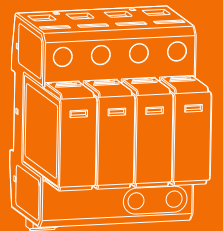




Your Partner for Safety

Surge Protection



Content

Company Profile	2
Surge Protection Concept	4
Typical Solution	9
Product Description	19

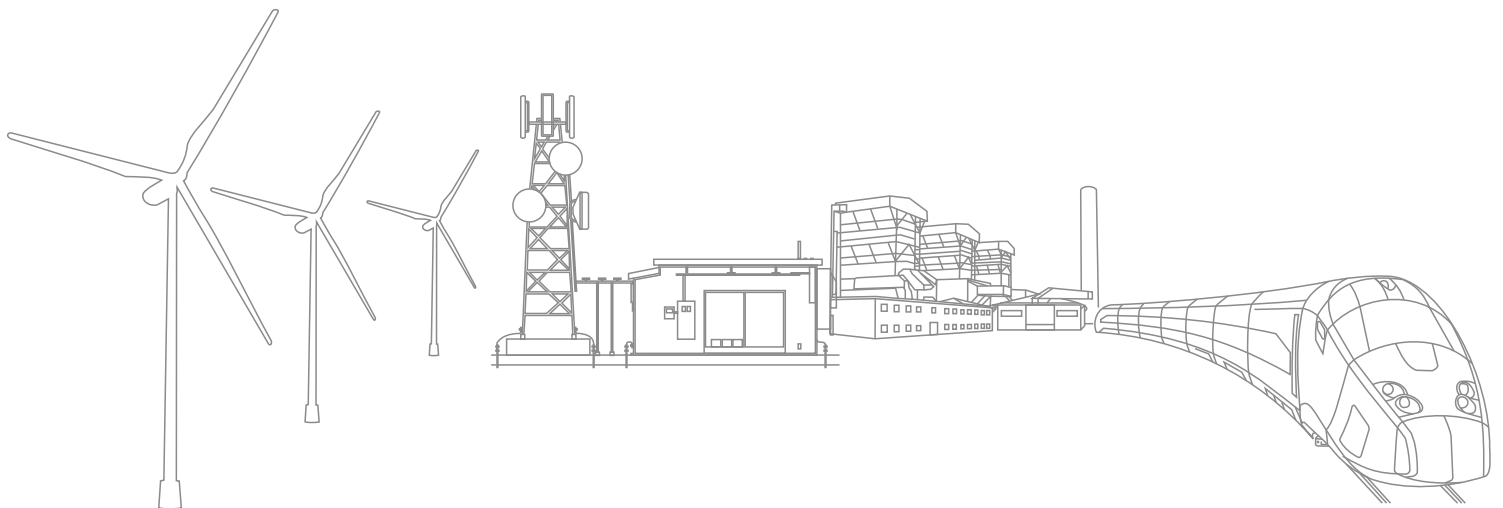
Power Supply System

Combined Lightning SPD - T1+2	21
Combined Highduty SPD - T2	27
Modular SPD - T2	31
Compact Modular SPD - T3	35
PV DC SPD	37

Information Technology System

Signal SPD	43
Coaxial RF SPD	47

Accessories	49
--------------------	----





We built up the great
professional team and
cutting-edge technology
and equipments to
successfully achieve
our mission:
To ensure your personal
and property safety.



Expertise

PTG, a group of experts with more than 20 years experiences, for surge and over voltage protection. It provides comprehensive and competitive solutions for Power, New Energy, Telecommunications, Construction, Transportation, Oil and Gas industries.

Technologies

PTG owns 40+ patents, and its world leading technology makes it honored as National High Technology Enterprise.

Product

It offers complete range of surge protection products: from direct lightning to equipment side fine protection, including power supply, data network, industrial equipment, building electric, etc. The products are qualified by third party organizations, such as TUV, KEMA, CE, CB, CSA and UL.

Quality

ISO 9001 and full functional lightning protection lab ensure the strict quality control; Semi-automation production line ensures the performance consistency.

R&D

PTG invests 10% of revenue annually into R&D, and it offers customization products and solutions.

Management

PTG uses customized ERP system to track and monitor every process from incoming to delivery, it leads to short lead time, as well as customer satisfaction.

Social Responsibility

PTG operates ISO 14001 and ISO 45001 strictly.



The background of the slide features a dramatic image of multiple bright yellow lightning bolts striking across a dark, stormy blue sky. The bolts are jagged and energetic, creating a sense of power and intensity.

Laboratory and Testing

PTG has established a world-class lightning protection laboratory in Shenzhen according to IEC and GB standards

- 8/20 μ s impulse current up to 200 kA
- 10/350 μ s impulse current up to 110 kA
- 1.2/50-8/20 μ s combined wave up to 20 kV/10 kA
- Transient overvoltage test (TOV) 1200 V/300 A
- Perfect environmental test, including high temperature and humidity, cold and hot shock, vibration, drop, salt spray, etc



Surge Protection Concept

Surge

A transient wave of electrical current, voltage, or power propagating along a line or a circuit and characterized by a rapid increase followed by a slower decrease. The causes include: directly lightning stroke, induced lightning (into the power system), start/stop of heavy duty equipment, short circuit, power switching (overvoltage or overcurrent produced by instant low impedance when starting up/turning off), and other surge sources such as: wrong wiring, power supply and equipment failure, and cable degradation. It mainly leads to acceleration of equipment aging, shorten of lifetime, equipment damage; harm the production safety and stability; interfere or damage the sensitive circuits and communication devices.

Surge Protection

Surge protection must start from potential risk evaluation and protected objective distinguish, utilizes the comprehensive/ systematical protection concept, offers protection on not only power supply, but also data and all signal transitions, and this is the only effective way to protect the power system/data network/equipment/ electrical systems. PTG takes it as its faith, prevent the harmful surge by its quality products and effective solutions.

Surge Protective Device

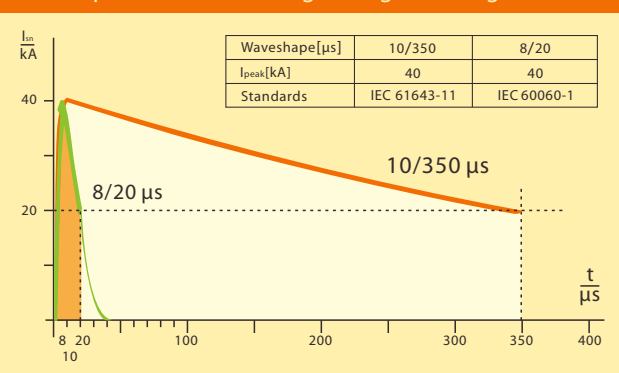
SPD is mainly used to prevent the hazards caused by harmful surge. Apart from lightning rods, grounding devices and other external protection solutions, SPD is required as internal protective device, since the external protection cannot defend induced surge, and or ground potential counterattack. Especially for the high value key IT/Power equipment in the building, SPD is necessary and critical, since their withstand ability is normally much lower than regular electrical equipment.



Surge Current

According to IEC standard, the test wave-shape of direct lightning arrester is 10/350 μ s, its impulse current parameters are as shown on the right diagram; the induced surge and its energy is much lower than the direct lightning, it is described by 8/20 μ s wave-shape.

Test Impulse Current of Lightning and Surge Arrester



Lightning Protection Zones Concept

To ensure providing the effective lightning protection solution for power supply system and IT system, we should know well the Lightning Protection Zones Concept from IEC 62305.

Protection measures such as LPS (Lightning Protection System), shielding wires, magnetic shields and SPD determine LPZ (Lightning Protection Zones).

LPZ downstream of the protection measure are characterized by significant reduction of LEMP than that upstream of the LPZ. With respect to the threat of lightning, the following LPZs are defined (see the below figures):

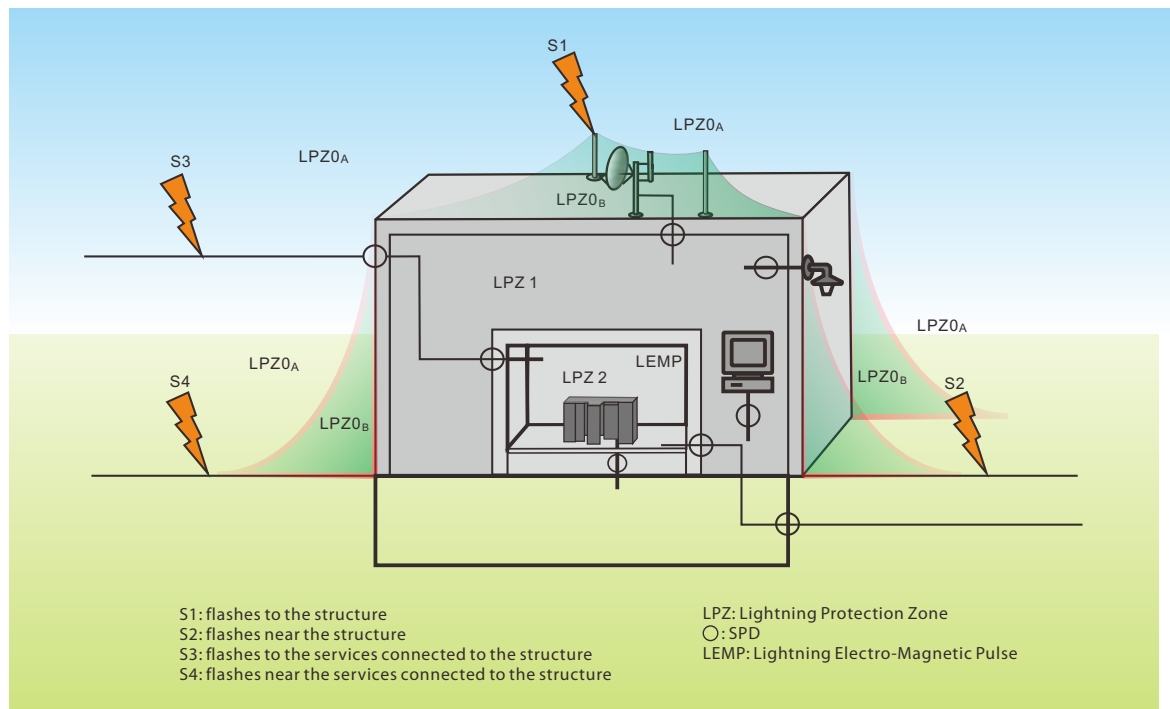
LPZ 0_A zone where the threat is due to the direct lightning flash and the full lightning electromagnetic field. The internal systems may be subjected to full or partial lightning surge current;

