacity: 40kA 8/20 μs
- Load current rating 16A, 10A is available
- Built in backup fuse for fault current protection
- All mode protection
- IEC socket for easy wiring
- LED failure indication

Model			BSF40-1/320-10A-3P	BSF40-1/320-16A-3P
Compliance			IEC61643-11; UL1449 4th; IEC61000-6; ANSI/IEEE C62.41; AS1768-1991; AS3100	
Category IEC/EN/UL			Class II+III / Type 2+3 / Type 2	
Ports/Protection Mode			2 / All mode protection	
Protection Technology			MOV technology; thermal protection; LC filter; built-in backup fuse	
Power System		U_n	220-277V single phase	220-277V single phase
Max. Continuous Operating Voltage (AC/DC)		U_c	320V / 420V	320V / 420V
Rated Load Current		I_L	10A	16A
Nominal Discharge Current (8/20μs)		I_n	L-N 20kA, N-E 5kA, L-E 5kA	
Max. Discharge Current (8/20μs)		I_{max}	L-N 40kA, N-E 10kA, L-E 10kA	
Voltage Impulse (1.2/50μs)		U_{oc}	20kV	
Total Surge Capacity Per Line		I_{total}	100kA (8/20μs)	
Voltage Protection Level	L-N @6kV/3kA	VPR	≤1.0kV	
	L/N-PE@6kV/3kA	VPR	≤1.2kV	
	L-N @I_n	U_p	≤1.2kV	
	L/N-PE@I_n	U_p	≤1.4kV	
Residual Current		I_{PE}	<1mA	
Voltage Drop			< 2V at rated load current	
Temporary Overvoltage TOV —Withstand Mode		U_{tov}	400V/5s	
Response Time		t_A	<5ns	
Filter Attenuation		dB	>40dB @ 1MHz	
Recommended External Over Current Protection In Series			10A Fuse or CB	16A Fuse or CB
Protect Status Indication			2 part display, Power OK, Protection fault	
Connecting Cable			IEC320 10A input x 1, IEC320 10A output x 1	IEC320 16A input x 1, IEC320 16A output x 1
Environment			Temperature Range: - 10°C~ +60°C; Humidity: ≤95%; Altitude: ≤2000m	
Mounting			Portable	
Location Category			Indoor	
Degree of Protection			IP20	
Dimension			152mm (L) x 133mm (W) x 48mm (H) approx.	
Weight			0.8kg approx.	
Approvals, certification			CE	

Basic Circuit Diagram



DSF25/… -25A/3P/C-S

▪ Single Phase ▪ 25A/16A

- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Application for 120~127V, 220~277V (L-N) TT/TN, or any 1-phase system with a grounded neutral
- Surge capacity 25kA 8/20 μs
- Load current rating 25A, 16A is available
- Built in backup fuse for fault current protection
- All mode protection
- LED failure indication
- Remote alarm function available
- Easy installation on DIN rails

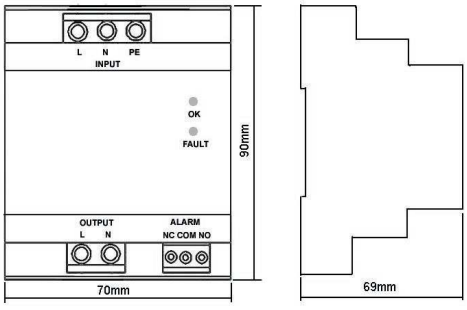
CE RoHS

Model			DSF25/175-25A/3P/C-S	DSF25/320-25A/3P/C-S
Compliance			IEC61643-11; UL 1449 4th; IEC61000-6; ANSI/IEEE C62.41; AS1768-1991; AS3100	
Category IEC/EN/UL			Class III / Type 3	
Ports/Protection Mode			2 / All mode protection	
Protection Technology			MOV technology; thermal protection; LC filter; built-in backup fuse	
Power System		U_n	120-127V single phase	220-277V single phase
Max. Continuous Operating Voltage (AC/DC)		U_c	175V / 230V	320V / 420V
Rated Load Current		I_L	25A	
Nominal Discharge Current (8/20μs)		I_n	L-N 10kA, N-E 3kA, L-E 3kA	
Max. Discharge Current (8/20μs)		I_{max}	L-N 25kA, N-E 6kA, L-E 6kA	
Voltage Impulse (1.2/50μs)		U_{oc}	10kV	
Total Surge Capacity Per Line (8/20μs)		I_{total}	31kA	
Voltage Protection Level	L-N @6kV/3kA	VPR	≤0.7kV	≤1.0kV
	L-N @I_n	U_p	≤0.8kV	≤1.2kV
Residual Current		I_{PE}	<1mA	
Voltage Drop			< 2V at rated load current	
Temporary Overvoltage TOV —Withstand Mode		U_{tov}	195V/5s	370V/5s
Response Time		t_A	<5ns	
Filter Attenuation		dB	>45dB @ 1MHz	
Recommended External Over Current Protection In Series			25A Fuse or CB	
Protect Status Indication			2 part display, Power OK, Protection fault	
Remote Alarm			Dry contact alarm relay – 125Vac 1A; 30Vdc, 2A	
Connecting Cable			Power: single-strand 6mm^2; multi-strand 4mm^2 Remote: 1.5 mm^2 (16 AWG)	
Environment			Temperature Range: - 10°C ~ +60°C; Humidity: ≤95%; Altitude: ≤2000m	
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3	
Location Category			Indoor	
Degree of Protection			IP20	
Dimension			90mm (L) x 70mm (W) x 69mm (H) approx	
Approvals, certification			CE	

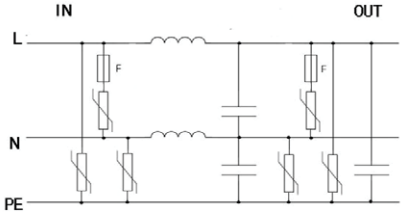
Other Models

Power System	Load Current	Model Recommended	Recommended External Over Current Protection In Series
Single phase 2W+G	16A	DSF25/…-16A/3P/C-S	16A CB/Fuse

■ Dimension Drawing



■ Basic Circuit Diagram



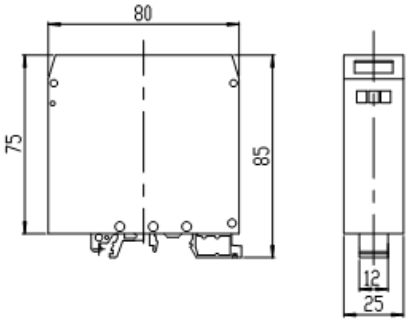
DSF10/... -10A/3P/C

▪ Single Phase ▪ 10A

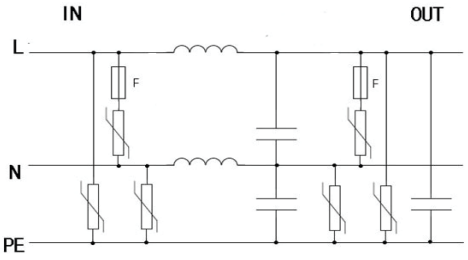
- Multi-stage protection circuit with LC Filter design to protect sensitive electronics
- Application for 120~127V, 220~277V (L-N) TT/TN, or any 1-phase system with a grounded neutral
- Surge capacity 10kA 8/20 μs
- Load current rating 10A
- Built in backup fuse for fault current protection
- All mode protection
- LED failure indication
- Easy installation on DIN rails

Model			DSF10/175-10A/3P/C	DSF10/320-10A/3P/C
Compliance			IEC 61643-11; UL 1449 4th; IEC61000-6; ANSI/IEEE C62.41; AS1768-1991; AS3100	
Category IEC/EN/UL			Class III/ Type 3	
Ports/Protection Mode			2 / All mode protection	
Protection Technology			MOV technology Thermal protection LC filter Built-in backup fuse	
Power System		U_n	120-127V single phase	220-277V sing phase
Max. Continuous Operating Voltage (AC/DC)		U_c	175V / 230V	320V / 420V
Rated Load Current		I_L	10A	
Nominal Discharge Current (8/20μs)		I_n	5kA	
Max. Discharge Current (8/20μs)		I_{max}	10kA	
Voltage Impulse (1.2/50μs)		U_{oc}	10kV	
Total Surge Capacity Per Line (8/20μs)		I_{total}	40kA	
Voltage Protection Level	L-N @6kV/3kA	VPR	≤0.7kV	≤1.0kV
	L-N @I_n	U_p	≤0.8kV	≤1.2kV
Residual Current		I_{PE}	<1mA	
Voltage Drop			< 2V at rated load current	
Temporary Overvoltage TOV —Withstand Mode		U_{tov}	195V/5s	370V/5s
Response Time		t_A	<5ns	
Filter Attenuation		dB	>40dB @ 1MHz	
Recommended External Over Current Protection In Series			10A Fuse or CB	
Protect Status Indication			LED Alarm, Green - Normal, LED off - fail	
Connecting Cable			Multi-strand 2.5mm^2	
Environment			Temperature Range: - 10°C ~ +60°C; Humidity: ≤95%; Altitude: ≤2000m	
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3	
Location Category			Indoor	
Degree of Protection			IP20	
Dimension			80mm(L)×25mm(W)×85mm(H) approx	
Approvals, certification			CE	

Dimension Drawing



Basic Circuit Diagram



Notes

SPD Components - Thermally Protected MOV

PTMOV - I_n: 10kA, I_{max}: 25kA;

20PTMOV - I_n: 20kA, I_{max}: 25kA

SMTMOV - I_n: 20kA, I_{max}: 50kA;

HSMTMOV - I_n: 20kA, I_{max}: 75kA

Thermally Protected MOV

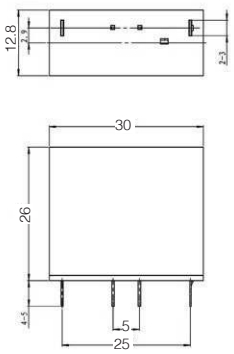
▪ I_n 10kA ▪ I_{max} 25kA

PTMOV…-S

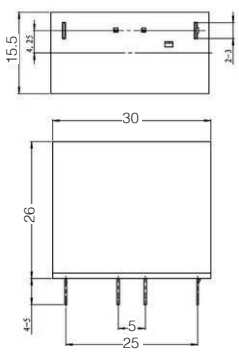
- UL recognized Type 1ca SPD (UL1449 4th), Type 2ca SPD (CSA C22.2)
- High surge current discharge capacity up to 25kA 8/20μs
- PCB mounting design, compact size to save installation space
- Global patented thermal disconnector design with arc extinguishing device (TPAE technology), fail-safe and self-protected, quick thermal response and perfect circuit cutoff function
- Floating remote signaling contact (50mA, 12Vdc) for fault indication
- Application in the AC mains, service entrance, and heavy industrial etc
- SCCR up to 200kArms tested without external fuse or CB
- Wide operating temperature range and high reliability
- Comply with EN/IEC61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		PTMOV150-S	PTMOV180-S	PTMOV320-S	PTMOV420-S	PTMOV550-S	PTMOV690-S
Compliance		ANSI/UL 1449-4th; EN/IEC 61643-11					
Category (UL/CSA)		Type 1ca per UL 1449 4th Type 2ca per CSA C22.2					
Technology		MOV technology TPAE technology					
Max. Continuous Operating Voltage (AC/DC)	MCOV	150V / 200V	180V / 230V	320V / 410V	420V / 560V	550V / 745V	690V / 910V
Nominal Discharge Current (8/20μs)	I_n	10kA					
Max. Discharge Current (8/20μs)	I_{max}	25kA				22kA	
Voltage Protection Rating	VPR	≤0.6kV	≤0.8kV	≤1.0kV	≤1.2kV	≤1.8kV	≤2.0kV
Max. Energy @ 10/1000μs (Joule)	WJ	302	340	665	790	950	1130
Typical Capacitance (Reference) @ 1KHz pF	C	2800	2450	1300	1000	750	605
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms					
Response Time	t_A	≤25ns					
Insulation Resistance		≥10 MOhm					
Electric Strength		≥2500V (AC)					
Environment		Temperature Range: - 40°C ~ +80°C; Humidity: ≤95%; Altitude: ≤2000m					
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0					
Degree of Protection		IP20					
Remote Alarm Contact		Floating contact (50mA 12Vdc)					
Mounting		PCB					
Approvals, certifications		UL					

Dimension Drawing

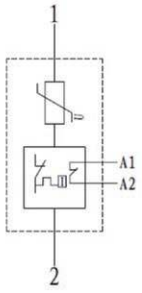


PTMOV.../S (MCOV 150~420Vac)



PTMOV…/S (MCOV 550~690Vac)

Basic Circuit Diagram



Thermally Protected MOV

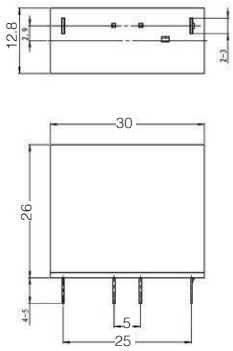
▪ I_n 20kA ▪ I_{max} 25kA

20PTMOV…-S

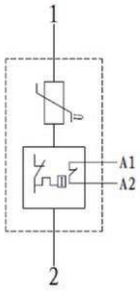
- UL recognized Type 1ca SPD (UL1449 4th), Type 2ca SPD (CSA C22.2)
- High surge current discharge capacity up to 25kA 8/20
- PCB mounting design, compact size to save installation space
- Global patented thermal disconnector design with arc extinguishing device (TPAE technology), fail-safe and self-protected, quick thermal response and perfect circuit cutoff function
- Floating remote signaling contact (50mA, 12Vdc) for fault indication
- Application in the AC mains, service entrance, and heavy industrial etc
- SCCR up to 200kArms tested without external fuse or CB
- Wide operating temperature range and high reliability
- Comply with EN/IEC61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		20PTMOV150-S	20PTMOV180-S	20PTMOV320-S
Compliance		ANSI/UL 1449-4th; EN/IEC 61643-11		
Category (UL/CSA)		Type 1ca per UL 1449 4th Type 2ca per CSA C22.2		
Technology		MOV technology TPAE technology		
Max. Continuous Operating Voltage (AC/DC)	MCOV	150V / 200V	180V / 230V	320V / 410V
Nominal Discharge Current (8/20μs)	I_n	20kA		
Max. Discharge Current (8/20μs)	I_{max}	25kA		
Voltage Protection Rating	VPR	≤0.6kV	≤0.8kV	≤1.0kV
Max. Energy @ 10/1000μs (Joule)	WJ	302	340	665
Typical Capacitance (Reference) @ 1KHz pF	C	2800	2450	1300
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms		
Response Time	t_A	≤25ns		
Insulation Resistance		≥10 MOhm		
Electric Strength		≥2500V (AC)		
Environment		Temperature Range: - 40°C ~ +80°C; Humidity: ≤95%; Altitude: ≤2000m		
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0		
Degree of Protection		IP20		
Remote Alarm Contact		Floating contact (50mA 12Vdc)		
Mounting		PCB		
Approvals, certifications		UL		