LPZ 0_B zone protected against direct lightning flashes but where the threat is the full lightning electromagnetic field. The internal systems may be subjected to partial lightning surge currents;

LPZ 1 zone where the surge current is limited by current sharing and by SPDs at the boundary. Spatial shielding may attenuate the lightning electromagnetic field;

LPZ 2... n zone where the surge current may be further limited by current sharing and by additional SPDs at the boundary. Additional spatial shielding may be used to further attenuate the lightning electromagnetic field.

As a general rule for protection, the object to be protected shall be in a LPZ whose electromagnetic characteristics are compatible with the capability of the object to withstand stress causing the damage to be reduced (physical damage, failure of electrical and electronic systems due to over-voltages).



The SPDs selected and their integration into the overall electrical system and IT system inside the structure shall ensure that the partial lightning current will mainly be diverted into the earthing system at the interface LPZ 0_A/LPZ 1. Once the majority of the energy of the partial lightning current has been diverted via the first SPD, the subsequent SPDs need to be designed only to cope with the remaining threat from the interface LPZ 0_A to LPZ 1 plus the induction effects from the electromagnetic field within LPZ 1 (especially if LPZ 1 has no electromagnetic shield).

Lines entering from LPZ 0_A (where direct flashes are possible) carry partial lightning currents.

At the interface LPZ 0_A to LPZ 1 therefore, SPDs tested with Iimp (Class I tested SPD) are needed to divert these currents. Lines entering from LPZ 0_B (where direct flashes are excluded but the full electromagnetic field exists), carry only induced surges. At the interface LPZ 0_B to LPZ 1 the induced effects should be simulated by means of either a surge current with a waveshape 8/20 μ s (Class II tested SPD) or an adequate combination wave test (Class III tested SPD) according to IEC 61643-1.

Technical Definitions

SPD

Surge protective Device that is intended to limit transient over-voltages and divert surge currents. It contains at least one nonlinear component.

One-port SPD

SPD connected in shunt with the circuit to be protected. A one port device may have separate input and output terminals without a specific series impedance between these terminals.

Two-port SPD

SPD with two sets of terminals, input and output. A specific series impedance is inserted between these terminals.

Combination type SPD

SPD that incorporates both voltage switching type components and voltage limiting type components may exhibit voltage switching, voltage limiting or both voltage switching and voltage limiting behavior depending upon the characteristics of the applied voltage.

Normal voltage U_N

The normal voltage stands for the normal voltage of the system to be protected. The value of the normal voltage often serves as type designation for SPD for information technology systems. It is indicated as an a.c. value for a.c. systems.

Maximum continuous operating voltage U_c

Maximum a.c. or d.c. voltage, which may be continuously applied to the SPD's mode of protection.

Normal discharge current I_n

Crest value of the current through the SPD having a current waveshape of 8/20 μ s. This is used for the classification of the SPD for class II test and also for preconditioning of the SPD for class I and II tests.

Maximum discharge current I_{max}

Crest value of a current through the SPD having an 8/20 μ s waveshape and magnitude according to the test sequence of the class II operating duty test. I_{max} is greater than I_n .

Impulse current I_{imp}

Defined by three parameters, a current peak value I_{peak} , a charge Q and a specific energy W/R .

Voltage protection level U_p

A parameter that characterizes the performance of the SPD in limiting the voltage across its terminals, which is selected from a list of preferred values. This value shall be greater than the highest value of the measured limiting voltages.

Backup fuse

Overcurrent protective device, which could be part of electrical installation located externally upstream of the SPD.

Short-circuit current rating I_{SCCR}

maximum prospective short-circuit current from the power system for which the SPD, in conjunction with the disconnector specified, is rated.

Short-circuit withstand of PV SPD I_{SCPv}

Maximum prospective short-circuit current which a PV SPD, in conjunction with its disconnection device, is able to withstand.

Temporary overvoltage test value U_T

Test voltage applied, for a specific duration, to the SPD to simulate the stress under TOV conditions.

Follow current I_f

Peak current supplied by the electrical power system and flowing through the SPD after a discharge current impulse.

Follow current interrupting rating I_{fi}

Prospective short-circuit current that an SPD is able to interrupt by itself.

Open circuit voltage U_{oc}

Open circuit voltage of the combination wave (1.2/50 μ s, 8/20 μ s) generator at the point of connection of the device under test.

Rated load current I_L

Maximum continuous rated a.c. or d.c. that can be supplied to a load connected to the protected output of an SPD.

N-PE SPD

Surge protective devices exclusively designed for installation between the N and PE conductor.

SPD disconnector

Device (internal and/or external) required for disconnecting an SPD from the power system.

1.2/50 voltage impulse

Voltage impulse with a virtual front time of 1.2 μ s and a time to half-value of 50 μ s.

8/20 current impulse

Current impulse with a virtual front time of 8 μ s and a time to half-value of 20 μ s.

10/350 current impulse

Current impulse with a virtual front time of 10 μ s and a time to half-value of 350 μ s.

Remote status indicator

Device that indicates the operational status of an SPD by a remote signaling contact.

Operating temperature range T_u

The operating temperature range indicates the range in which the devices can be used. For non-self-heating devices, it is equal to the ambient temperature range. The temperature rise for self-heating devices must not exceed the maximum value indicated.

SSD

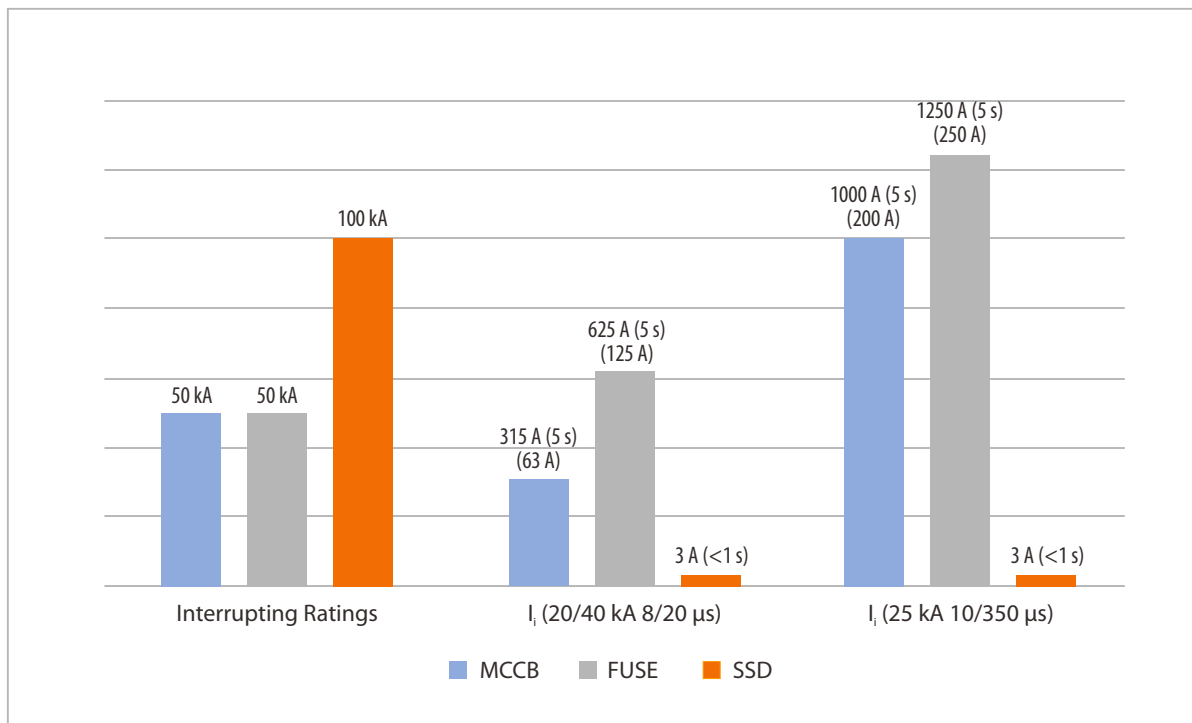
SPD Specific Disconnecter (SSD), a SPD special backup protection device of low-voltage power system can withstand the expected surge current of the protected SPD, and can disconnect the device that passes through the power current due to the SPD fault, and has the characteristics of small power current action, also known as SCB.