Dimension Drawing



Basic Circuit Diagram



Thermally Protected MOV

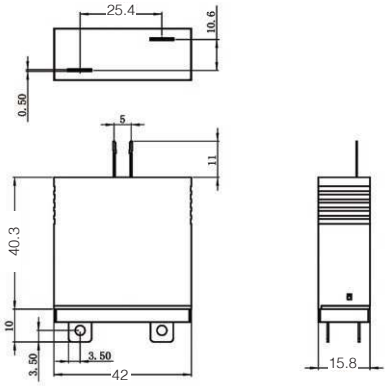
▪ I_n 20kA ▪ I_{max} 50kA

SMTMOV…-S

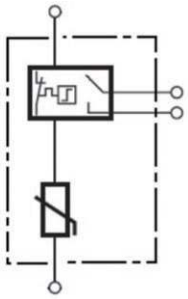
- UL recognized Type 1ca SPD (UL1449 4th), Type 2ca SPD (CSA C22.2)
- High surge current discharge capacity up to 50kA 8/20μs
- PCB mounting design, compact size to save installation space
- Global patented thermal disconnector design with arc extinguishing device(TPAE technology), fail-safe and self-protected, quick thermal response and perfect circuit cutoff function
- Floating remote signaling contact (50mA, 12Vdc) for fault indication
- Application in the AC mains, service entrance, and heavy industrial etc
- SCCR up to 200kArms tested without external fuse or CB
- Wide operating temperature range and high reliability
- Comply with EN/IEC61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		SMTMOV150-S	SMTMOV180-S	SMTMOV275A-S	SMTMOV320-S	SMTMOV420-S	SMTMOV550-S	SMTMOV690-S
Compliance		ANSI/UL 1449-4th; EN/IEC 61643-11						
Category (UL/CSA)		Type 1ca per UL 1449 4th Type 2ca per CSA C22.2						
Technology		MOV technology TPAE technology						
Max. Continuous Operating Voltage (AC/DC)		150V / 200V	180V / 230V	275V / 350V	320V / 410V	420V / 560V	550V / 745V	690V / 910V
Nominal Discharge Current (8/20μs)	I_n	20kA						
Max. Discharge Current (8/20μs)	I_{max}	50kA						40kA
Voltage Protection Rating	VPR	≤0.6kV	≤0.6kV	≤0.8kV	≤1.0kV	≤1.5kV	≤1.5kV	≤2.0kV
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms						
Response Time	t_A	≤25ns						
Insulation Resistance		≥10 MOhm						
Electric Strength		≥2500V (AC)						
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m						
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0						
Degree of Protection		IP20						
Remote Alarm Contact		Floating contact (50mA 12Vdc)						
Failure Indication /Status		RED- Failure, viewed through top hole of plastic housing						
Mounting		PCB						
Approvals, certifications		UL						

■ Dimension Drawing



■ Basic Circuit Diagram



Thermally Protected MOV

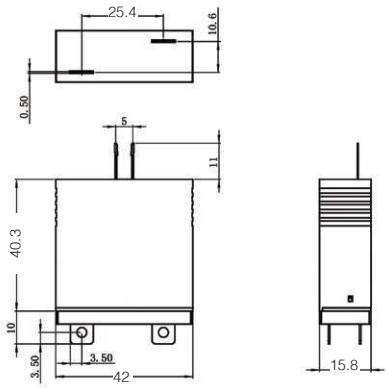
▪ I_n 20kA ▪ I_{max} 75kA

HSMTMOV…-S

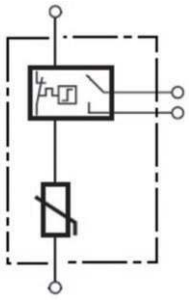
- UL recognized Type 1ca SPD (UL1449 4th), Type 2ca SPD (CSA C22.2)
- High surge current discharge capacity up to 75kA 8/20μs
- PCB mounting design, compact size to save installation space
- Global patented thermal disconnector design with arc extinguishing device(TPAE technology), fail-safe and self-protected, quick thermal response and perfect circuit cutoff function
- Floating remote signaling contact (50mA, 12Vdc) for fault indication
- Application in the AC mains, service entrance, and heavy industrial etc
- SCCR up to 200kArms tested without external fuse or CB
- Wide operating temperature range and high reliability
- Comply with EN/IEC61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		HSMTMOV150-S	HSMTMOV275A-S	HSMTMOV320-S
Compliance		ANSI/UL 1449-4th; EN/IEC 61643-11		
Category (UL/CSA)		Type 1ca per UL 1449 4th Type 2ca per CSA C22.2		
Technology		MOV technology TPAE technology		
Max. Continuous Operating Voltage (AC/DC)		150V / 200V	275V / 350V	320V / 410V
Nominal Discharge Current (8/20μs)	I_n	20kA		
Max. Discharge Current (8/20μs)	I_{max}	75kA		
Voltage Protection Rating	VPR	≤0.6kV	≤0.8kV	≤1.0kV
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms		
Response Time	t_A	≤25ns		
Insulation Resistance		≥10 MOhm		
Electric Strength		≥2500V (AC)		
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m		
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0		
Degree of Protection		IP20		
Remote Alarm Contact		Floating contact (50mA 12Vdc)		
Failure Indication /Status		RED- Failure, viewed through top hole of plastic housing		
Mounting		PCB		
Approvals, certifications		UL		

Dimension Drawing



Basic Circuit Diagram



SPD for DC / PV System

T1 SPD

T2 SPD

Replaceable Module

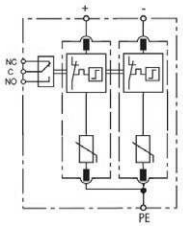
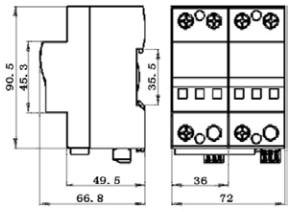
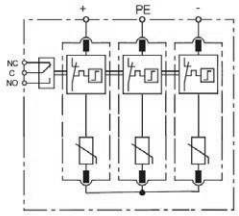
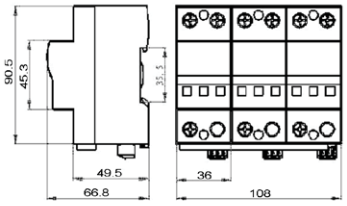
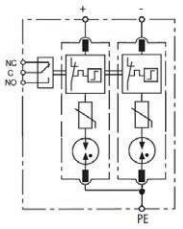
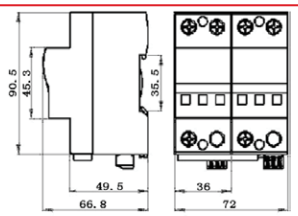
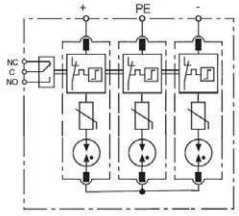
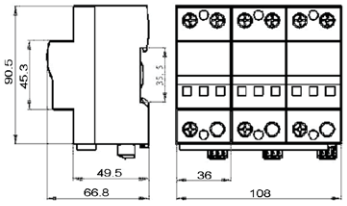
PVB12.5... -S

▪ MOV or VT Technology ▪ I_{max} 12.5kA

- Non-pluggable T1+2 PV SPD with high energy MOV/VT technology
- High lightning current discharge capacity up to I_{imp} 12.5kA 10/350
- Prewired V or Y protection circuit, for common mode & differential mode protection
- Degradation indication & optional remote signal contact
- Lower voltage protection level
- Model with VT technology to eliminate leakage current & follow current for better reliability and robustness.
- Comply with EN/IEC61643-31, EN50539-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		PVB12.5-600-V-C-S	PVB12.5-1000-V-CD-S	PVB12.5-600-VT-C-S	PVB12.5-1000-VT-CD-S
Compliance		IEC61643-31, EN50539-11, UL1449 4th			
Category EN/IEC/UL		T1+2/ Class I+II / Type 1ca			
Nominal PV System Voltage (DC)	U_n	600V	1000V	600V	1000V
Max. Continuous Operating DC Voltage	U_{cpv}	640V	1060V	640V	1020V
Technology		High energy MOV Technology Thermal disconnector		VT technology Thermal disconnector	
Ports/Protection Mode		Common	Common + Differential	Common	Common + Differential
Lightning Impulse Current (10/350µs)	I_{imp}	12.5kA			
Nominal Discharge Current (8/20µs)	I_n	12.5kA			
Max. Discharge Current (8/20µs)	I_{max}	100kA			
Voltage Protection Level	U_p	≤1.8kV	≤3.2kV	≤1.8kV	≤3.2kV
Residual Current	I_{PE}	<0.1mA	<0.1mA	No	No
Follow Current	I_f	No			
Short Circuit Withstand Capacity	I_{scpv}	1000A			
Response Time	t_A	≤25ns			
Environment		Temperature Range: -40°C ~ +80°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		2 modules, DIN 43880			
Failure Indication /Status		RED- Failure			
Remote Alarm Contact		Yes			
Approvals, certification		CE			
Diagram		1	2	3	4
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

Prewired Multi-pole SPD

Diagram	Basic Circuit Diagram	Dimension Drawing
1) 		 All dimension in mm
2) 		 All Dimension in mm
3) 		 All dimension in mm
4) 		 All Dimension in mm

CPV...-C-S

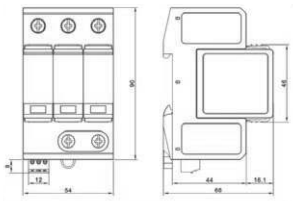
▪ EN 50539-11 ▪ TUV ▪ I_{max} 40kA

- TUV certified T2 PV SPD with high energy MOV technology
- High surge current discharge capacity up to 40kA 8/20μs
- Short circuit current rating (UL1449, SCCR) up to 100kA tested without external fuse or CB.
- Prewired Y protection circuit, for common mode & differential mode protection
- Easy replacing and anti-vibration due to module releasing and locking system
- Degradation indication & optional remote signal contact
- Comply with IEC61643-31, EN50539-11, UL 1449 4th, IEEE C62.41, CSA C22.2

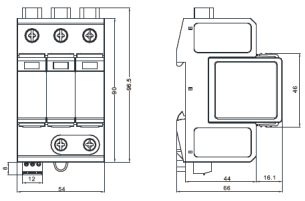
Model		CPV40-200-V-CD-S	CPV40-600-V-CD-S	CPV40-1000-V-CD-S	CPV40-1200-V-CD-S	CPV40-1500-V-CD-S
Compliance		EN50539-11:2013/A1:2014, IEC61643-31, UL 1449 4th				
Category EN/IEC/UL		T2/ Class II /Type 1ca				
Nominal PV System Voltage (DC)	U_n	200V	600V	1000V	1200V	1500V
Max. Continuous Operating DC Voltage	U_{cpv}	200V	600V	1000V	1200V	1500V
Technology		High energy MOV technology; Thermal disconnector				
Ports/Protection Mode		1 / Common+Differential				
Nominal Discharge Current (8/20μs)	I_n	20kA				
Max. Discharge Current (8/20μs)	I_{max}	40kA				
Voltage Protection Level	U_p	≤1.2kV	≤2.8kV	≤3.5kV	≤4.0kV	≤5.0kV
Voltage Protection Level @ 5kA	U_{res}	<0.7kV	<2.0kV	<2.8kV	<3.0kV	<3.8kV
Residual Current	I_{PE}	<0.1mA				
Short Circuit Withstand Capacity	I_{scpv}	1000A				
Response Time	t_A	≤25ns				
Follow Current	I_f	No				
Environment		Temperature Range: - 40°C ~ + 80°C; Humidity: ≤95%; Altitude: ≤4000m				
Cross-Section of Connection Wire		Single-strand 35mm²; multi-strand 25mm²				
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3				
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0				
Degree of Protection		IP20				
Installation Width		3 modules, DIN 43880				
Thermal Disconnector		Internal green – normal ; red - failure				
Remote Alarm Contact		Yes				
Approvals, certification		TUV, CE				
Diagram		1				2
Additional Data for Remote Alarm Contacts						
Remote Alarm Contact Type		Isolated Form C				
Switching Capability U_n/I_n		AC: 250V/0.5A DC: 250V/0.1A; 125V/0.2A; 75V/0.5A				
Max. Size of Connecting Wire		Max. 1.5mm²(or # 16AWG)				

Dimension Drawing

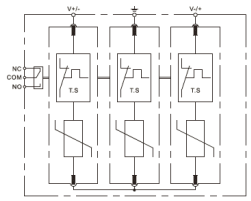
1) U_n: 200~1200V



2) U_n:1500V



Basic Circuit Diagram



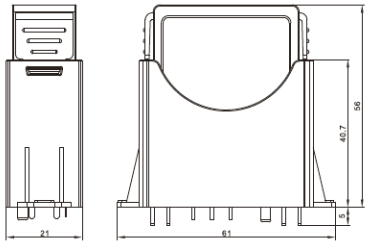
CPV40...-V

▪ EN 50539-11 ▪ TUV ▪ PCB Mount ▪ I_{max} 40kA

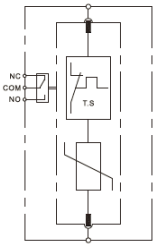
- TUV certified T2 surge protection modules for PV/ Photovoltaic system PV SPD.
- High surge current discharge capacity up to 40kA 8/20μs
- PCB mount design, compact size to save installation space
- Easy replacing and anti-vibration due to module releasing and locking system
- Degradation indication & optional remote signal contact
- Comply with IEC61643-31, EN50539-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		CPV40-100-V	CPV40-300-V	CPV40-500-V	CPV40-600-V	CPV40-750-V
Compliance		EN50539-11:2013/A1:2014, IEC61643-31, UL 1449th				
Category EN/IEC/UL		T2/ Class II /Type 1ca				
Ports/Protection mode		1 / single mode				
Nominal PV System Voltage (DC)	U_n	200V	600V	1000V	1200V	1500V
Max. Continuous Operating DC Voltage	U_{cpv}	100V	300V	500V	600V	750V
Technology		High energy MOV technology Thermal disconnector				
Nominal Discharge Current (8/20μs)	I_n	20kA				
Max. Discharge Current (8/20μs)	I_{max}	40kA				
Voltage Protection Level	U_p	0.6kV	1.4kV	1.75kV	2.0kV	2.5kV
Voltage Protection Level @ 5kA	U_{res}	0.35kV	1.0kV	1.4kV	1.5kV	1.9kV
Residual Current	I_{PE}	<0.1mA				
Short Circuit Withstand Capacity	I_{scpv}	1000A				
Response Time	t_A	≤25ns				
Environment		Temperature Range: - 40°C ~ +80°C Humidity: ≤95% Altitude: ≤4000m				
Location Category		Indoor				
Enclosure Material		thermoplastic; UL94 V-0				
Degree of Protection		IP20				
Failure Indication /Status		RED- Failure				
Mounting		PCB				
Approvals, certifications		TUV, CE				
Additional Data for Remote Alarm Contacts						
Type of Remote Signaling Contact		Changeover contact				
Switching Capability		$125V_{ac}$/1A, $125V_{dc}$/0.2A				

Dimension Drawing



Basic Circuit Diagram



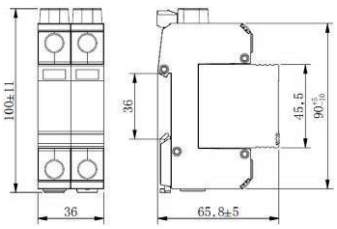
SPV...-C-S
(Common Mode)

▪ UL 1449 ▪ I_{max} 50kA

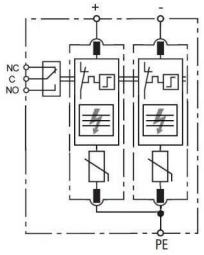
- UL recognized Type 1ca PV SPD with high energy MOV technology
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology).
- High surge current discharge capacity up to 50kA 8/20μs
- Short circuit current rating (UL1449, SCCR) up to 100kA tested without external fuse or CB.
- Prewired V protection circuit, for common mode protection
- Pluggable module for easy replacement
- Degradation indication & optional remote signal contact
- Comply with IEC61643-31, EN50539-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		SPV48-V-C-S	SPV500-V-C-S	SPV600-V-C-S
Compliance		IEC61643-31, EN50539-11, UL1449 4th		
Category EN/IEC/UL		T2/ Class II / Type 1ca		
Nominal PV System Voltage (DC)	U_n	48V	500V	600V
Max. permitted DC voltage	V_{pvdc}	85V	560V	670V
Technology		High energy MOV Technology TPAE technology		
Ports/Protection Mode		1 / Common		
Nominal Discharge Current (8/20μs)	I_n	20kA		
Max. Discharge Current (8/20μs)	I_{max}	50kA		
Voltage Protection Rating	VPR	≤0.8kV	≤3.0kV	≤3.0kV
Leakage (Quiescent) Current	I_q	<2.5μA	<2.5μA	<2.5μA
Short Circuit Current Rating per UL 1449 4th	I_{sccr}	30kA	100kA	50kA
Response Time	t_A	≤25ns		
Follow Current	I_f	No		
Environment		Temperature Range: -40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤2000m		
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2		
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3		
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0		
Degree of Protection		IP20		
Installation Width		2 modules, DIN 43880		
Thermal disconnector		Internal green – normal ; red - failure		
Remote Alarm Contact		Yes		
Approvals, certification		UL, CE		
Additional Data for Remote Alarm Contacts				
Remote Alarm Contact Type		Isolated Form C		
Switching Capability U_n/I_n		AC: 250V/0.5A DC: 250V/0.1A; 125V/0.2A; 75V/0.5A		
Max. Size of Connecting Wire		Max. 1.5mm^2(or # 16AWG)		

■ Dimension Drawing



■ Basic Circuit Diagram



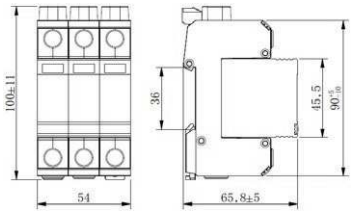
SPV...-CD-S (Common + Differential Mode)

▪ UL 1449 ▪ I_{max} 50kA

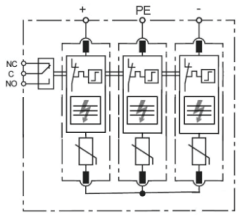
- UL recognized Type 1ca PV SPD with high energy MOV technology
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology).
- High surge current discharge capacity up to 50kA 8/20μs
- Short circuit current rating (UL1449, SCCR) up to 100kA tested without external fuse or CB.
- Prewired Y protection circuit, for common mode & differential mode protection
- Pluggable module for easy replacement
- Degradation indication & optional remote signal contact
- Comply with IEC61643-31, EN50539-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		SPV600-V-CD-S	SPV800-V-CD-S	SPV1000-V-CD-S	SPV1200-V-CD-S	SPV1500-V-CD-S
Compliance		IEC61643-31, EN50539-11, UL1449 4th				
Category EN/IEC/UL		T2/ Class II / Type 1ca				
Nominal PV System Voltage (DC)	U_n	600V	800V	1000V	1200V	1500V
Max. permitted DC voltage	V_{pvdc}	700V	920V	1120V	1340V	1500V
Technology		High energy MOV technology; TPAE technology				
Ports/Protection Mode		1 / Common+Differential				
Nominal Discharge Current (8/20μs)	I_n	20kA				
Max. Discharge Current (8/20μs)	I_{max}	50kA				
Voltage Protection Rating	VPR	≤1.8kV	≤2.5kV	≤2.5kV	≤3.0kV	≤4.0kV
Leakage (Quiescent) Current	I_q	<2.5μA				
Short Circuit Current Rating per UL 1449 4th	I_{sccr}	50kA				
Response Time	t_A	≤25ns				
Follow Current	I_f	No				
Environment		Temperature Range: - 40℃ ~ + 85℃; Humidity: ≤95%; Altitude: ≤2000m				
Cross-Section of Connection Wire		Single-strand 35mm²; multi-strand 25mm²				
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3				
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0				
Degree of Protection		IP20				
Installation Width		3 modules, DIN 43880				
Thermal disconnector		Internal green – normal ; red - failure				
Remote Alarm Contact		Yes				
Approvals, certification		UL, CE				
Additional Data for Remote Alarm Contacts						
Remote Alarm Contact Type		Isolated Form C				
Switching Capability U_n/I_n		AC: 250V/0.5A DC: 250V/0.1A; 125V/0.2A; 75V/0.5A				
Max. Size of Connecting Wire		Max. 1.5mm²(or # 16AWG)				

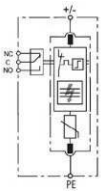
Dimension Drawing

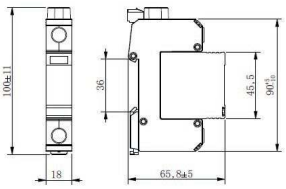


Basic Circuit Diagram

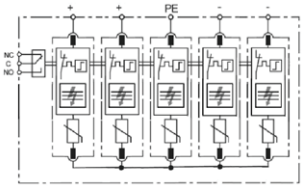


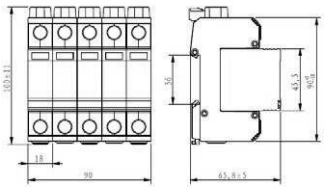
1) Single mode (U_n: 48, 500, 600 Vdc)





2) Prewired 2Y (U_n: 600, 800,1000,1200,1500 Vdc)





SP…D

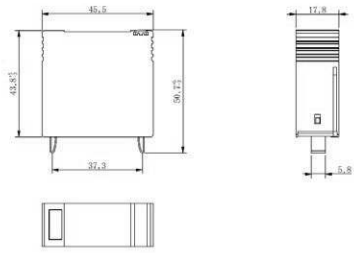
▪ UL 1449 ▪ PCB Mount ▪ I_{max} 50kA

- UL recognized Type 1ca (UL1449 4th), Type 2ca SPD (CSA C22.2) surge protection modules for PV/ Photovoltaic system
- High surge current discharge capacity up to 50kA 8/20μs
- PCB mount design (with PVD_Base), compact size to save installation space
- Global patented thermal disconnector design with arc extinguishing device(TPAE technology), fail-safe and self-protected, quick thermal response and perfect circuit cutoff function
- Floating remote signaling contact (50mA, 12Vdc) for fault indication
- SCCR up to 100kA tested without external fuse or CB
- Wide operating temperature range and high reliability
- Comply with IEC61643-31, EN5039-11, UL 1449 4th, IEEE C62.41, CSA

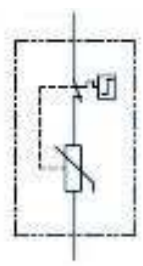
Model		SP85D	SP350D	SP460D	SP560D	SP670D	SP825D
Compliance		ANSI/UL 1449-4th; IEC61643-31, EN50539-11					
Category (UL/CSA)		Type 1ca per UL 1449 4th Type 2ca per CSA C22.2					
Technology		MOV technology TPAE technology					
Nominal PV System Voltage (DC)	U_n	48V	300V	400V	500V	600V	750V
Max. Permitted DC Voltage	V_{pvdc}	85V	350V	460V	560V	670V	825V
Nominal Discharge Current (8/20μs)	I_n	20kA					
Max. Discharge Current (8/20μs)	I_{max}	50kA					
Voltage Protection Rating	VPR	≤0.4kV	≤0.9kV	≤1.2kV	≤1.5kV	≤1.5kV	≤1.8kV
Leakage (Quiescent) Current	I_q	<2.5μA					
Short Circuit Current Rating per UL 1449 4th	I_{sccr}	30kA	100kA	100kA	100kA	50kA	50kA
Response Time	t_A	≤25ns					
Environment		Temperature Range: - 40°C ~ +85°C; Humidity: ≤95%; Altitude: ≤3000m					
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0					
Degree of Protection		IP20					
Insulation Resistance		≥10 M Ohm					
Failure Indication /Status		RED- Failure					
Approvals, certifications		UL, CE					

PVD_BASE Remote Alarm Contacts	
Remote Alarm Contact Type	Isolated Form C
Switching Capability U_n/I_n	AC: 250V/0.5A DC: 250V/0.1A; 125V/0.2A; 75V/0.5A

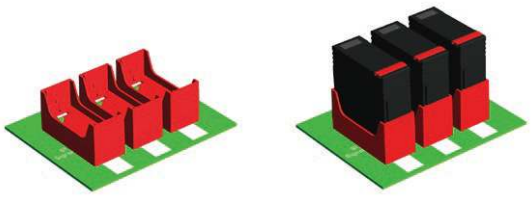
Dimension Drawing



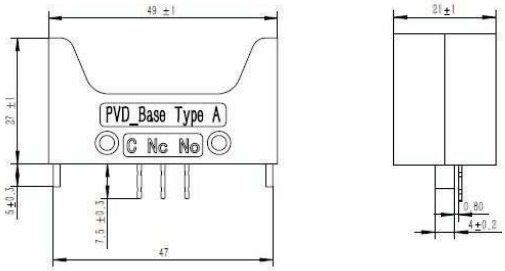
Basic Circuit Diagram



PCB Mounting Method Illustration



Dimension Drawing



SPD for Wind Turbine

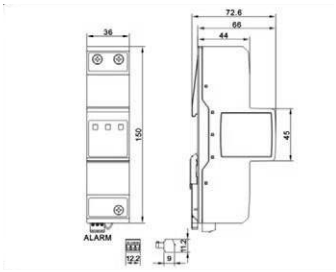
B25VG...-S

▪ TUV ▪ TSG Technologuy ▪ I_{max} 25kA

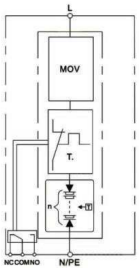
- TUV certified non-pluggable T1+2 SPD with high energy MOV and TSG technology
- High lightning current discharge capacity up to 25kA 10/350μs
- Short circuit withstand capability 25kArms
- Degradation indication & optional remote signal contact
- Lower voltage protection level
- Comply with EN/IEC61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		B25VG440-S	B25VG440	B25VG760-S	B25VG760
Compliance		EN/IEC 61643-11, UL 1449th			
Category EN/IEC/UL		T1+2/ Class I+II /Type 1ca			
Nominal Voltage	U_n	400V	400V	690V	690V
Max. Continuous Operating Voltage (AC)	U_c	440V	440V	760V	760V
Technology		High energy MOV & TSG(Trigger spark gap) technology Thermal disconnector			
Ports/Protection Mode		1 / L-PE or L-N or N-PE			
Lightning Impulse Current (10/350μs)	I_{imp}	25kA			
Nominal Discharge Current (8/20μs)	I_n	25kA			
Max. Discharge Current (8/20μs)	I_{max}	100kA			
Voltage Protection Level	U_p	≤2.4kV	≤2.4kV	≤3.5kV	≤3.5kV
Voltage Protection Level @ 5kA	U_{res}	<2.0kV	<2.0kV	<2.5kV	<2.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	690V/5s	690V/5s	1000V/5s	1000V/5s
Residual Current	I_{PE}	No			
Follow Current	I_f	No			
Short-Circuit Current Rating per IEC 61643	I_{sc}	25kArms			
Response Time	t_A	≤25ns			
Backup Fuse (only required if not already provided in mains)		250A gL/gG			
Environment		Temperature Range: -40°C ~ +80°C; Humidity: ≤95%; Altitude: ≤2000m			
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2			
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0			
Degree of Protection		IP20			
Installation Width		2 modules, DIN 43880			
Failure Indication /Status		RED- Failure			
Remote Alarm Contact		Yes	No	Yes	No
Approvals, certification		TUV, CE			
Additional Data for Remote Alarm Contacts					
Remote Alarm Contact Type		Isolated Form C			
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A			
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)			

Dimension Drawing



Basic Circuit Diagram

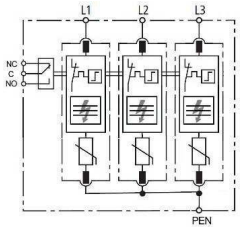
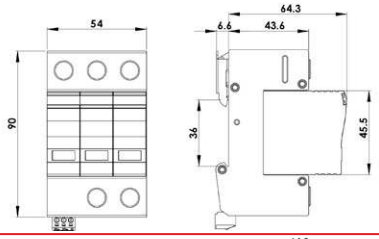
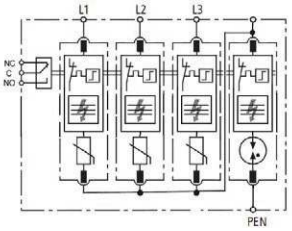
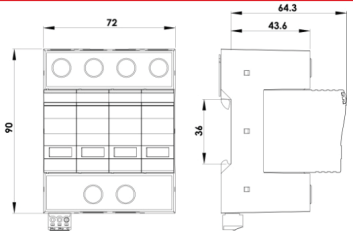


SP…/3P-S

▪ MOV+GDT Technology ▪ I_{max} 40kA

- Pluggable T2 SPD with high energy MOV technology for wind turbine
- High reliability due to global patented thermally protected with special arc-extinguish device (TPAE technology)
- High surge current discharge capacity up to 40kA 8/20μs
- Pluggable module for easy replacement
- Degradation indication & optional remote signal contact.
- Prewired for three phase 3W+G network systems such as TN-C etc
- Comply with IEC/EN 61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Model		SP440/3P-S	SP760/3P-S	SP860/3PT-S
Compliance		EN/IEC 61643-11, UL 1449th		
Category EN/IEC/UL		T2/ Class II /Type 1ca		
Nominal Voltage	U_n	400/690Vac		
Max. Continuous Operating Voltage (AC)	U_c	440V	760V	860V
Technology		High energy MOV technology; TPAE technology (patented)		High energy MOV & GDT technology; TPAE technology (patented)
Ports/Protection Mode		1 / L-PEN		
Nominal Discharge Current (8/20μs)	I_n	20kA		
Max. Discharge Current (8/20μs)	I_{max}	40kA		
Voltage Protection Level	U_p	≤2.4kV	≤3.0kV	≤4.0kV
Voltage Protection Level @ 5kA	U_{res}	<2.0kV	<2.0kV	<2.5kV
Temporary Overvoltage TOV —Withstand Mode	U_{tov}	582V/5s	900V/5s	1200V/5s
Residual Current	I_{PE}	<0.1mA	<0.1mA	No
Follow Current	I_f	No		
Short Circuit Current Rating per UL 1449	I_{sccr}	200kArms		
Response Time	t_A	≤25ns		
Backup Fuse (only required if not already provided in mains)		125A gL/gG		
Environment		Temperature Range: -40°C ~ +80°C; Humidity: ≤95%; Altitude: ≤3000m		
Cross-Section of Connection Wire		Single-strand 35mm^2; multi-strand 25mm^2		
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3		
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0		
Degree of Protection		IP20		
Installation Width		3 modules, DIN 43880		4 modules, DIN 43880
Failure Indication /Status		RED- Failure		
Remote Alarm Contact		Yes		
Approvals, certification		CE		
Diagram		1	1	2
Additional Data for Remote Alarm Contacts				
Remote Alarm Contact Type		Isolated Form C		
Switching Capability U_n/I_n		AC: 250V/0.5A; DC: 250V/0.1A; 125V/0.2A; 75V/0.5A		
Max. Size of Connecting Wire		Max. 1.5mm^2 (or # 16AWG)		

Diagram	Basic Circuit diagram	Dimension Drawing
1) 		
2) 		

Note: SP860/3PT-S is specifically designed for protecting the rotor winding of the generator and the supply line of the inverter. An additional spark gap module is used for potential isolation and to prevent that the MOV based modules operate prematurely due to high voltage tolerances and voltage fluctuations.