In general, the backup protection of SPD normally uses fuse or circuit breaker. However, since the surge withstand capacity of fuse and circuit breaker is positively related to the rated current value, it means that if they want to pass the surge test, their rated current value needs to be relatively large. For example, if they pass the tests of 20 kA (I_n) and 40 kA (I_{max}), the fuse needs 125 A gL/gG; the circuit breaker needs 63 A-100 A, and the action current of 125 A fuse is up to 625 A within 5 s, which is almost the same value for the circuit breaker meeting the same surge test. This characteristic leads to a blind area for the backup protection of fuses and

circuit breakers for SPD. The typical situation is that the capacity of the power system is small, in case of short circuit, the fuse of SPD will not act, so SPD will catch fire quickly. Most SPD fires are caused by this mismatch, and the backup protection does not act.

The characteristic of SSD is that it can pass the surge test matching with SPD. At the same time, it can be triggered by a small power current, generally around 3 A, which is also to ensure that the protection can be started before the SPD catches fire. SSD has the characteristics of high surge withstanding capability, small power current start-up, slim size, high sensitivity and strong breaking capacity.

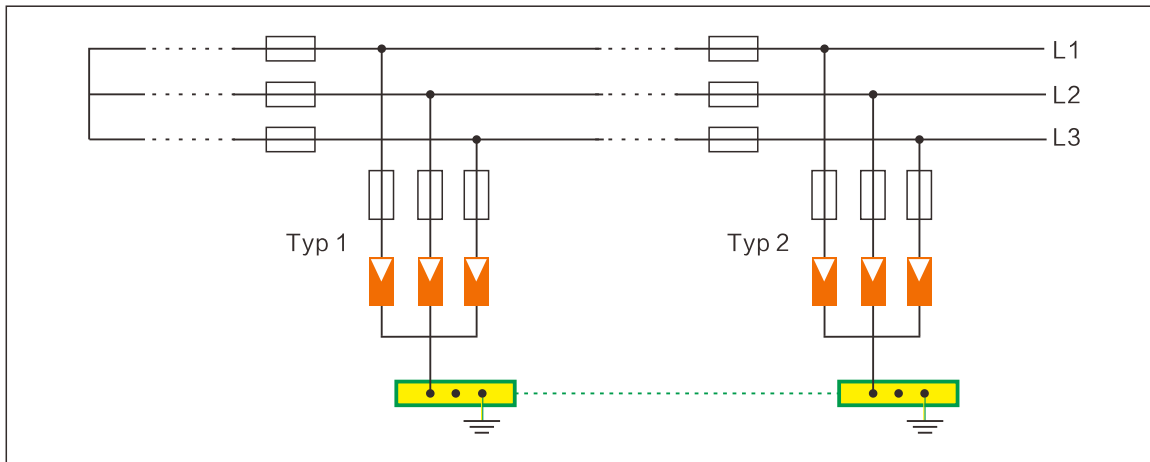
PTG SSD could perfectly co-operate with PTG SPD, thus achieves excellent protection performance. PTG SSD is designed with a single-pole assembly free structure, which makes it user-friendly.



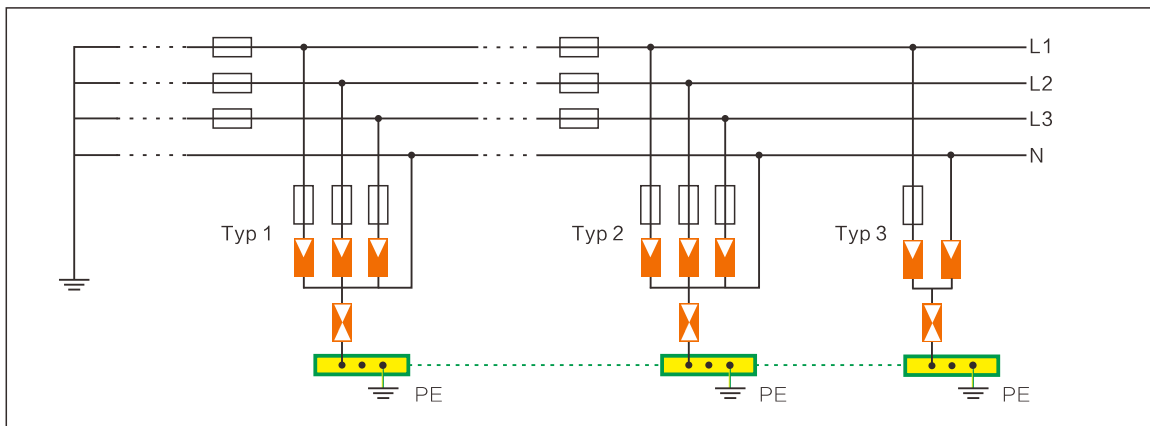
The performance of SSD, MCCB and FUSE

Power Supply System

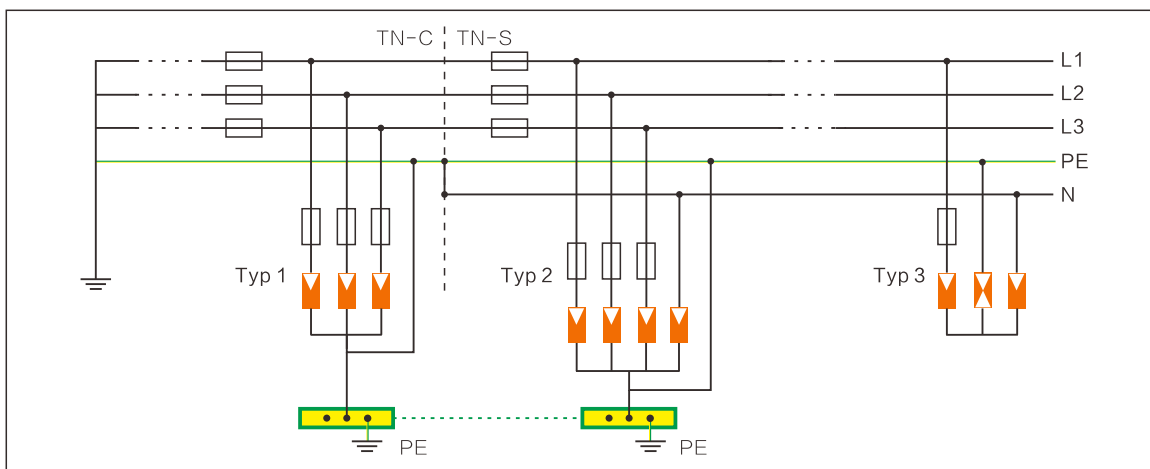
In accordance with IEC60364-1 and IEC61643-11, PTG offers all kinds of SPD to protect different types of power network system. For IT network system, 30-Series of Type1 and Type 2 SPD are designed for 400 V power supply system (e.g. 3* PE 440-25W1-10R, PE 440-40M2-30R) and 690 V power supply system (e.g. 3*PE 760-25W1-10R, PE 760-25M2-30R).



For TT network system, 31-Series of Type1 and Type 2 SPD are designed for 230/400 V power supply system (e.g. PTE 320-25W1-31R, PE 320-40M2-31R); and Type 3 SPD is designed for fine protection of equipment (e.g. PE 255-6W3-21R-S25).

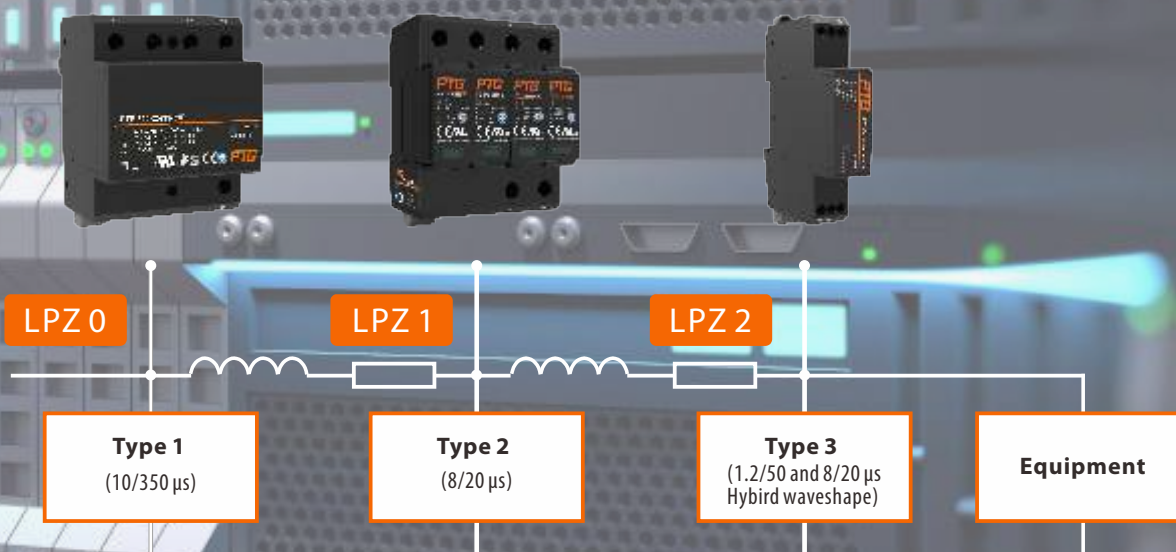


For TN-C-S network system, 30-Series/40-Series of Type1 and Type 2 SPD are designed for 230/400 V power supply system (e.g. PTE 320-25W1-30R, PE 320-40M2-40R); and Type 3 SPD is designed for fine protection of equipment (e.g. PE 255-6W3-21R-S25).