SPD for Street Lighting

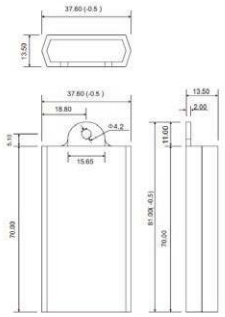
WS3VT/390-10

▪ VT Technology ▪ U_{oc} 20kV

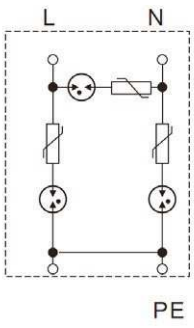
- Surge arrester comply with IEC 61643-11 and UL 1449 4th.
- Designed to protect LED light applications or other single phase electrical and electronic facility.
- Suitable for using in 110~347Vac single phase.
- VT (GDT and MOV in series) technology to eliminate leakage current to ground (or protective conductor) to avoid malfunction of upstream residual current protection device.
- Max Discharge Current up to 10kA 8/20μs and Open Circuit Voltage U_{oc} to 20kV.
- Offering full mode protection to L-PE, L-N, N-PE.
- IP67 waterproof enclosure.

Model		WS3VT/390-10
Compliance		IEC61643-11:2011; UL1449 4th
Category EN/IEC/UL		T3/ Class III /Type 4ca
Connection Type		1 / full mode protection
Power system (single phase)		110~347Vac
Max. Continuous Operating Voltage (AC)	U_c	390Vac
Technology		VT technology
Protection Mode		Full mode protection
Nominal Discharge Current (8/20μs)	I_n	5kA
Max. Discharge Current (8/20μs)	I_{max}	10kA
Open Circuit Voltage	U_{oc}	20kV
Voltage Protection Level	U_p	≤1.1kV
Residual Current	I_{PE}	No
Response Time	t_A	≤25ns
Backup Fuse (only required if not already provided in mains)		32 A gL/gG
Environment		Temperature Range: -40°C ~ +80°C; Humidity: ≤95% Non Condensing; Altitude: ≤3000m
Dimension		81*37.6*13.4 mm
Connection Wire		1.5 mm^2 flexible (L/N: Blue/Brown; PE=Y/G)
Enclosure Material		ABS; extinguishing degree UL94 V-0
Degree of Protection		IP67 (Waterproof)
Approvals, certification		CE

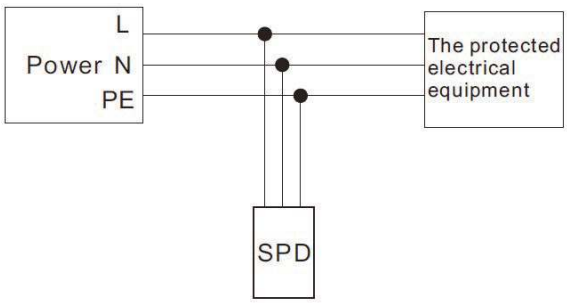
Dimension Drawing



Basic Circuit Diagram



Connection Diagram



SPD for Overhead Line

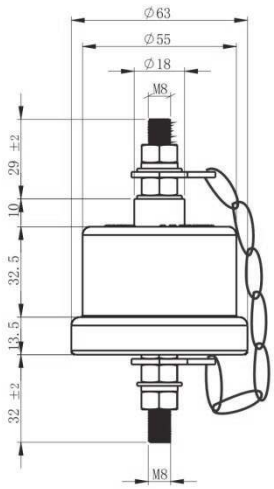
TPLA40/...F

▪ With Disconnector ▪ Overhead Line ▪ I_{max} 40kA

- Used to protect the terminal equipment/ overhead cable against the effects of overvoltages, which can be installed on overhead lines from low voltage bushing insulator of transformer to point of entry of power line into the building.
- High discharge capacity due to heavy-duty metal oxide varistors (MOV)
- Integrated thermal disconnector to be fail-safe and self-protected in case of overloading
- Fault indication
- Fire retardant and UV resistant housing, suitable for indoor and outdoor use
- Easy installation
- Comply with EN/IEC61643-11, UL 1449 4th, IEEE C62.41, CSA C22.2

Part No.		TPLA40 /150F	TPLA40 /175F	TPLA40 /280F	TPLA40 /300F	TPLA40 /320F	TPLA40 /385F	TPLA40 /420F	TPLA40 /440F
Accordance to		IEC61643-11:2011							
Disconnector		Integrated thermal disconnector							
Rated Power Frequency		48 - 62 Hz							
Max. Continuous Operating Voltage (AC/DC)	U_c	150V / 200V	175V / 225V	280V / 355V	300V / 385V	320V / 420V	385V / 505V	420V / 560V	440V / 590V
Nominal Discharge Current (8/20μs)	I_n	20kA							
Max. Discharge Current (8/20μs)	I_{max}	40kA							
Voltage Protection Level @I_n	U_p	≤0.8kV	≤0.8kV	≤1.3kV	≤1.4kV	≤1.5kV	≤1.8kV	≤2.0kV	≤2.2kV
Response Time		≤25ns							
Operating Temperature Range		- 40°C ~ + 70°C							
Enclosure Material		Thermoplastic; extinguishing degree UL94 V-0							
Electric Strength		≥2500V (AC)							
Mounting		Hanging-mount							

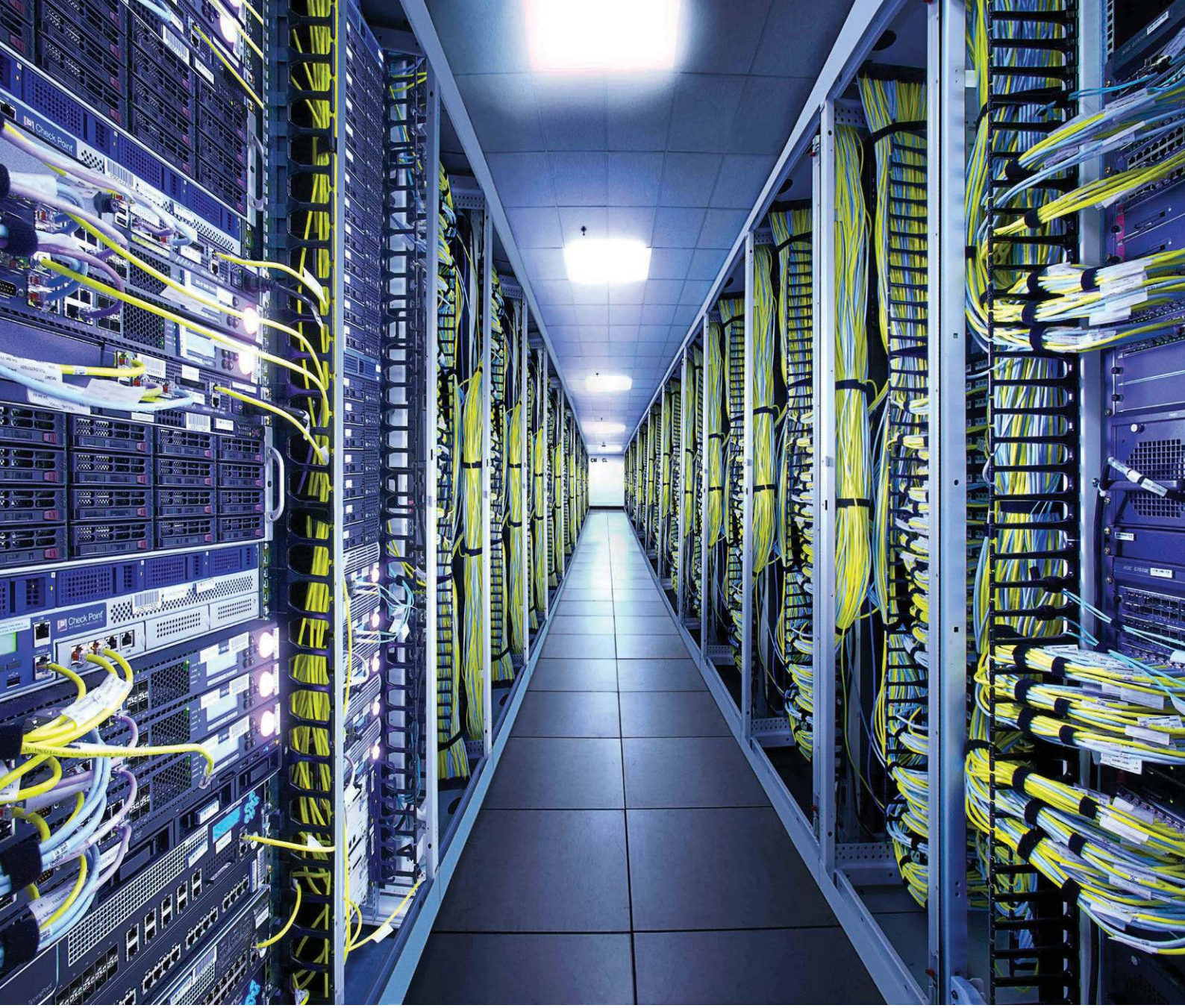
Dimension Drawing



Disconnector Indication

Normal operating condition

Failed- arrester disconnected



SPD for Information System

Modular Protector for 1-Pair Line

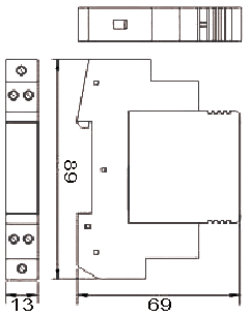
DM-…/B0

▪ Pluggable ▪ D1/C1/C2/C3

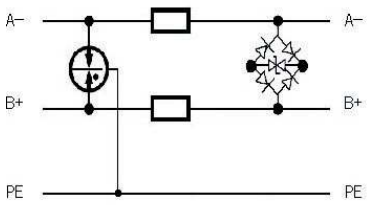
- SPD for universal balanced (symmetrical) 1-pair/2 data lines, such as data, signal or communication system protection.
- 13mm pluggable surge protector for DIN mounting;
- Signal transmission is not interrupted when exchanging module
- Two-stage protection circuit. Limit the transients with gas discharge tubes and transzorb diodes;
- Earth possible on DIN rail
- Suitable to use for 20mA current loop, analog telephone line, TTL, and measurement system etc.
- Comply with UL497b, IEC61643-21

Model			DM-05/B0	DM-12/B0	DM-24/B0	DM-48/B0
Lines Protected			1-Pair / 2 wires			
Accordance to			UL497b, IEC61643-21			
Category IEC/EN			D1/C1/C2/C3			
Nominal Voltage (Vdc)		U_n	5V	12V	24V	48V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	6V / 5V	15V /12V	28V /24V	60V /48V
C2 Nominal Discharge Current (8/20μs)		I_n	5kA			
C2 Total nominal Discharge Current (8/20μs)			10kA			
Lightning Impulse Current (10/350μs)		I_{imp}	1.0kA			
Voltage Protection Level	@C2 (8/20μs)	U_p	≤30V(L-L); ≤500V(L-G)	≤45V(L-L) ≤500V(L-G)	≤55V(L-L) ≤500V(L-G)	≤190V(L-L); ≤500V(L-G)
	@C3 (1kV/μs)	U_p	≤24V(L-L); ≤600V(L-G)	≤38V(L-L); ≤600V(L-G)	≤48V(L-L); ≤600V(L-G)	≤145V(L-L); ≤600V(L-G)
Rated Load Current		I_L	500mA			
Cut-off Frequency		fG	>20 MHz			
Series Impedance per line		R	2.2 Ω			
Response Time		t_A	≤1ns			
Type of Connection IN/OUT			screw terminal			
Cross-Section of Connection Wire			0.08mm² ~ 4mm² solid / 2.5mm² flexible			
Earthing via			Base to DIN rail			
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material			thermoplastic; extinguishing degree UL94 V-0			
Location Category			Indoor			
Degree of Protection			IP20			
Dimensions (mm)			89 X 13 X 69			
Operating Temperature Range			-40°C ~ + 80°C			

Dimension Drawing



Basic Circuit Diagram



Modular Protector for 1- Pair+Shielded Line

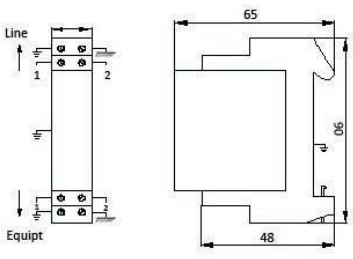
DM-…/C0

▪ Pluggable ▪ D1/C1/C2/C3

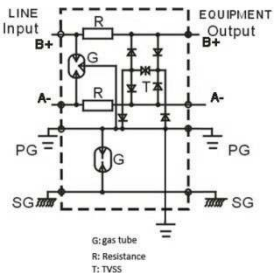
- SPD for universal 1-pair data lines with shielded, such as data, signal or communication system protection.
- 13mm pluggable surge protector for DIN mounting;
- Signal transmission is not interrupted when exchanging module
- Two-stage protection circuit. Limit the transients with gas discharge tubes and transzorb diodes
- Earth possible on DIN rail
- Suitable to use for 20mA current loop, analog telephone line, high-frequency bus and transmission systems, RS 232, RS 485, RS422(V11), field-Bus etc.,
- Comply with UL497b, IEC61643-21