Typical Solution

Power Supply



In accordance to:

1. IEC 62305 : Protection against Lightning
2. IEC 61312 : Protection against Lightning Electromagnetic Impulse
3. IEC 61643-11: SPDs connected to low-voltage power distribution systems - Requirements and tests
4. UL 1449: Surge protective devices
5. GB 50074: Design code for protection of structures against lightning



Typical Solution

Wind Power

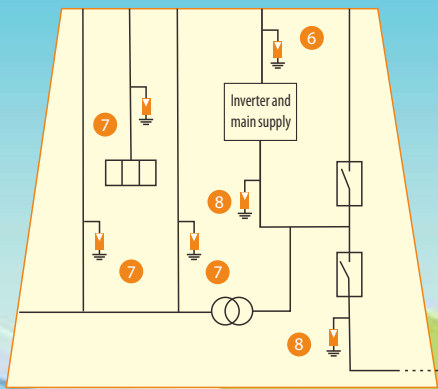
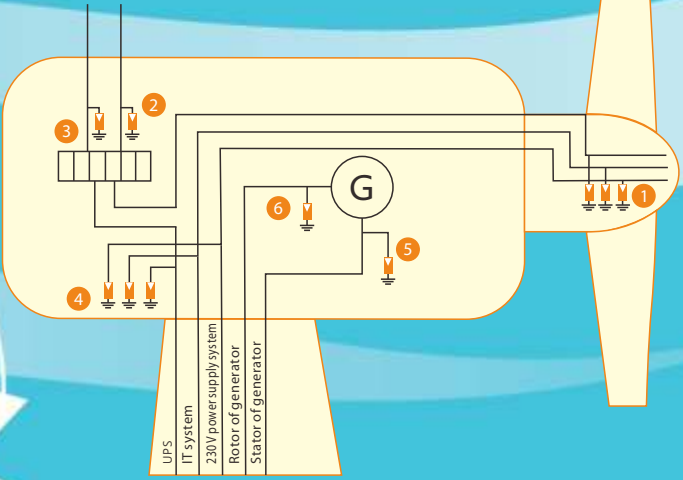
Wind power, at present, is one of the most mature and feasible renewable clean energy. It brings a great opportunity to human and nature harmonic development. Due to outdoor operational environment, lightning stroke and harmful surge becomes one of the most austere challenges to its operation. For wind power system, due to its special operating geography location, height, highly integrated by a large quantity of sensitive electronic, electrical components/expensive cost, surge protection is strongly required. PTG provides comprehensive and effective solutions for it.

In accordance with IEC 62305 and IEC 61400-24, below should be considered when categorizing surge protection zones and selecting/installing the SPD:

1. Lightning protection zone (LPZ 0...3);
2. Relative SPD test waveshapes (8/20 μ s or 10/350 μ s);
3. Voltage protection level
4. Voltage and standard of power supply (230/400 V; 400/690 V; TT/TN system);
5. Harmonic wave interference.

In accordance to:

1. IEC 62305: Protection against lightning
2. IEC 61312: Protection against lightning electromagnetic impulse
3. IEC 61643-11: SPDs connected to low-voltage power distribution systems - Requirements and tests
4. IEC 61643-21: SPDs connected to telecommunication and signalling networks - Requirements and tests
5. IEC 61400-24: Wind energy generation systems - Lightning protection
6. UL 1449: Surge protective devices
7. GB 50074: Design code for protection of structures against lightning



1, Pitch system

Pluggable, anti-vibration, modular SPD for single TN network system; Space-saving and DIN Rail installation SPD for IT system

Type	Part No.
PE 275-40M2-20R	92 20 21
PD LA-24WS	97 21 23S



2, Aircraft warning light

Pluggable, anti-vibration, modular SPD for single TN power system

Type	Part No.
PE 275-40M2-20R	92 20 21



3, Weather station

Pluggable, anti-vibration, modular SPD for single TN power system; Space-saving and DIN Rail installation SPD for IT system

Type	Part No.
PE 275-40M2-20R	92 20 21
PD LA-24WS	97 21 23S



4, Control cabinet in the nacelle

Pluggable, anti-vibration, modular SPD for various power system

Type	Part No.
PE 275-40M2-30R	93 30 20
PE 275-40M2-11R	92 11 20



5, Stator side of generator

760V, pluggable, anti-vibration, modular SPD for IT and TNC power system

Type	Part No.
PE 760-25M2-30R	93 30 26



6, Rotor side of generator

760V, pluggable, anti-vibration, modular SPD with the 2000 V isolated module is equipped to avoid harmonic wave interference

Type	Part No.
PE 760-25M2-32R	93 32 04
PE 1000-40W2-10R	92 10 04



7, Control cabinet in the tower base

Pluggable, anti-vibration, modular SPD for TNC power system; Space-saving and DIN Rail installation SPD for IT system.

Type	Part No.
PE 275-40M2-30R	93 30 20
PD LA-24WS	97 21 23S



8, Inverter and main supply

Pluggable, anti-vibration, modular SPD for various power system

Type	Part No.
PE 760-25M2-30R	93 30 26
PE 1000-40W2-10R	92 10 04



9, Transformer low-voltage side

760V, compact, combined type 1 SPD for the direct lightning protection

Type	Part No.
PE 760-25W1-10R	91 10 05
PE 1000-15W1-10R	91 10 07





Typical Solution

Solar Power

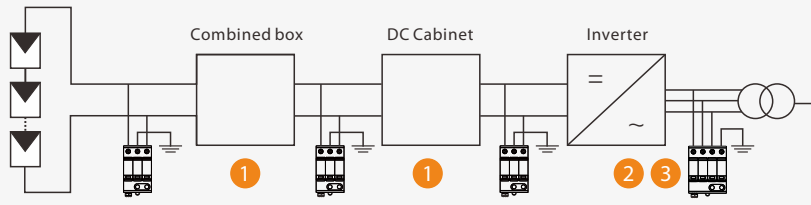
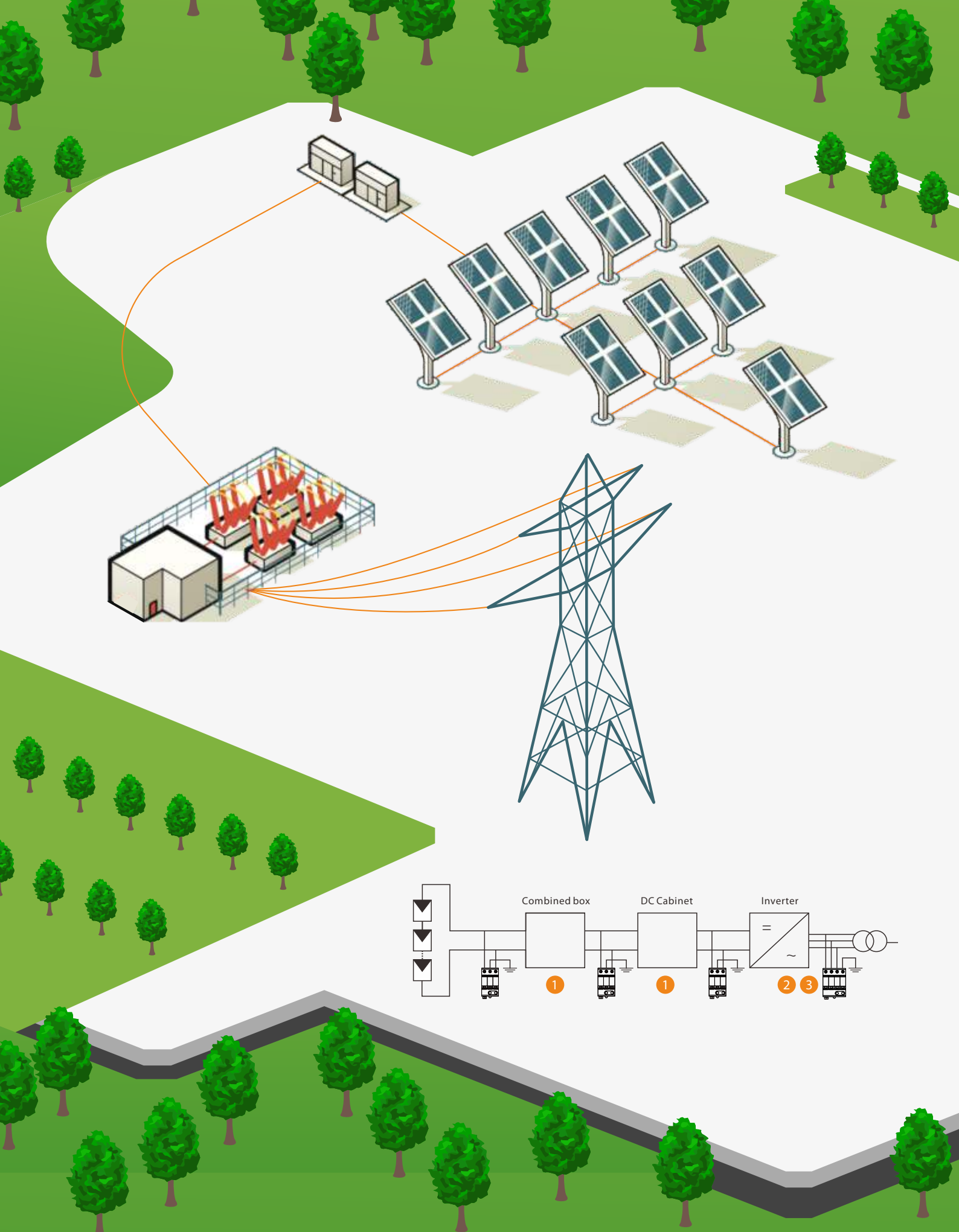
Solar Power, another renewable clean energy out of Wind Power, is now widely used in various countries and territories. It is easy installation, flexible, stable and long lifetime. The solar power system is typically consisted by solar panel, junction box, inverter, PDU, battery and control system, etc. A lot of electrical/electronic devices are integrated in a small and limited space. It's no doubt that, lightning and harmful surge are the disasters. PTG provides comprehensive and effective solutions for Solar Power.