Model			DM-05/C0	DM-12/C0	DM-24/C0	DM-48/C0
Lines Protected			1-Pair / 2 wires +shield			
Accordance to			UL497b, IEC61643-21			
Category IEC/EN			D1/C1/C2/C3			
Nominal Voltage (Vdc)		U_n	5V	12V	24V	48V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	8V / 6V	15V / 12V	28V / 24V	54V / 38V
C2 Nominal Discharge Current (8/20μs)		I_n	5kA			
C2 Total nominal Discharge Current(8/20μs)			10kA			
Lightning Impulse Current (10/350μs)		I_{imp}	1.0kA			
Voltage Protection Level	@C2 (8/20μs)	U_p	≤30V(L-L); ≤500V(L-G)	≤45V(L-L) ≤500V(L-G)	≤55V(L-L) ≤500V(L-G)	≤100V(L-L); ≤500V(L-G)
	@C3 (1kV/μs)	U_p	≤24V(L-L); ≤600V(L-G)	≤38V(L-L); ≤600V(L-G)	≤48V(L-L); ≤600V(L-G)	≤75V(L-L); ≤600V(L-G)
Rated Load Current		I_L	500mA			
Cut-off Frequency		fG	>20 MHz			
Series Impedance per line		R	2.2 Ω			
Response Time		t_A	≤1ns			
Type of Connection IN/OUT			screw terminal			
Cross-Section of Connection Wire			0.08mm² ~ 4mm² solid / 2.5mm² flexible			
Earthing via			Base to DIN rail			
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material			thermoplastic; extinguishing degree UL94 V-0			
Location Category			Indoor			
Degree of Protection			IP20			
Dimensions (mm)			90 X 13 X 65			
Operating Temperature Range			-40°C ~ + 80°C			

Dimension Drawing



Basic Circuit Diagram



Modular Protector for 2- Pair Line

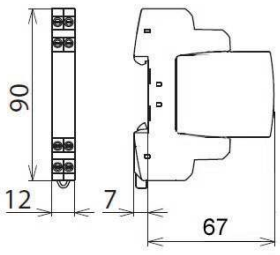
▪ Pluggable ▪ D1/C1/C2/C3

DM-…/M4N1

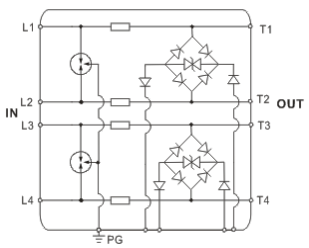
- SPD for universal 2- pair data lines, such as data, signal or communication system protection
- 12mm pluggable surge protector for DIN mounting
- Signal transmission is not interrupted when exchanging module
- Two-stage protection circuit. Limit the transients with gas discharge tubes and transzorb diodes
- Earth possible on DIN rail
- Suitable to use for 20mA current loop, analog telephone line, high-frequency bus and transmission systems, RS 232, RS 485, RS422(V11), field-Bus etc.
- Comply with UL497b, IEC61643-21

Model			DM-05/M4N1	DM-12/M4N1	DM-24/M4N1	DM-48/M4N1	DM-110/M4N1
Lines Protected			2-Pair				
Compliance			UL497b, IEC61643-21				
Category IEC/EN			D1/C1/C2/C3				
Nominal Voltage (Vdc)		U_n	5V	12V	24V	48V	110V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	6V / 4.2V	15V / 10.6V	33V / 23.3V	54V / 38.1V	170V / 120V
C2 Nominal Discharge Current (8/20μs)		I_n	10kA				
C2 Total nominal Discharge Current (8/20μs)			20kA				
Lightning Impulse Current (10/350μs)		I_{imp}	2.5kA				
Voltage Protection Level	@C2 (8/20μs)	U_p	≤30V(L-L); ≤30V(L-G)	≤45V(L-L) ≤45V(L-G)	≤55V(L-L) ≤55V(L-G)	≤100V(L-L); ≤100V(L-G)	≤300V(L-L) ≤300V(L-G)
	@C3 (1kV/μs)	U_p	≤24V(L-L); ≤24V(L-G)	≤38V(L-L); ≤38V(L-G)	≤48V(L-L); ≤48V(L-G)	≤75V(L-L); ≤75V(L-G)	≤250V(L-L) ≤250V(L-G)
Rated Load Current		I_L	500mA				
Cut-off Frequency		fG	>30 MHz				
Series Impedance per line		R	2.2 Ω				
Response Time		t_A	≤1ns				
Type of Connection IN/OUT			screw terminal				
Cross-Section of Connection Wire			0.08mm² ~ 4mm² solid / 2.5mm² flexible				
Earthing via			Base to DIN rail				
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3				
Enclosure Material			thermoplastic; extinguishing degree UL94 V-0				
Location Category			Indoor				
Degree of Protection			IP20				
Dimensions (mm)			90 X 12 X 67				
Operating Temperature Range			-40°C ~ + 80°C				

Dimension Drawing

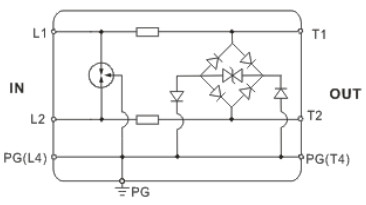


Basic Circuit Diagram

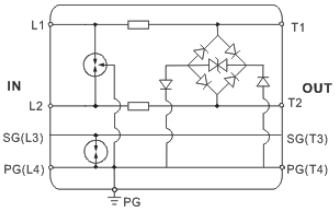


For 2-pair data line
DM-…/M4N1

Basic Circuit Diagram (more models)



For 1-pair data line
DM-…/M2N1



For 1-pair+shield data line
DM-…/M2N3

Modular Protector for 2- Pair Line

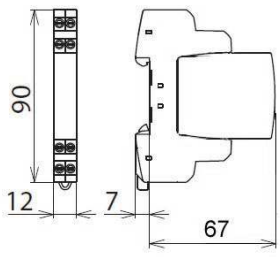
▪ Pluggable ▪ D1/C1/C2/C3

DM-…/M4N2

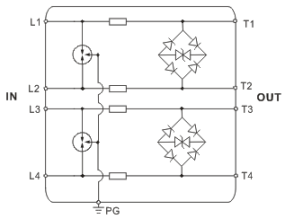
- SPD for universal balanced (symmetrical) 2- pair data lines, such as data, signal or communication system protection
- 12mm pluggable surge protector for DIN mounting;
- Signal transmission is not interrupted when exchanging module
- Two-stage protection circuit. Limit the transients with gas discharge tubes and transzorb diodes
- Earth possible on DIN rail
- Suitable to use for 20mA current loop, analog telephone line, TTL, and measurement system etc.
- Comply with UL497b, IEC61643-21

Model			DM-05/M4N2	DM-12/M4N2	DM-24/M4N2	DM-48/M4N2	DM-110/M4N2
Lines Protected			2-Pair				
Compliance			UL497b, IEC61643-21				
Category IEC/EN			D1/C1/C2/C3				
Nominal Voltage (Vdc)		U_n	5V	12V	24V	48V	110V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	6V / 4.2V	15V / 10.6V	33V / 23.3V	54V / 38.1V	170V / 120V
C2 Nominal Discharge Current (8/20μs)		I_n	10kA				
C2 Total nominal Discharge Current (8/20μs)			20kA				
Lightning Impulse Current (10/350μs)		I_{imp}	2.5kA				
Voltage Protection Level	@C2 (8/20μs)	U_p	≤30V(L-L); ≤500V(L-G)	≤45V(L-L) ≤500V(L-G)	≤55V(L-L) ≤500V(L-G)	≤100V(L-L); ≤500V(L-G)	≤300V(L-L); ≤500V(L-G)
	@C3 (1kV/μs)	U_p	≤24V(L-L); ≤600V(L-G)	≤38V(L-L); ≤600V(L-G)	≤48V(L-L); ≤600V(L-G)	≤75V(L-L); ≤600V(L-G)	≤250V(L-L); ≤600V(L-G)
Rated Load Current		I_L	500mA				
Cut-off Frequency		fG	>30 MHz				
Series Impedance per line (Ohm)		R	2.2 Ω				
Response Time		t_A	≤1ns				
Type of Connection IN/OUT			Screw terminal				
Cross-Section of Connection Wire			0.08mm² ~ 4mm² solid / 2.5mm² flexible				
Earthing via			Base to DIN rail				
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3				
Enclosure Material			thermoplastic; extinguishing degree UL94 V-0				
Location Category			Indoor				
Degree of Protection			IP20				
Dimensions (mm)			90 X 12 X 67				
Operating Temperature Range			-40°C ~ + 80°C				

Dimension Drawing

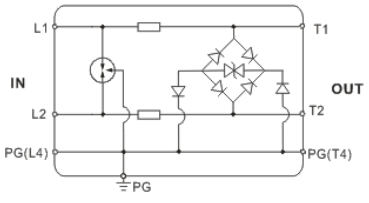


Basic Circuit Diagram

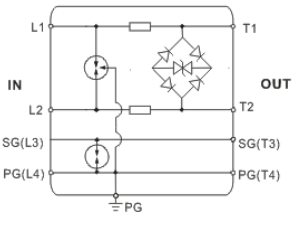


For 2-pair data line
DM-…/M4N2

Basic Circuit Diagram (more models)



For 1-pair data line
DM-…/M2N2



For 1-pair+shield data line
DM-…/M2N4

Modular Protector for 2- Pair Line

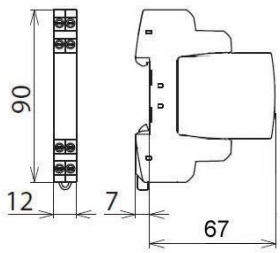
▪ Pluggable ▪ D1/C1/C2/C3

DM-…/M4N6

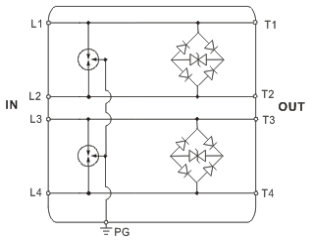
- SPD for universal balanced (symmetrical) 2 pairs floating data lines, such as data, signal or communication system protection.
- 12mm pluggable surge protector for DIN mounting;
- Signal transmission is not interrupted when exchanging module
- No series resistance, two-stage protection circuit. Limit the transients with gas discharge tubes and transzorb diodes;
- Rated load current up to 2A
- Earth possible on DIN rail
- Suitable to use for universal high bit-rate data transmission circuit or low voltage alarm circuits such as fire or security, thermocouples (PT100 devices), etc
- Comply with UL497b, IEC61643-21

Model			DM-05/M4N6	DM-12/M4N6	DM-24/M4N6	DM-48/M4N6	DM-110/M4N6
Lines Protected			2-Pair				
Compliance			UL497b, IEC61643-21				
Category IEC/EN			D1/C1/C2/C3				
Nominal Voltage (Vdc)		U_n	5V	12V	24V	48V	110V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	6V /4.2V	15V /10.6V	33V /23.3V	54V /38.1V	170V /120V
C2 Nominal Discharge Current (8/20μs)		I_n	10kA				
C2 Total nominal Discharge Current (8/20μs)			20kA				
Lightning Impulse Current (10/350μs)		I_{imp}	2.5kA				
Voltage Protection Level	@C2 (8/20μs)	U_p	≤30V(L-L); ≤500V(L-G)	≤45V(L-L) ≤500V(L-G)	≤55V(L-L) ≤500V(L-G)	≤100V(L-L); ≤500V(L-G)	≤300V(L-L); ≤500V(L-G)
	@C3 (1kV/μs)	U_p	≤24V(L-L); ≤600V(L-G)	≤38V(L-L); ≤600V(L-G)	≤48V(L-L); ≤600V(L-G)	≤75V(L-L); ≤600V(L-G)	≤250V(L-L); ≤600V(L-G)
Rated Load Current		I_L	2000mA				
Cut-off Frequency		fG	>30 MHz				
Series Impedance per line		R	0 Ω				
Response Time		t_A	≤1ns				
Type of Connection IN/OUT			Screw terminal				
Cross-Section of Connection Wire			0.08mm² ~ 4mm² solid / 2.5mm² flexible				
Earthing via			Base to DIN rail				
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3				
Enclosure Material			thermoplastic; extinguishing degree UL94 V-0				
Location Category			Indoor				
Degree of Protection			IP20				
Dimensions (mm)			90 X 12 X 67				
Operating Temperature Range			-40°C ~ + 80°C				

■ **Dimension Drawing**

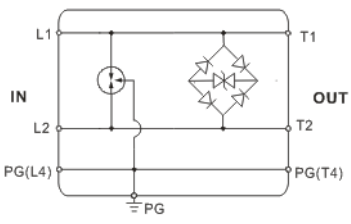


■ **Basic Circuit Diagram**



For 2-pair data line
DM-…/M4N6

■ **Basic Circuit Diagram (more models)**



For 1-pair data line
DM-…/M2N6

Modular Protector for 2- Pair Line

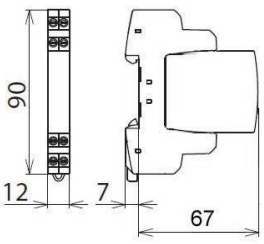
▪ Fault Indication ▪ Pluggable ▪ D1/C1/C2/C3

DM-…/M4N7

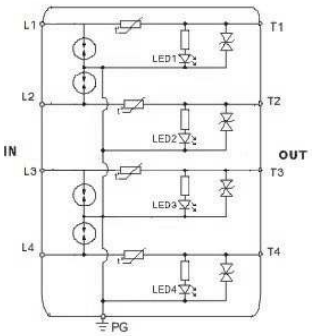
- SPD for switching value signal, sensor, digital I/O, or analog power system protection.
- 12mm pluggable surge protector for DIN mounting;
- Signal transmission is not interrupted when exchanging module
- Two-stage protection circuit. Limit the transients with gas discharge tubes and transzorb diodes
- Comprising a PTC for over-current fault and short-circuit fault protection.
- LED failure indication to replace timely.
- Earth possible on DIN rail
- Comply with UL497b, IEC61643-21

Model			DM-05/M4N7	DM-12/M4N7	DM-24/M4N7	DM-48/M4N7
Lines Protected			2-Pair			
Compliance			UL497b, IEC61643-21			
Category IEC/EN			D1/C1/C2/C3			
Nominal Voltage (Vdc)		U_n	5V	12V	24V	48V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	6V /4.2V	15V /10.6V	33V /23.3V	54V /38.1V
C2 Nominal Discharge Current (8/20μs)		I_n	10kA			
C2 Total nominal Discharge Current (8/20μs)			20kA			
Lightning Impulse Current (10/350μs)		I_{imp}	2.5kA			
Voltage Protection Level	@C2 (8/20μs)	U_p	≤30V(L-L); ≤500V(L-G)	≤45V(L-L) ≤500V(L-G)	≤55V(L-L) ≤500V(L-G)	≤100V(L-L); ≤500V(L-G)
	@C3 (1kV/μs)	U_p	≤24V(L-L); ≤600V(L-G)	≤38V(L-L); ≤600V(L-G)	≤48V(L-L); ≤600V(L-G)	≤75V(L-L); ≤600V(L-G)
Rated Load Current		I_L	500mA			
Cut-off Frequency		fG	>2 MHz			
Series Impedance per line		R	0.5 Ω (PTC)			
Response Time		t_A	≤1ns			
Type of Connection IN/OUT			Screw terminal			
Cross-Section of Connection Wire			0.08mm² ~ 4mm² solid / 2.5mm² flexible			
Earthing via			Base to DIN rail			
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material			thermoplastic; extinguishing degree UL94 V-0			
Location Category			Indoor			
Degree of Protection			IP20			
Dimensions (mm)			90 X 12 X 67			
Operating Temperature Range			-40°C ~ + 80°C			

■ Dimension Drawing

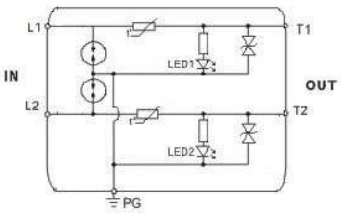


■ Basic Circuit Diagram



For 2-pair data line
DM-…/M4N7

■ Basic Circuit Diagram (more models)



For 1-pair data line
DM-…/M2N7

Terminal Block Protector for 1- Pair Line

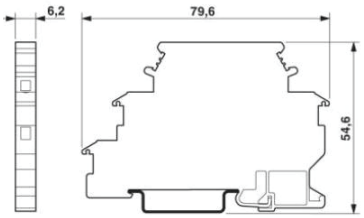
▪ 1 Pair Line ▪ D1/C1/C2/C3

DM-.../S2

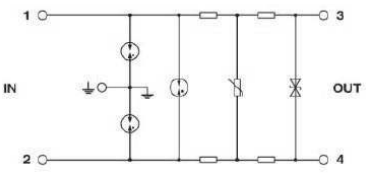
- Terminal block SPD for universal balanced (symmetrical) 1 pair floating signal lines, such as data, signal or communication system protection.
- 6.2mm compact protector for DIN-rail mounting
- Three-stage protection circuit. Limit the transients with gas discharge tubes and transzorb diodes
- Earth possible on DIN rail
- Suitable to use for analog telephone line, TTL, and measuring, controlling system etc.
- Comply with UL497b, IEC61643-21

Model			DM-12/S2	DM-24/S2	DM-48/S2	DM-110/S2
Lines Protected			1-Pair			
Compliance			UL497b, IEC61643-21			
Category IEC/EN			D1/C1/C2/C3			
Nominal Voltage (Vdc)		U_n	12V	24V	48V	110V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	14V / 9.5V	33V / 23V	55V / 38.5V	170V / 120V
C2 Nominal Discharge Current (8/20μs)		I_n	5kA			
C2 Total nominal Discharge Current (8/20μs)			10kA			
Lightning Impulse Current (10/350μs)		I_{imp}	1kA			
Voltage Protection Level	@C2 (8/20μs)	U_p	≤25V(L-L) ≤750V(L-G)	≤50V(L-L) ≤750V(L-G)	≤100V(L-L); ≤750V(L-G)	≤260V(L-L); ≤750V(L-G)
	@C3 (1kV/μs)	U_p	≤19V(L-L); ≤650V(L-G)	≤45V(L-L); ≤650V(L-G)	≤70V(L-L); ≤650V(L-G)	≤230V(L-L); ≤650V(L-G)
Rated Load Current		I_L	500mA			
Cut-off Frequency		fG	>2.5MHz	>6 MHz	>10 MHz	>16 MHz
Series Impedance per line		R	4Ω			
Response Time		t_A	≤1ns			
Type of Connection IN/OUT			screw terminal			
Cross-Section of Connection Wire			0.08mm^2 ~ 4mm^2 solid / 2.5mm^2 flexible			
Earthing via			Base to DIN rail			
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3			
Enclosure Material			thermoplastic; extinguishing degree UL94 V-0			
Location Category			Indoor			
Degree of Protection			IP20			
Dimensions (mm)			80 X 6.2 X 55			
Operating Temperature Range			-40°C ~ + 80°C			

Dimension Drawing



Basic Circuit Diagram



Terminal Block Protector for 2- Pair Line

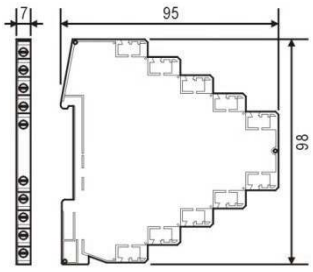
▪ 2 Pair Line ▪ D1/C1/C2/C3

DM-.../S4

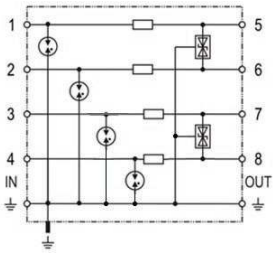
- Terminal block SPD for universal 2 pairs or four floating signal lines, such as data, signal or communication system protection
- 7 mm compact protector for DIN-rail mounting
- Two-stage protection circuit. Limit the transients with gas discharge tubes and transzorb diodes
- Earth possible on DIN rail
- Suitable to use for analog telephone line, high-frequency bus and transmission systems, RS232, RS485, RS422(V11), field-Bus etc.
- Comply with UL497b, IEC61643-21

Model			DM-05/S4	DM-12/S4	DM-24/S4	DM-48/S4	DM-110/S4
Lines Protected			2-Pair				
Compliance			UL497b, IEC61643-21				
Category IEC/EN			D1/C1/C2/C3				
Nominal Voltage (Vdc)		U_n	5V	12V	24V	48V	110V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	6V / 4.2V	14V / 9.5V	33V / 23V	54V / 38V	170V / 120V
C2 Nominal Discharge Current (8/20μs)		I_n	5kA				
C2 Total nominal Discharge Current (8/20μs)			10kA				
Lightning Impulse Current (10/350μs)		I_{imp}	1kA				
Voltage Protection Level	@C2 (8/20μs)	U_p	≤26V(L-L) ≤26V(L-G)	≤40V(L-L) ≤40V(L-G)	≤55V(L-L) ≤55V(L-G)	≤100V(L-L); ≤100V(L-G)	≤400V(L-L); ≤400V(L-G)
	@C3 (1kV/μs)	U_p	≤11V(L-L); ≤11V(L-G)	≤25V(L-L); ≤25V(L-G)	≤48V(L-L); ≤48V(L-G)	≤75V(L-L); ≤75V(L-G)	≤350V(L-L); ≤350V(L-G)
Rated Load Current		I_L	500mA				
Cut-off Frequency		fG	100MHz				
Series Impedance per line (Ohm)		R	1Ω				
Response Time		t_A	≤1ns				
Type of Connection IN/OUT			screw terminal				
Cross-Section of Connection Wire			$0.08mm^2$ ~ $4mm^2$ solid / $2.5mm^2$ flexible				
Earthing via			Base to DIN rail				
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3				
Enclosure Material			thermoplastic; extinguishing degree UL94 V-0				
Location Category			Indoor				
Degree of Protection			IP20				
Dimensions (mm)			98 X 7 X 95				
Operating Temperature Range			-40°C ~ + 80°C				

Dimension Drawing



Basic Circuit Diagram



CAT6 Ethernet Protector

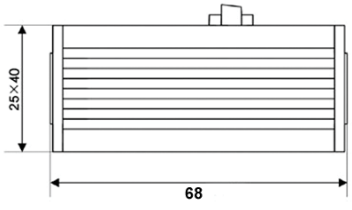
▪ CAT6 ▪ RJ45 ▪ D1/C1/C2/C3

D-05/RJ45-CAT6/H

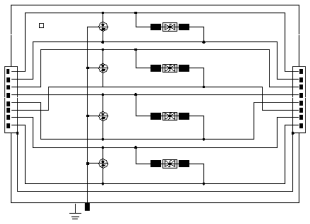
- SPD for Gigabit Ethernet /Local Area Network (LAN) protection
- Fulfill the requirement of CAT5/5e & CAT6 network
- RJ45 connector for simple installation, 8 wires protection
- Two-stage protection circuit, limit the transients with gas discharge tubes and transzorb diodes
- Din rail type is available
- Comply with UL497b, EN50173 Category 6, IEC61643-21

Model			D-05/RJ45-CAT6/H
Lines Protected			All four pairs
Compliance			UL497b, EN50173 Category 6, IEC61643-21
Category IEC/EN			D1/C1/C2/C3
Nominal Voltage (Vdc)		U_n	05V
Max. Continuous Operating Voltage (Vdc)		U_c	06V
C2 Nominal Discharge Current (8/20μs)		I_n	2.5kA
C2 Total nominal Discharge Current (8/20μs)		I_{total}	10kA
Lightning Impulse Current (10/350μs)		I_{imp}	0.5kA
Voltage Protection Level	@C2 (8/20μs)	U_p	≤55V
	@C3 (1kV/μs)	U_p	≤25V
Rated Load Current		I_L	200mA
Transmission Speed			1000Mbps
Response Time		t_A	≤1ns
Cut-off Frequency		fG	250MHz
Insertion Loss at 250MHz			≤3.0dB
Ttransmission Standards			100BaseT / 1000BaseT / 1000BaseTX, CAT5/CAT6
Type of Connection IN/OUT			RJ45 (shielded) Female/ Female
Pinning			1/2, 3/6, 4/5, 7/8
Earthing via			Earth wire
Enclosure Material			Aluminium
Mounting			35mm DIN-rail in accordance with EN 50022/DIN46277-3 (Optional for din rail type)
Location Category			Indoor
Degree of Protection			IP30
Dimensions (mm)			66 X 40 X 25
Operating Temperature Range			-40°C ~ + 80°C

Dimension Drawing



Basic Circuit Diagram



CAT6/PoE Ethernet Protector

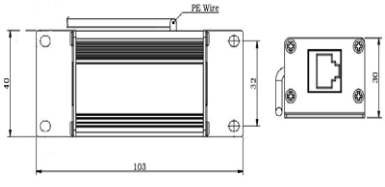
▪ CAT6 POE ▪ RJ45 ▪ D1/C1/C2/C3

D-48/RJ45-CAT6/H(POE)-B

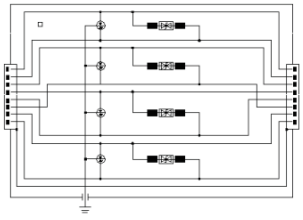
- SPD for Gigabit Ethernet / Local Area Network (LAN) protection
- Fulfill the requirement of PoE (Power over Ethernet), CAT5/5e & CAT6 network
- U_n rated to 48V, universal industrial Ethernet compatible
- RJ45 connector for simple installation, 8 wires protection.
- Two-stage protection circuit, limit the transients with gas discharge tubes and transzorb diodes;
- Din rail type is available
- Comply with IEEE 802.3at/af, UL497b, EN50173 Category 6, IEC61643-21

Model			D-48/RJ45-CAT6/H(POE)-B
Lines Protected			All four pairs
Compliance			IEEE802.3at/af, UL497b, EN50173 Category 6, IEC61643-21
Category IEC/EN			D1/C1/C2/C3
Nominal Voltage (Vdc)		U_n	48V
Max. Continuous Operating Voltage (Vdc)		U_c	68V
C2 Nominal Discharge Current (8/20μs)		I_n	2.5kA
C2 Total nominal Discharge Current (8/20μs)			10kA
Lightning Impulse Current (10/350μs)		I_{imp}	0.5kA
Voltage Protection Level	@C2 (8/20μs)	U_p	≤190V(L-L); ≤500V(L-G)
	@C3 (1kV/μs)	U_p	≤145V(L-L); ≤600V(L-G)
Rated Load Current		I_L	800mA
Transmission Speed			1000Mbps
Response Time		t_A	≤1ns
Cut-off Frequency		fG	250MHz
Insertion Loss at 250MHz			≤0.1dB
Ttransmission standards			100BaseT/1000BaseT /1000BaseTX, CAT5/CAT6, POE
Type of Connection IN/OUT			RJ45 (shielded) Female/ Female
Pinning			Data transmission: 1/2, 3/6, 4/5, 7/8 PoE: 1&2/ 3&6; 4&5/ 7&8
Earthing via			Earth wire
Enclosure Material			Aluminium
Mounting			Flag
Location Category			Indoor
Degree of Protection			IP30
Dimensions (mm)			103X 40 X 30
Operating Temperature Range			-40°C ~ + 80°C

Dimension Drawing



Basic Circuit Diagram



Multi-port Ethernet Protector

▪ 19" Bay ▪ Gigabit ▪ RJ45 ▪ D1/C1/C2/C3

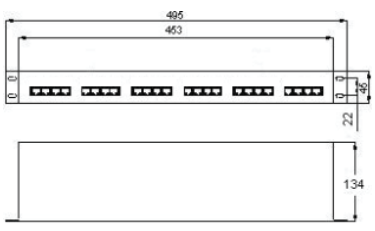
DSB05/RJ45-1000-24P

DSB48/RJ45-1000-24P (POE model)

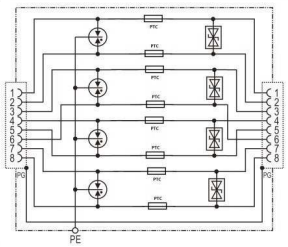
- Multiport SPD for Gigabit Ethernet / Local Area Network (LAN) protection
- Fulfill the requirement of PoE (Power over Ethernet), CAT5/5e network
- U_n rated to 48V, Universal industrial Ethernet compatible
- Comprising a PTC for over-current fault and short-circuit fault protection
- Two-stage protection circuit, Limit the transients with gas discharge tubes and transzorb diodes
- EMI Shielded Enclosure, 19" bay design, can be installed conveniently on the 19 inch's standard machine-cabinet.
- Comply with IEEE802.3af, UL497b, IEC61643-21

Model			DSB05/RJ45-1000-24P	DSB48/RJ45-1000-24P
Lines Protected			All four pairs / 24 Ports	
Compliance			IEEE802.3af, UL497b, IEC61643-21	
Category IEC/EN			D1/C1/C2/C3	
Nominal Voltage (Vdc)		U_n	5V	48V
Max. Continuous Operating Voltage (Vdc)		U_c	6V	68V
C2 Nominal Discharge Current (8/20μs)		I_n	2.5kA	
C2 Total nominal Discharge Current (8/20μs)			10kA	
Lightning Impulse Current (10/350μs)		I_{imp}	0.5kA	
Voltage Protection Level	@C2 (8/20μs)	U_p	≤30V (L-L); ≤500V (L-G)	≤190V (L-L); ≤500V (L-G)
	@C3 (1kV/μs)	U_p	≤24V (L-L); ≤600V (L-G)	≤145V (L-L); ≤600V (L-G)
Rated Load Current		I_L	150mA	750mA
Transmission Speed			1000Mbps	
Response Time		t_A	≤1ns	
Cut-off Frequency		fG	100 MHz	
Insertion Loss at 250MHz			≤0.1dB	
Series Impedance per line		R	1.6 Ω(PTC)	
Response Time		t_A	≤1ns	
Ttransmission standards			100BaseT/1000BaseT /1000BaseTX, CAT5e	100BaseT/1000BaseT /1000BaseTX, CAT5e, POE (15W)
Type of Connection IN/OUT			RJ45(shielded) Female/ Female	
Pinning			Data transmission: 1/2, 3/6, 4/5, 7/8	Data transmission: 1/2, 3/6, 4/5, 7/8; PoE: 1&2/ 3&6; 4&5/ 7&8 (15W)
Earthing via			Earth wire	
Enclosure Material			EMI Shielded Enclosure	
Mounting			19" Rack mounting	
Location Category			Indoor	
Degree of Protection			IP30	
Dimensions (mm)			495 X 134 X 45	
Operating Temperature Range			-40°C ~ + 80°C	