In accordance to IEC 62305 and the special requirement of solar system, below should be considered when categorizing surge protection zones and selecting/installing the SPD:

1. Lightning protection zone (LPZ 0...3);
2. Relative SPD test waveshapes (8/20 μ s or 10/350 μ s);
3. Voltage protection level (especially the U_P value of SPD AC side);
4. Open circuit voltage at the DC side;
5. Harmonic wave interference.

In accordance to:

1. IEC 62305: Protection against lightning
2. IEC 61312: Protection against lightning electromagnetic impulse
3. IEC 61643-11: SPDs connected to low-voltage power distribution systems - Requirements and tests
4. IEC 61643-31: Low-voltage SPDs - Requirements and tests methods for SPDs for PV installations
5. IEC 61643-32: SPDs connected to the d.c. side of PV installations – Selection and application principles
6. UL 1449: Surge protective devices
7. GB 50074: Design code for protection of structures against lightning



1, DC side – Combined box/ Inverter

Pluggable, anti-vibration, Y-structure, modular SPD can match the various voltage system

Type	Part No.
PV 1000-40M2-21R	94 21 21
PV 1200-40M2-21R	94 21 22
PV 1500-40M2-21R	94 21 44A



The compact PCB on board SPD is commonly used in small/medium power inverter and distributed inverter junction box

Type	Part No.
PV 600-40M2-10	94 10 49
PV 750-40M2-10	94 10 50A
PV 600-40M2-M	94 10 81
PV 750-40M2-M	94 10 80



2, AC side – Inverter

Type 2 SPD with the isolated module is equipped to avoid harmonic wave interference and ensure low voltage protection level.

Type	Part No.
PE 760-25W1-10R	91 10 05
PE 385-40M2-32R	93 32 01
PE 760-25M2-30R	93 30 26



3, AC side – Power supply system

The combined a.c. type 1 SPD is an optional solution by the application field

Type	Part No.
PTE 320-25W1-31R	93 31 08



Pluggable, anti-vibration, modular SPD can match the various power system

Type	Part No.
PE 385-40M2-30R	92 30 21
PE 385-40M2-31R	93 31 22
PE 760-25M2-30R	93 30 26





Typical Solution

Construction, IDC

IDC (Internet Data Center) is a fast-growing industry along with the development of internet, it is not only a data storage center, but more important also a data exchange center, a key carrier of mass data, a core place of informatization. It is always a critical place with complexities, particularities and heavy investments, as well as fragility. There are many types of accidents in the IDC, fire/equip damage/communication-interruption, caused by direct lightning strikes/induced surge/overvoltage, might lead to the irreparable huge losses.

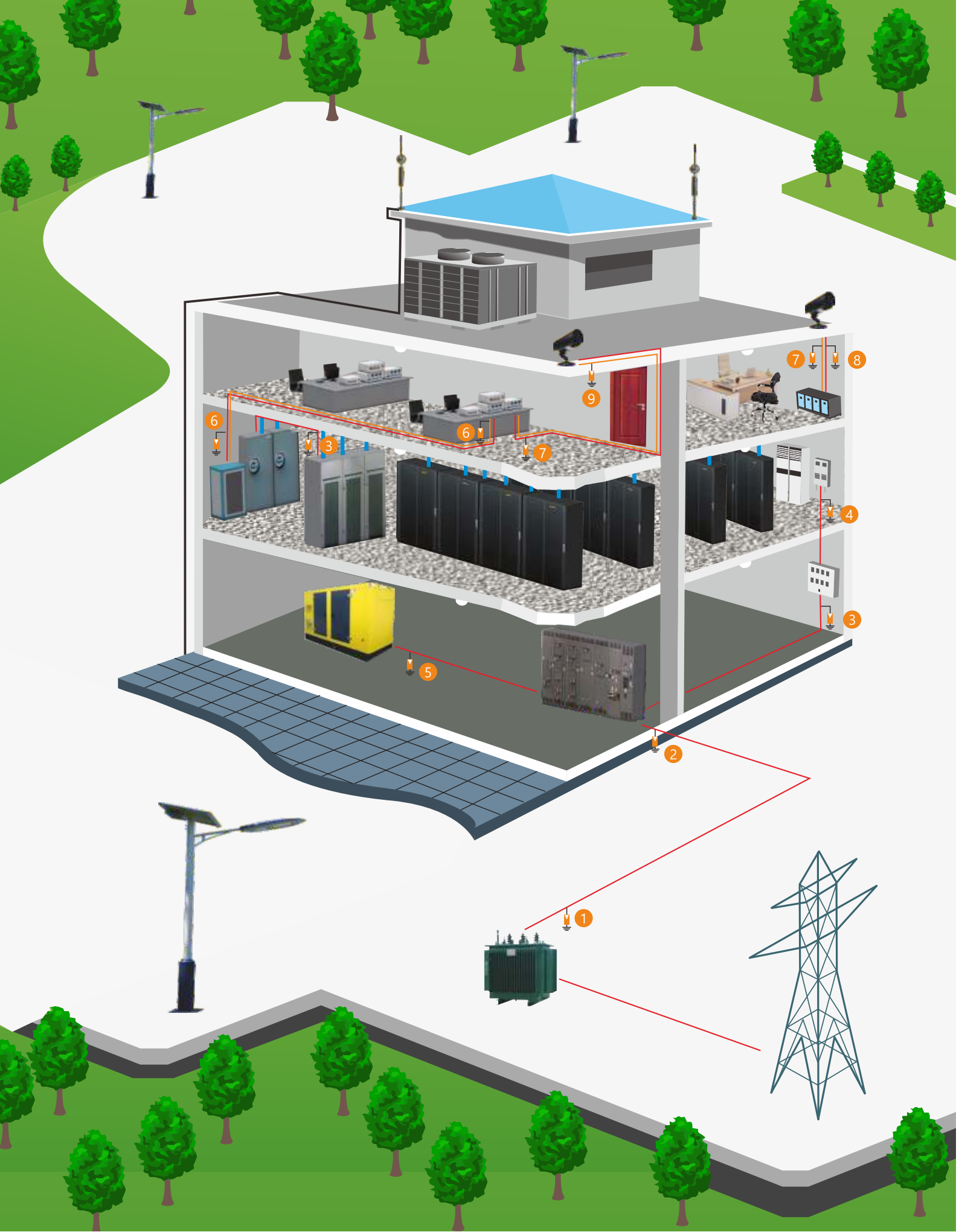
In view of its characteristics, PTG provides a tailored lightning and surge protection solution.

According to the IDC protection requirement of IEC 62305 and GB 50174-2008, in order to determine the categories of LPZ (lightning protection zone) and SPD selection/installation, the below items must be taken into consideration:

1. Lightning protection zone (LPZ 0...3);
2. Relative SPD test waveshapes (8/20 μ s or 10/350 μ s);
3. Voltage protection level
4. Voltage and standard of power supply (230/400 V; 400/690 V; TT/TN system);
5. Harmonic wave interference.

In accordance to:

1. IEC 62305: Protection against lightning
2. IEC 61312: Protection against lightning electromagnetic impulse
3. IEC 61643-11: SPDs connected to low-voltage power distribution systems - Requirements and tests
4. IEC 61643-21: SPDs connected to telecommunication and signalling networks - Requirements and tests
5. UL 1449: Surge protective devices
6. GB 50174: Code for design of electronic information system room
7. GB 50074: Design code for protection of structures against lightning



1, Voltage Transformer

Out of direct lightning protection zone, Type 1 SPD required, normally TNC power system

Type	Part No.
PTE 320-25W1-30R	93 30 05



2, Master Power Distribution Cabinet

Huge risk of direct lightning attraction, Type 1 SPD required, normally TT power system

Type	Part No.
PTE 320-25W1-31R	93 31 08



3, Power Distribution Box/ RPP

Type 2 SPD with pluggable/ lockable modules, applicable for TT power system

Type	Part No.
PE 385-40M2-31R	93 31 22
PE 385-80W2-31R	93 31 80



4, Terminal Power Distribution Box

Type 2 SPD with Pluggable/ lockable modules, applicable for TT power system

Type	Part No.
PE 385-40M2-11R	92 11 22
PE 385-40M2-11	92 11 25



5, Diesel Generator

Type 1 SPD dedicated for generator with anti-harmonic module, applicable for IT or TNC power system

Type	Part No.
PE 760-25W1-10R	91 10 05



6, Internet Communication System

Integrated ethernet protector, applicable for data and PoE system protection

Type	Part No.
PD J5-2X1000-4	97 12 03
PD J48-2X1000-4	97 12 04



7, Control System

Slim signal protector, size minimized to 6mm, offers full mode protector for both high and low frequency