Dimension Drawing



Basic Circuit Diagram



Ethernet Protector

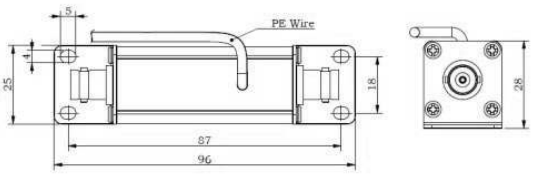
▪ BNC ▪ D1/C1/C2/C3

D-05/BNC-FF50-B

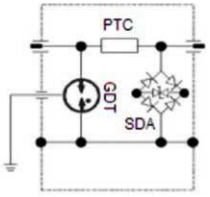
- SPD for coaxial Ethernet network systems protection
- High discharge capability, total nominal discharge current up to 20kA 8/20μs
- Two-stage protection circuit
- Limit the transient with gas discharge tubes and transzorb diodes
- Comprising a PTC for over-current and short-circuit fault protection
- Models with higher nominal voltage for protection of video signal, cameras and/ or TV system available
- Comply with UL497b, IEC61643-21

Model			D-05/BNC-FF50-B
Lines Protected			1
Compliance			UL497b, IEC61643-21
Category IEC/EN			D1/C1/C2/C3
Nominal Voltage (Vdc)		U_n	5V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	6V / 5V
C2 Nominal Discharge Current (8/20μs)		I_n	10kA
C2 Total nominal Discharge Current (8/20μs)			20kA
Lightning Impulse Current (10/350μs)		I_{imp}	1kA
Voltage Protection Level	@C2 (8/20μs)	U_p	≤30V
	@C3 (1kV/μs)	U_p	≤24V
Rated Load Current		I_L	350mA
Response Time		t_A	≤1ns
Cut-off Frequency		fG	20MHz
Insertion Loss at 250MHz			≤0.2dB
Impedance		Z	50 ohm
Type of Connection IN/OUT			BNC male/ male
Earthing via			Earth wire
Enclosure Material			Aluminium
Mounting			Flag
Location Category			Indoor
Degree of Protection			IP30
Dimensions (mm)			96X 25 X 28
Operating Temperature Range			-40°C ~ + 80°C

Dimension Drawing



Basic Circuit Diagram



RJ11 Protector

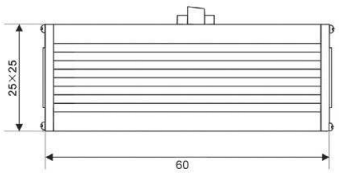
▪ RJ11 ▪ D1/C1/C2/C3

D...-RJ11-4

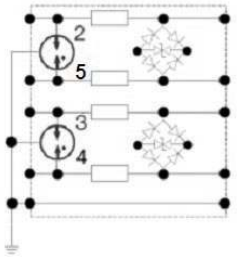
- SPD for analog telecommunication, DSL, ADLS, ISDN etc systems protection
- RJ11 connector for simple installation; 4 wires protection
- Two-stage protection circuit, Limit the transients with gas discharge tubes and transzorb diodes
- In aluminum housing;
- Comply with UL497b, IEC61643-21

Model			D-48/RJ11-4	D-110/RJ11-4
Lines Protected			All two pairs	
Compliance			UL497b, IEC61643-21	
Category IEC/EN			D1/C1/C2/C3	
Nominal Voltage (Vdc)		U_n	48V	110V
Max. Continuous Operating Voltage (Vdc/Vac)		U_c	60V / 48V	180V / 140V
C2 Nominal Discharge Current (8/20μs)		I_n	2.5kA	
C2 Total nominal Discharge Current (8/20μs)			5kA	
Lightning Impulse Current (10/350μs)		I_{imp}	0.5kA	
Voltage Protection Level	@C2 (8/20μs)	U_p	≤190V(L-L); ≤500V(L-G)	≤350V (L-L); ≤500V(L-G)
	@C3 (1kV/μs)	U_p	≤145V(L-L); ≤600V(L-G)	≤230V (L-L); ≤600V(L-G)
Rated Load Current		I_L	500mA	
Cut-off Frequency		fG	16 MHz	
Series Impedance per line		R	2.2 Ω	
Response Time		t_A	≤1ns	
Ttransmission standards			ISDN	Telephone, ADSL, VDSL
Type of Connection IN/OUT			RJ11 Female/ Female	
Pinning			2 Pairs (3/4, 2/5)	
Earthing via			Earth wire	
Enclosure Material			Aluminium	
Location Category			Indoor	
Degree of Protection			IP30	
Dimensions (mm)			60 X 25 X 40	
Operating Temperature Range			-40°C ~ + 80°C	

Dimension Drawing



Basic Circuit Diagram



SUB-D Protector

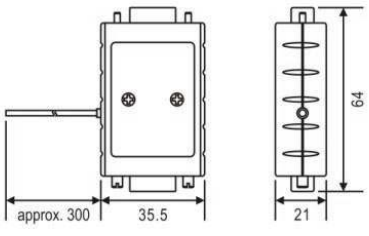
▪ 9-pin ▪ C1/C2/C3

D-12/DB9

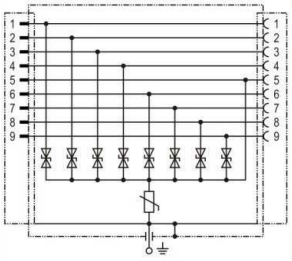
- SPD for 9-pin SUB-D signal system or terminal equipment with SUB-D plug protection
- Limit the transient with transzorb diode and varistor
- High discharge capacity,
- low voltage protection level, quick response
- UNC 4/40 threaded screws for fixing at the interface
- Suitable to use for RS485, RS422 or RS432 signal device
- Comply with UL497b, IEC61643-21

Model			D-12/DB9
Lines Protected			1 / 9-pin
Compliance			UL497b, IEC61643-21
Category IEC/EN			C1/C2/C3
Nominal Voltage (Vdc)		U_n	12V
Max. Continuous Operating Voltage (Vdc)		U_c	15V
C2 Nominal Discharge Current (8/20μs)		I_n	100A (line-SG), 100A (SG-PG)
C2 Max. Discharge Current (8/20μs)		I_{max}	200A (line-SG), 200A (SG-PG)
Voltage Protection Level	@C2 (8/20μs)	U_p	≤24V (line-SG), ≤200V (SG-PG)
	@C3 (1kV/μs)	U_p	≤21V (line-SG), ≤90V (SG-PG)
Response Time		t_A	≤1ns
Cut-off Frequency		fG	>10MHz
Max. Data Transmission Rates		Vs	>1Mbits/s
Pining			9 pins
Protected lines			Line: 1/2/3/4/6/7/8/9, SG: 5
Connection (input/output)			SUB-D, socket/plug, 9 pins
Earthing via			Earth wire1.5mm^2×300mm
Enclosure Material			Plastic, metalized
Mounting			SUB-D, 2 threaded screws UNC 4/40
Location Category			Indoor
Degree of Protection			IP20
Dimensions (mm)			66×35.5×21
Operating Temperature Range			-40°C ~ + 80°C

■ Dimension Drawing



■ Basic Circuit Diagram



SUB-D Protector

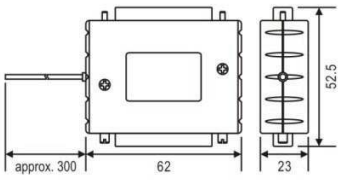
▪ 25-pin ▪ C1/C2/C3

D-12/DB25

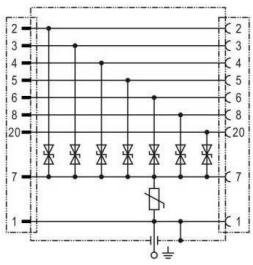
- SPD for 25-pin SUB-D signal system or terminal equipment with SUB-D plug protection
- Limit the transient with transzorb diode and varistor
- High discharge capacity,
- low voltage protection level, quick response
- UNC 4/40 threaded screws for fixing at the interface
- Suitable to use for RS485, RS422 or RS432 signal device
- Comply with UL497b, IEC61643-21

Model			D-12/DB25
Lines Protected			1 / 25-pin
Compliance			UL497b, IEC61643-21
Category IEC/EN			C1/C2/C3
Nominal Voltage (Vdc)		U_n	12V
Max. Continuous Operating Voltage (Vdc)		U_c	15V
C2 Nominal Discharge Current (8/20μs)		I_n	100A (line-SG), 100A (SG-PG)
C2 Max. Discharge Current (8/20μs)		I_{max}	200A (line-SG), 200A (SG-PG)
Voltage Protection Level	@C2 (8/20μs)	U_p	≤24V (line-SG), ≤200V (SG-PG),
	@C3 (1kV/μs)	U_p	≤21V (line-SG), ≤90V (SG-PG),
Response Time		t_A	≤1ns
Cut-off Frequency		fG	>10MHz
Max. Data Transmission Rates		Vs	>1Mbits/s
Pining			25 pins
Protected lines			Line: 2/3/4/5/6/8/20, SG: 7
Connection (input/output)			SUB-D, socket/plug, 25 pins
Earthing via			Earth wire1.5mm^2×300mm
Enclosure Material			Plastic, metalized
Mounting			SUB-D, 2 threaded screws UNC 4/40
Location Category			Indoor
Degree of Protection			IP20
Dimensions (mm)			62×25.5×23
Operating Temperature Range			-40°C ~ + 80°C

Dimension Drawing



Basic Circuit Diagram



Plug-in Protector

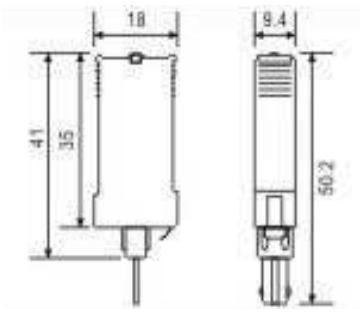
▪ LSA ▪ D1/C1/C2/C3 ▪ 1-Pair

LSA-PLUS Protector

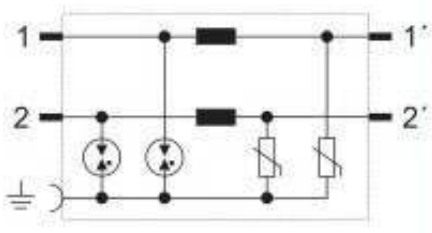
- SPD for telephone line or measurement and control system protection
- Based on the LSA-PLUS wiring technology, easy for installation.
- Providing surge voltage protection for one pair of conductors or two single conductors.
- High discharge capability, total nominal discharge current 10kA 8/20 and Lightning current up to 1kA 10/350μs
- Two-stage protection circuit.
- Comply with UL497b, IEC61643-21

Model		LSA P12L	LSA P60L	LSA P110L
Lines Protected		1 pair		
Accordance to		IEC61643-21, UL497b		
Category IEC/EN		D1/C1/C2/C3		
Nominal Voltage (Vdc)	U_n	12V	60V	110V
Max. Continuous Operating Voltage (Vdc/Vac)	U_c	14V / 9.9V	100V / 70.5V	180V / 126.5V
C2 Nominal Discharge Current (8/20μs)	I_n	5kA		
C2 Total nominal Discharge Current(8/20μs)		10kA		
Lightning Impulse Current (10/350μs)	I_{imp}	1kA		
Voltage Protection Level @C3 (1kV/μs) L-PG	U_p	≤25V	≤200V	≤300V
Rated Load Current	I_L	360mA		
Cut-off Frequency	fG	0.14MHz	0.14MHz	0.14MHz
Capacitance	C	≤3nF	≤0.3nF	≤0.15 nF
Series Impedance per line (Ohm)	R	100μH+1.7Ω		
Response Time	t_A	≤1ns	≤1ns	≤25ns
Pluggable into		LSA-PLUS disconnection block		
Earthing		Earthing busbar		
Enclosure Material		Grey thermoplastic, UL94-V0		
Location Category		Indoor		
Degree of Protection		IP20		
Dimensions (mm)		50 X18X 9.4		
Operating Temperature Range		-40°C ~ + 80°C		

Dimension Drawing



Basic Circuit Diagram



Plug-in Protector

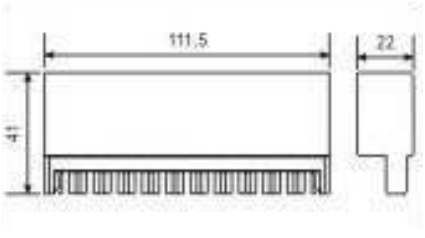
▪ LSA ▪ D1/C1/C2/C3 ▪ 10-Pairs

LSA-PLUS Protector

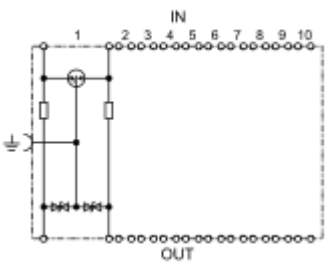
- SPD for telephone line, ADSL, ISDN, VDSL protection
- Based on the LSA-PLUS wiring technology, easy for installation
- Providing surge voltage protection for10 pairs of conductors
- High discharge capability, total nominal discharge current 10kA 8/20μs and Lightning current up to 1kA 10/350μs
- Two-stage protection circuit
- Comply with UL497b, IEC61643-21

Model		LSA P12L	LSA P60L	LSA P110L
Lines Protected		10 pairs		
Accordance to		IEC61643-21, UL497b		
Category IEC/EN		D1/C1/C2/C3		
Nominal Voltage (Vdc)	U_n	12V	60V	110V
Max. Continuous Operating Voltage (Vdc/Vac)	U_c	14V / 9.9V	100V / 70.5V	180V / 126.5V
C2 Nominal Discharge Current (8/20μs)	I_n	5kA		
C2 Total nominal Discharge Current (8/20μs)		10kA		
Lightning Impulse Current (10/350μs)	I_{imp}	1kA		
Voltage Protection Level @C3 (1kV/μs) L-PG	U_p	≤25V	≤200V	≤300V
Rated Load Current	I_L	360mA		
Cut-off Frequency	fG	0.14MHz	0.14MHz	0.14MHz
Capacitance	C	≤3nF	≤0.3nF	≤0.15 nF
Series Impedance per line (Ohm)	R	100μH+1.7Ω		
Response Time	t_A	≤1ns	≤1ns	≤25ns
Pluggable into		LSA-PLUS disconnection block		
Earthing		Earthing busbar		
Enclosure Material		Grey thermoplastic, UL94-V0		
Location Category		Indoor		
Degree of Protection		IP20		
Dimensions (mm)		50 X18X 9.4		
Operating Temperature Range		-40°C ~ + 80°C		

Dimension Drawing



Basic Circuit Diagram



Coaxial Protector

▪ 3G Hz ▪ RF Antenna ▪ D1/C1/C2/C3

CT/...

1. BNC Socket

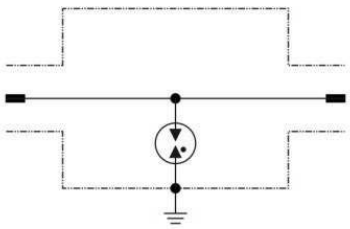
2. N Socket

3. F Socket

- SPD for coaxial systems, RF antenna system etc. protection.
- High discharge capability, nominal discharge current up to 10kA 8/20;
- Limit the transient with GDT
- High discharge capacity, low voltage protection level, quick response
- In metal housing, with BNC/N/F socket/plug are available.
- Wide frequency range 0 ~ 3000MHz
- Comply with UL497c, IEC61643-21

Model			CT/90-B/MF	CT/90-N2.4/MF	CT/60-F/MF
Lines Protected			1		
Compliance			UL497C, IEC61643-21		
Category IEC/EN			D1/C1/C2/C3		
Max. Continuous Operating Voltage (Vdc)		U_c	90V	90V	60V
C2 Nominal Discharge Current (8/20μs)		I_n	10kA		
C2 Total nominal Discharge Current (8/20μs)			20kA		
Lightning Impulse Current (10/350μs)		I_{imp}	1kA		
Voltage Protection Level	@C2 (8/20μs)	U_p	≤700V	≤700V	≤600V
Rated Load Current		I_L	3.5A	3.5A	2A
Response Time		t_A	≤100ns		
Cut-off Frequency		fG	3000 MHz	2400Mhz	3000Mhz
Insertion Loss		aE	≤0.2dB	≤0.2dB	≤0.2dB
Return loss		aR	≥ 20dB	≥ 20dB	≥ 18dB
Impedance		Z	50 ohms	75 ohms	75 ohms
Type of Connection IN/OUT			BNC socket F/ M	N socket F/ M	F socket F/ M
Earthing via			Earth wire		
Enclosure Material			Metal		
Mounting			Flag		
Location Category			Indoor		
Degree of Protection			IP20		
Diagram			1	2	3
Operating Temperature Range			-40°C ~ + 80°C		

Basic Circuit Diagram



Coaxial Protector

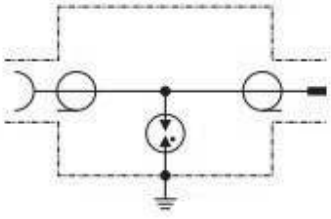
▪ 5.8G Hz ▪ RF Antenna ▪ D1/C1/C2/C3

CT/90-N5.8/FM

- SPD for coaxial systems, RF antenna system etc. protection.
- High discharge capability, nominal discharge current up to 10kA 8/20μs;
- Limit the transient with GDT
- High discharge capacity, low voltage protection level, quick response
- In metal housing, with N socket/plug.
- Wide frequency range 0 ~ 5800MHz
- Comply with UL497c, IEC61643-21

Model			CT/90-N5.8/FM
Lines Protected			1
Compliance			UL497C, IEC61643-21
Category IEC/EN			D1/C1/C2/C3
Max. Continuous Operating Voltage (Vdc)		U_c	90V
C2 Nominal Discharge Current (8/20μs)		I_n	10kA
C2 Total nominal Discharge Current (8/20μs)			20kA
Lightning Impulse Current (10/350μs)		I_{imp}	1kA
Voltage Protection Level	@C2 (8/20μs)	U_p	≤700V
Rated Load Current		I_L	3.5A
Response Time		t_A	≤100ns
Cut-off Frequency		fG	5800 MHz
Insertion Loss		aE	≤0.2dB
Return loss		aR	≥ 20dB
Impedance		Z	50 ohms
Type of Connection IN/OUT			N socket Female/ male
Earthing via			Earth wire
Enclosure Material			Metal
Mounting			Flag
Location Category			Indoor
Degree of Protection			IP20
Operating Temperature Range			-40°C ~ + 80°C

Basic Circuit Diagram



Lightning Event Counter

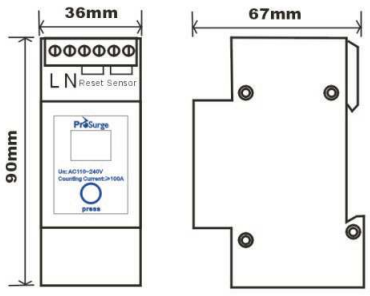
▪ DIN-rail

LEC-A

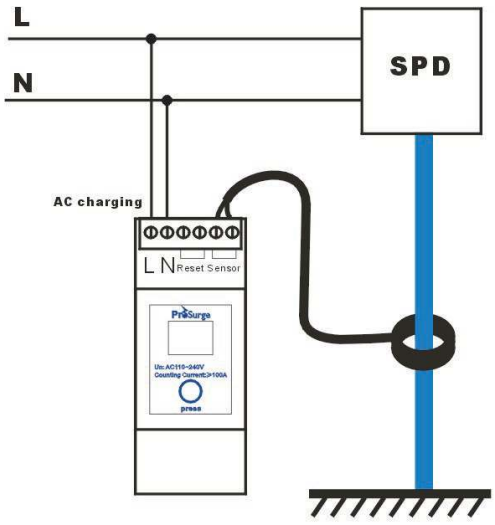
- Used for registering the lightning event
- Potential-free registration of discharge currents of surge protective device
- Sensitive response, trigger current from 100A
- Stable capability, strongly anti-jamming
- Din- rail design, easy to install and use
- Easy installation by enclosing the earth conductor of the arrester with an open toroidal core
- Voltage or current counting alternative is available
- 2 digit LCD display with setting and resetting buttons
- AC online charging to the battery

Model		LEC-A
Nominal Voltage	U_n	AC: 110~240V
Counting Current (rise time ≥8μs)	I_t	≥100A
Sequence of Impulse		<1s
Display Model		LCD
Indicator		Lightning Event 0~99
Reset		short-circuit tow terminals of "RESET"
Current Sample Mode		Inductive Probe
Working Mode		Battery service life> 3month without AC power
Mounting		35mm DIN-rail in accordance with EN 50022/DIN46277-3
Screw Torque		0.2Nm
Enclosure Material		thermoplastic; extinguishing degree UL94 V-0
Degree of Protection		IP20
Dimension (mm)		150x80.5x36mm, 2 modules, DIN 43880
Operation Temperature		-20°C ~ +60°C

Dimension Drawing



Installation Diagram



Lightning Event Counter

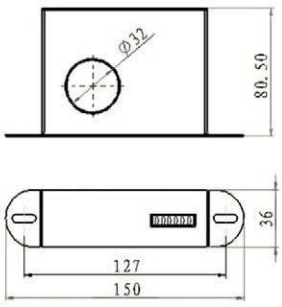
▪ IP67 ▪ No Battery Needed

LEC-D

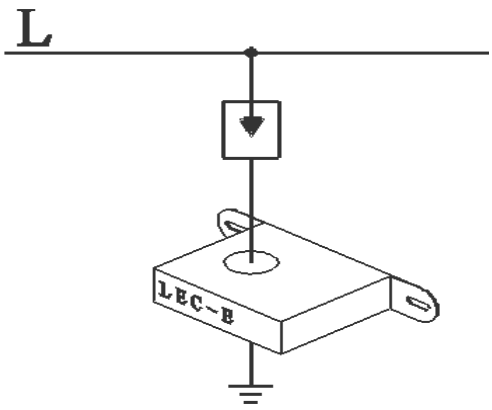
- Passive Lightning event counter is used for registering the direct lightning event
- Long service life due to no battery need
- Sensitive response with trigger current 500A
- Can register very high lightning strike up to 150kA 8/20μs
- 32mm through hole, easy to install and use, a simple insertion of the down conductor
- IP67 for out-door installation
- Mechanical count, 6 digit display

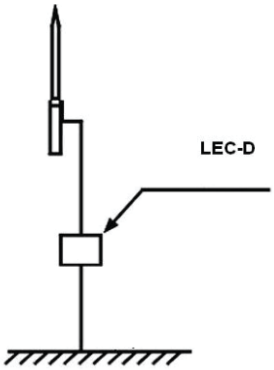
Model		LEC-D
Counting Current (rise time ≥8μs)	I_t	≥500A
Sequence of Impulse		<1s
Display Model		Electromechanical digital display
Indicator		Lightning Event 0~999999
Current Sample Mode		Built-in inductive Probe
Working Mode		No battery need
Through hole for down-lead (mm)		32
Mounting		Wall mounting
Enclosure Material		Steal
Degree of Protection		IP67
Dimension(mm)		150x80.5x36
Operation Temperature		-20°C~+60°C

Dimension Drawing



Installation





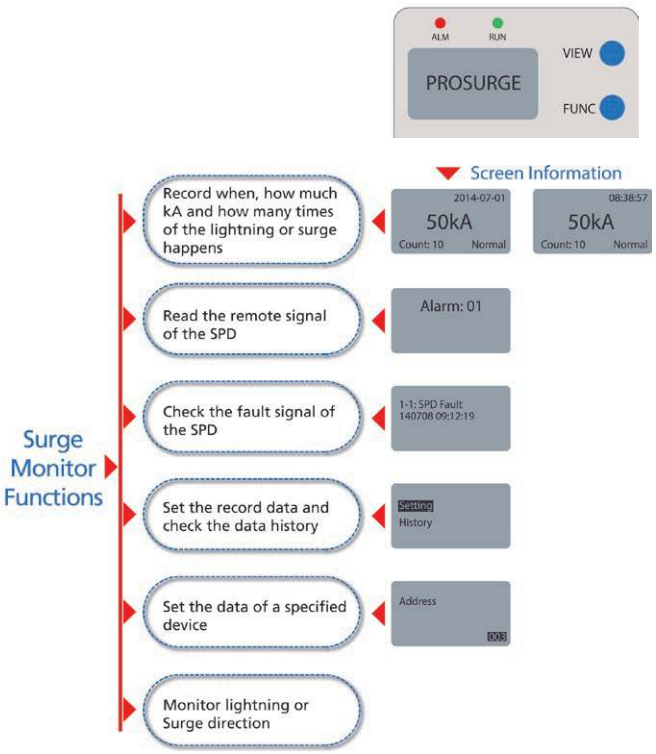
Lightning Monitoring

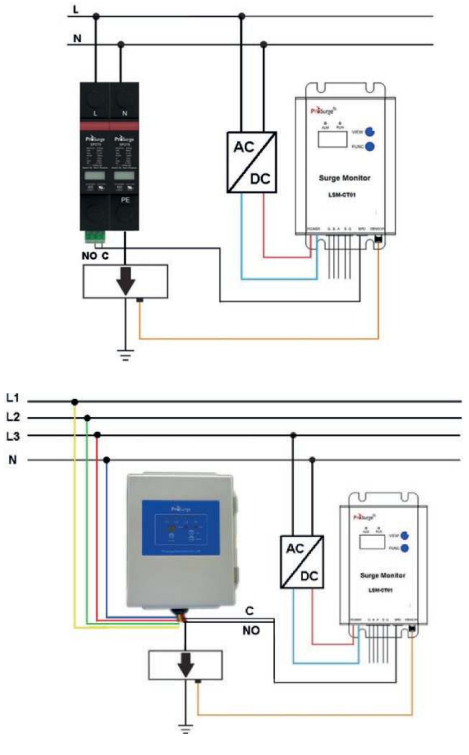
Surge Monitor

LSM-CT01

- For surge/lightning monitoring & measuring
- Registering the time, frequency, magnitude etc of the lightning/surge passing through.
- LCD display, is convenient for users to view the running state, the present alarm and historical records etc.
- Built-in RTC real-time clock, accurately record the time of each event and the alarm time.
- Lightning event recording auto-save, can save more than 100 alarm recording data of the lightning protection module and 500 lightning events recording data
- Follow the standard communication protocol ModBus RTU mode, is convenient for remote centralized monitoring
- Lightning current polarity detection, positive and negative polarity detection ability at the same time
- Threshold of current for lightning counting adjustable, the threshold can be adjusted according to actual demand

Part No.		LSM-CT01
Environment Conditions	Working Temperature	-20℃~55℃
	Working Temperature	-40℃~70℃
	Relative Humidity	5~95%RH no condensation
	Altitude	≤2000m
	Others	No conductive dust and corrosive gas, no explosion danger
Power	Rated Input Voltage	10~28Vdc (switch mode power supply not recommended)
	Overall Power Consumption	≤1W
I/V	Output Type	Voltage output
Transform Output	Output Range	0~5V (Corresponding to surge current detected 0~50kA)
Sensor Interface	Lightning Current Sensor	Range:1~50kA, Error: ±10%
	SPD Fault O/C signal	Alarm when SPD failure (dry contact closing)
Lightning Protection	Input Power	Withstand 5 times positive and negative impulse, Interval 1min, Waveform 10/700μs, Amplitude 5kV
	Communication RS485	Withstand 5 times positive and negative impulse, Interval 1min, Waveform 10/700μs, Amplitude 1kV
Mechanical Specifications	Dimension	Host: 112.4 (Length) × 82 (Width) × 32.4 (Height)
		Lightning sensor: diameter 70, thickness: 27
	Weight (kg)	≤0.5kg (net weight)
	IP Grade	IP40
Installation	Host Machine	Wall mounted, screw fixed setting
	Lightning Sensor	Wall mounted, screw fixed setting





Isolating Spark Gap

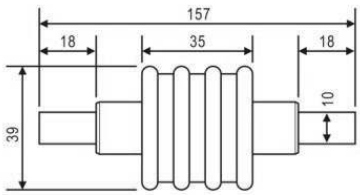
▪ 100kA 10/350 ▪ Outdoor

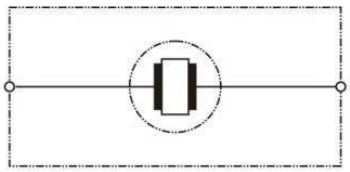
LEB100D230

- Designed for lightning equipotential bonding, especially for connection of separated earthing systems
- Up to 100kA 10/350μs lightning impulse current discharge capacity
- 10mm stainless steel terminal
- IP 65 design, for in/out door mounting.
- Extremely loadable unit
- Accessories are available for easy installation
- Comply with IEC/EN 62305, IEC61643-11, UL96A

Model		LEB100D230
In accordance with		IEC 61643-11, IEC62305
Power Frequency Withstand Voltage	U_w	≥ 230V AC
Lightning impulse current (10/350μs)	I_{imp}	100kA
Nominal Discharge Current (8/20μs)	I_n	100kA
100% Lightning Impulse Sparkover Voltage	U_{as}	≤1.5kV
Power Frequency Sparkover Voltage (50Hz)	U_{aw}	≤400V
Operating Temperature Range		-40℃~+80℃
Diameter of enclosure	D	39mm
Degree of Protection		IP65
Enclosure Material		Orange thermoplastic, UL94-V0
Connection		Rd 10 mm
Material (Connection)		Stainless Steel

Accessory for Installation





Notes

This catalogue is intended as an overview of Prosurge's surge protection devices. More detailed product information can be found at www.Prosurge.com or contact us.

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Prosurge's products are distributed in more than 60 countries worldwide via our distributors.