Type	Part No.
PD HA-24WS	97 21 205
PD LA-24WS	97 21 235



8, Lighting System

Type 2 SPD with pluggable/ lockable modules, applicable for TT power system

Type	Part No.
PE 275-40M2-11R	92 11 20
PE 275-40M2-11	92 11 23

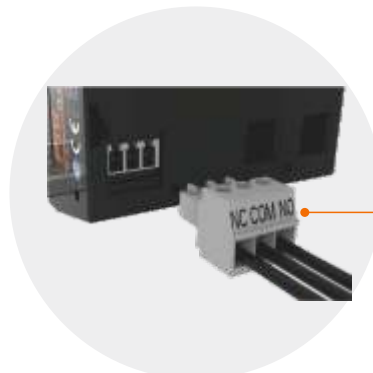
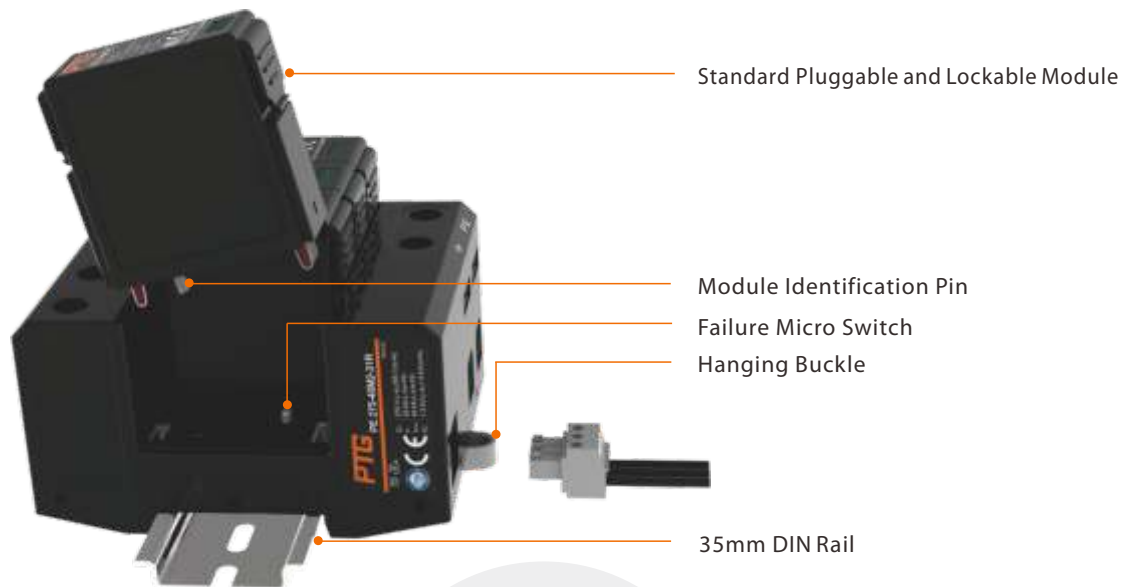
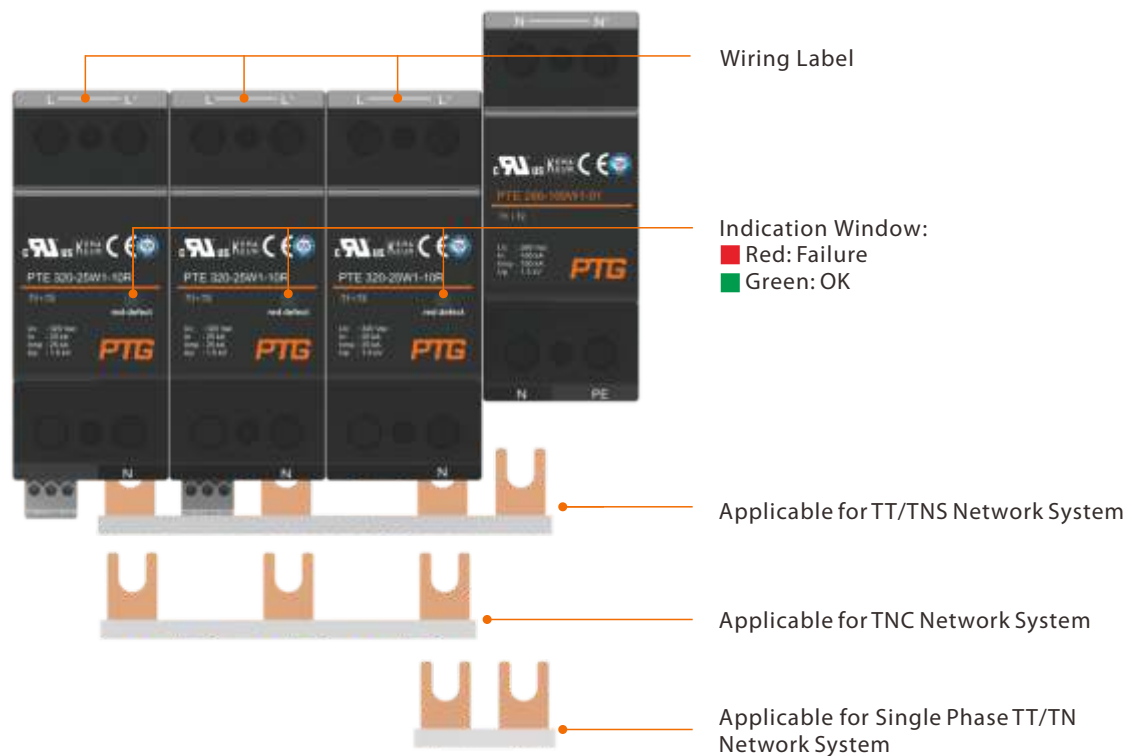


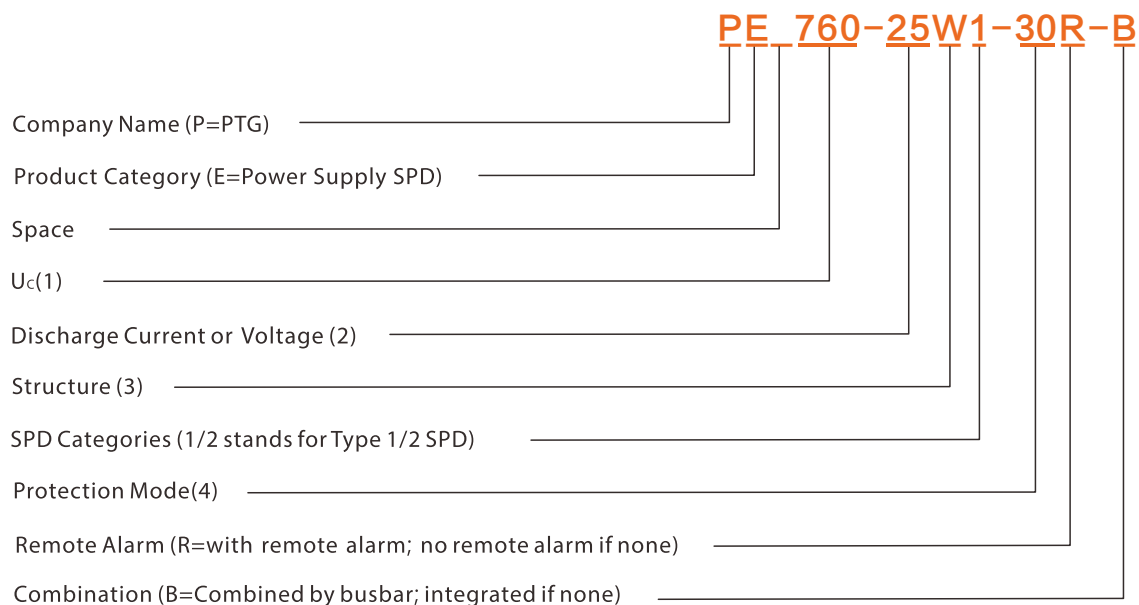
9, CCTV

2 in 1 integrated CCTV protector, protects all power/ video/ control interfaces

Type	Part No.
PC 385-10W2-21/ J5-2X100-2	99 11 03







Definition

(1) Maximum continuous operating voltage

It could be mean value of AC or DC voltage value. Unit is Volt(V), shown in different letters in different standards, e.g. U_c in IEC 61643-11; U_{CPV} in IEC 61643-31; MCOV in UL 1449.

(2) Discharge current or voltage

It stands for I_{imp} of T1/Class I, I_{max} of T2/Class II or U_{oc} of T3/Class III defined in EN/IEC standards, current unit is kA, voltage unit is kV.

(3) Product structure

It stands for the combination structure of protection module and wiring base. M stands for pluggable, W stands for integrated.

(4) Protection Mode

10: Single pole, L-N protection, applicable for TN/TT/IT(L-PE) power system

01: Single pole, N-PE protection, applicable for TN/TT power system

11: 1+1 protection mode, applicable for TN/TT/IT power system

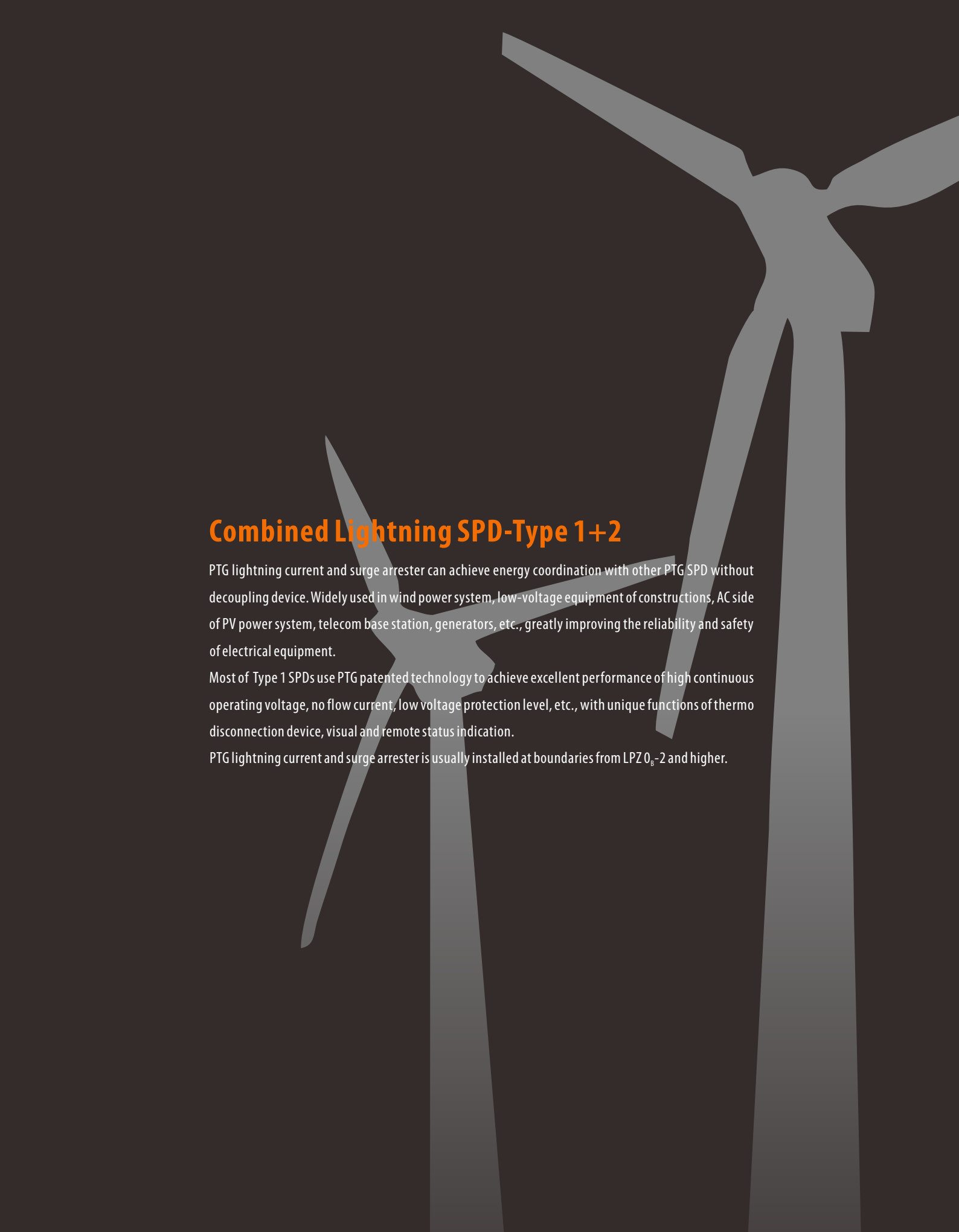
20: 2+0 protection mode, applicable for TN power system

21: Y-structure protection circuit, commonly used in PV system, as well as single phase power symmetry protection

30: 3+0 protection mode, applicable for TN-C power system

31: 3+1 protection mode, applicable for TT/TN/IT power system

40: 4+0 protection mode, applicable for TN-S power system



Combined Lightning SPD-Type 1+2

PTG lightning current and surge arrester can achieve energy coordination with other PTG SPD without decoupling device. Widely used in wind power system, low-voltage equipment of constructions, AC side of PV power system, telecom base station, generators, etc., greatly improving the reliability and safety of electrical equipment.

Most of Type 1 SPDs use PTG patented technology to achieve excellent performance of high continuous operating voltage, no flow current, low voltage protection level, etc., with unique functions of thermo disconnection device, visual and remote status indication.

PTG lightning current and surge arrester is usually installed at boundaries from LPZ 0_s-2 and higher.

Combined Lightning SPD -Type 1+2



DIN rail, Type 1+2 / Class I+II multi-purpose single-pole SPD with MOV and Spark Gap technology for use in max. 1000 Vac power supply system at boundaries from LPZ 0_B-2

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _{fi}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 440-15W1-10R	91 10 94	Type 1+Type 2	440 Vac	15 kA	15 kA	2.4 kV	infinite	160 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 440-25W1-10R	91 10 03	Type 1+Type 2	440 Vac	25 kA	25 kA	2.4 kV	infinite	250 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 600-15W1-10R	91 10 52	Type 1+Type 2	600 Vac	15 kA	15 kA	3.0 kV	infinite	160 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 600-25W1-10R	91 10 07	Type 1+Type 2	600 Vac	25 kA	25 kA	3.0 kV	infinite	250 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 760-15W1-10R	91 10 53	Type 1+Type 2	760 Vac	25 kA	15 kA	3.5 kV	infinite	160 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 760-25W1-10R	91 10 05	Type 1+Type 2	760 Vac	25 kA	25 kA	3.5 kV	infinite	250 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 1000-15W1-10R	91 10 08	Type 1+Type 2	1000 Vac	15 kA	15 kA	4.5 kV	infinite	160 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA



DIN rail, Type 1+2 / Class I+II multi-purpose single-pole SPD with MOV and Spark Gap technology for use in various voltage power supply system at boundaries from LPZ 0_B-2

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _{fi}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTE 60-15W1-10R	91 10 84	Type 1+Type 2	60 Vac	15 kA	15 kA	1.0 kV	infinite	160 A gL/gG	2 mods	Optional	New Product
PTE 60-25W1-10R	91 10 55	Type 1+Type 2	60 Vac	25 kA	25 kA	1.0 kV	infinite	250 A gL/gG	2 mods	Optional	New Product
PTE 150-15W1-10R	91 10 85	Type 1+Type 2	150 Vac	15 kA	15 kA	1.2 kV	infinite	160 A gL/gG	2 mods	Optional	New Product
PTE 150-25W1-10R	91 10 86	Type 1+Type 2	150 Vac	25 kA	25 kA	1.2 kV	infinite	250 A gL/gG	2 mods	Optional	New Product
PTE 320-15W1-10R	91 10 87	Type 1+Type 2	320 Vac	15 kA	15 kA	1.5 kV	infinite	160 A gL/gG	2 mods	Optional	TUV, CE, CB, KEMA, UL, CSA
PTE 320-25W1-10R	91 10 09	Type 1+Type 2	320 Vac	25 kA	25 kA	1.5 kV	infinite	250 A gL/gG	2 mods	Optional	TUV, CE, CB, KEMA, UL, CSA
PTE 320-50W1-10R	91 10 88	Type 1+Type 2	320 Vac	50 kA	50 kA	1.5 kV	infinite	500 A gL/gG	2 mods	Optional	New Product



DIN rail, combined Type 1+2 / Class I+II with Spark Gap technology for use in 240/415 Vac power supply system at boundaries from LPZ 0_B -2, and specially designed for installation between N and PE

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _n	Width	Remote Indicator	Approvals
PTE 260-100W1-10	91 01 02	Type 1+Type 2	260 Vac	100 kA	100 kA	1.5 kV	100 Arms	2 mods	Null	TUV, CE, CB, KEMA, UL, CSA

Combined Lightning SPD -Type 1+2



DIN rail, combined Type 1+2 / Class I+II SPD with MOV and Spark Gap technology for use in single phase TT and TN power supply system at boundaries from LPZ 0_B-2 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (L-N/N-PE) (8/20 μs)	I _{imp} (L-N/N-PE) (10/350 μs)	U _p	I _n	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTE 60-15W1-11R	92 11 59	Type 1+Type 2	60 Vac	15/60 kA	15/60 kA	1.0 kV	infinite	160 A gL/gG	2 mods	Optional	New Product
PTE 60-25W1-11R	92 11 60	Type 1+Type 2	60 Vac	25/100 kA	25/100 kA	1.0 kV	infinite	250 A gL/gG	2 mods	Optional	New Product
PTE 150-15W1-11R	92 11 57	Type 1+Type 2	150 Vac	15/60 kA	15/60 kA	1.2 kV	infinite	160 A gL/gG	2 mods	Optional	New Product
PTE 150-25W1-11R	92 11 58	Type 1+Type 2	150 Vac	25/100 kA	25/100 kA	1.2 kV	infinite	250 A gL/gG	2 mods	Optional	New Product
PTE 320-15W1-11R	92 11 05	Type 1+Type 2	320 Vac	15/60 kA	15/60 kA	1.5 kV	infinite	160 A gL/gG	2 mods	Optional	TUV, CE, CB, UL, KEMA, CSA
PTE 320-25W1-11R	92 11 06	Type 1+Type 2	320 Vac	25/100 kA	25/100 kA	1.5 kV	infinite	250 A gL/gG	2 mods	Optional	TUV, CE, CB, UL, KEMA, CSA



DIN rail, combined Type 1+2 / Class I+II SPD with MOV and Spark Gap technology for use in 240/415 Vac TNC power supply system at boundaries from LPZ 0_B-1 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (L-PE/Total) (8/20 μs)	I _{imp} (L-PE/Total) (10/350 μs)	U _p	I _n	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTE 320-15W1-30R	93 30 04	Type 1+Type 2	320 Vac	15/45 kA	15/45 kA	1.5 kV	infinite	160 A gL/gG	4 mods	Optional	TUV, CE, CB, UL, KEMA, CSA
PTE 320-25W1-30R	93 30 05	Type 1+Type 2	320 Vac	25/75 kA	25/75 kA	1.5 kV	infinite	250 A gL/gG	4 mods	Optional	TUV, CE, CB, UL, KEMA, CSA



DIN rail, combined Type 1+2 / Class I+II SPD with MOV and Spark Gap technology for use in 240/415 Vac TT and TNS power supply system at boundaries from LPZ 0_B-2 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (L-N/N-PE) (8/20 μs)	I _{imp} (L-N/N-PE) (10/350 μs)	U _p	I _n	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTE 320-15W1-31R	93 31 07	Type 1+Type 2	320 Vac	15/60 kA	15/60 kA	1.5 kV	infinite	160 A gL/gG	4 mods	Optional	TUV, CE, CB, UL, KEMA, CSA
PTE 320-25W1-31R	93 31 08	Type 1+Type 2	320 Vac	25/100 kA	25/100 kA	1.5 kV	infinite	250 A gL/gG	4 mods	Optional	TUV, CE, CB, UL, KEMA, CSA

Modular SPD -Type 1+2



DIN rail, Type 1+2 / Class I+II multi-purpose single-pole SPD with anti-vibration pluggable module for use in a.c. or d.c. power supply system at boundaries from LPZ 0_s-2 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _n	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTE 60-12M1-10R	92 10 44	Type 1+Type 2	60 Vac	12.5 kA	12.5 kA	0.8 kV	infinite	160 A gL/gG	1 mod	Optional	New Product
PTE 150-12M1-10R	92 10 43	Type 1+Type 2	150 Vac	12.5 kA	12.5 kA	1.0 kV	infinite	160 A gL/gG	1 mod	Optional	New Product
PTE 275-12M1-10R	92 10 42	Type 1+Type 2	275 Vac	12.5 kA	12.5 kA	1.4 kV	infinite	160 A gL/gG	1 mod	Optional	New Product
PTE 320-12M1-10R	92 10 41	Type 1+Type 2	320 Vac	12.5 kA	12.5 kA	1.5 kV	infinite	160 A gL/gG	1 mod	Optional	New Product
PTE 385-12M1-10R	92 10 40	Type 1+Type 2	385 Vac	12.5 kA	12.5 kA	1.75 kV	infinite	160 A gL/gG	1 mod	Optional	New Product



DIN rail, Type 1+2 / Class I+II SPD with anti-vibration pluggable module for use in single phase TN power supply system at boundaries from LPZ 0_s-2 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	U _p (L-PE)	I _n	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTE 60-12M1-20R	92 20 54	Type 1+Type 2	60 Vac	12.5 kA	12.5 kA	0.8 kV	infinite	160 A gL/gG	2 mods	Optional	New Product
PTE 150-12M1-20R	92 20 53	Type 1+Type 2	150 Vac	12.5 kA	12.5 kA	1.0 kV	infinite	160 A gL/gG	2 mods	Optional	New Product
PTE 275-12M1-20R	92 20 52	Type 1+Type 2	275 Vac	12.5 kA	12.5 kA	1.4 kV	infinite	160 A gL/gG	2 mods	Optional	New Product
PTE 320-12M1-20R	92 20 51	Type 1+Type 2	320 Vac	12.5 kA	12.5 kA	1.5 kV	infinite	160 A gL/gG	2 mods	Optional	New Product
PTE 385-12M1-20R	92 20 50	Type 1+Type 2	385 Vac	12.5 kA	12.5 kA	1.75 kV	infinite	160 A gL/gG	2 mods	Optional	New Product



DIN rail, Type 1+2 / Class I+II SPD with anti-vibration pluggable module for use in TNC power supply system at boundaries from LPZ 0_s-2 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _{ft}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTE 275-12M1-30R	93 30 72	Type 1+Type 2	275 Vac	12.5 kA	12.5 kA	1.4 kV	infinite	160 A gL/gG	3 mods	Optional	New Product
PTE 320-12M1-30R	93 30 71	Type 1+Type 2	320 Vac	12.5 kA	12.5 kA	1.5 kV	infinite	160 A gL/gG	3 mods	Optional	New Product
PTE 385-12M1-30R	93 30 70	Type 1+Type 2	385 Vac	12.5 kA	12.5 kA	1.75 kV	infinite	160 A gL/gG	3 mods	Optional	New Product



DIN rail, Type 1+2 / Class I+II SPD with anti-vibration pluggable module for use in TNS power supply system at boundaries from LPZ 0_s-2 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _{ft}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTE 275-12M1-40R	93 40 52	Type 1+Type 2	275 Vac	12.5 kA	12.5 kA	1.4 kV	infinite	160 A gL/gG	4 mods	Optional	New Product
PTE 320-12M1-40R	93 40 51	Type 1+Type 2	320 Vac	12.5 kA	12.5 kA	1.5 kV	infinite	160 A gL/gG	4 mods	Optional	New Product
PTE 385-12M1-40R	93 40 50	Type 1+Type 2	385 Vac	12.5 kA	12.5 kA	1.75 kV	infinite	160 A gL/gG	4 mods	Optional	New Product





Combined Highduty SPD-Type2

PTG High Duty Type 2 SPDs have obtained the third-party certification of TUV and national laboratory in accordance with IEC 61643-11 and GB 18802.1.

This series of products provide multi-level discharge current, I_n/I_{max} : 30/60 kA, 40/80 kA, 50/100 kA, 60/120 kA, and are applicable to a variety of power supply systems, including TT, IT and TN.

PE 385 series products are characterized by small size, easy installation, good appearance, etc., and with reliability thermo disconnection device, visual and remote status indication.

PE 600 and PE 1000 series single-pole products were designed for higher operating voltage system according to IEC 61643-11 and UL 1449 standards.

These SPDs are usually installed at boundaries from LPZO_B-3.

Combined Highduty SPD-Type 2



DIN rail, Integrated Type 2/Class II SPD with high duty MOVs and Spark Gap components for use in 240/415 Vac single phase TT and TN power supply system at boundaries from LPZ 0_B -3

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p (L-N / N-PE)	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 385-60W2-11R	92 11 07	Type 2	385 Vac	30 kA	60 kA	1.8 kV / 1.5 kV	100 A gL/gG	2 mods	Optional	TUV, CE
PE 385-80W2-11R	92 11 08	Type 2	385 Vac	40 kA	80 kA	1.8 kV / 1.5 kV	125 A gL/gG	2 mods	Optional	TUV, CE
PE 385-100W2-11R	92 11 09	Type 2	385 Vac	50 kA	100 kA	1.8 kV / 1.5 kV	160 A gL/gG	2 mods	Optional	TUV, CE
PE 385-120W2-11R	92 11 00	Type 2	385 Vac	60 kA	120 kA	1.8 kV / 1.5 kV	200 A gL/gG	2 mods	Optional	TUV, CE



DIN rail, Integrated Type 2/Class II SPD with high duty MOVs and Spark Gap components for use in 240/415 Vac TT and TNS power supply system at boundaries from LPZ 0_B -3

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p (L-N / N-PE)	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 385-60W2-31R	93 31 75	Type 2	385 Vac	30 kA	60 kA	1.8 kV / 1.5 kV	100 A gL/gG	4 mods	Optional	TUV, CE
PE 385-80W2-31R	93 31 80	Type 2	385 Vac	40 kA	80 kA	1.8 kV / 1.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE
PE 385-100W2-31R	93 31 81	Type 2	385 Vac	50 kA	100 kA	1.8 kV / 1.5 kV	160 A gL/gG	4 mods	Optional	TUV, CE
PE 385-120W2-31R	93 31 82	Type 2	385 Vac	60 kA	120 kA	1.8 kV / 1.5 kV	200 A gL/gG	4 mods	Optional	TUV, CE



DIN rail, Integrated Type 2/Class II multi-purpose single-pole SPD with high duty MOVs and Spark Gap components for use in 400/690 Vac and higher voltage power supply system at boundaries from LPZ O_b -3

PTG Model	Part No.	SPD Type	U_c	I_n (8/20 μ s)	I_{max} (8/20 μ s)	U_p	U_r	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 600-80W2-10R	92 10 01	Type 2	600 Vac	40 kA	80 kA	2.8 kV	1000 V/5 s, 900 V/2 h	200 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 600-120W2-10R	92 10 02	Type 2	600 Vac	60 kA	120 kA	2.8 kV	1000 V/5 s, 900 V/2 h	200 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 760-40W2-10R	92 10 15	Type 2	760 Vac	20 kA	40 kA	3.5 kV	1200 V/5 s, 1000 V/2 h	125 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 760-80W2-10R	92 10 17	Type 2	760 Vac	40 kA	80 kA	3.5 kV	1200 V/5 s, 1000 V/2 h	200 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 1000-40W2-10R	92 10 04	Type 2	1000 Vac	20 kA	40 kA	4.5 kV	1600 V/5 s, 1400 V/2 h	125 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 1000-80W2-10R	92 10 05	Type 2	1000 Vac	40 kA	80 kA	4.5 kV	1600 V/5 s, 1400 V/2 h	200 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA





Modular SPD- Type 2

PTG Type 2 SPD adopts the protection circuit of MOV and dynamic thermo disconnect device, which greatly improves the safety and reliability of low-voltage power system.

Easy replacing and anti-vibration by modular releasing and locking design, even if the impact of transportation vibration and current discharge will not make the module loose, however, if necessary, the replacement of the module does not need any tools. The ingenious design of Anti-arc technology with large arc extingui-sher provides the fast heat conduction of the low-temperature solder joint and the large creepage distance (> 10 mm) after the disconnection, greatly improving the tripping sensitivity and greatly reducing the fire risk. The visual status indication of the local red and green window and the remote signaling alarm of the floating switching dry contact effectively inform the working status of the SPD, providing a friendly customer maintenance experience.

This series also provide a wide range of continuous operating voltage from 60 Vac to 760 Vac, and various forms of power system, including TT, IT and TN.

PTG Type 2 SPDs are usually installed at boundaries from LPZ 0_B-3.



DIN rail, Type 2 / Class II multi-purpose single-pole SPD with anti-vibration pluggable module for use in a.c. or d.c. power system at boundaries from LPZ 0_B -3 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 60-40M2-10R	91 10 20	Type 2	60 Vac	20 kA	40 kA	0.6 kV	125 A gL/gG	1 mod	Optional	TUV, CE, UL, CSA
PE 150-40M2-10R	91 10 21	Type 2	150 Vac	20 kA	40 kA	1.0 kV	125 A gL/gG	1 mod	Optional	--
PE 275-40M2-10R	91 10 22	Type 2	275 Vac	20 kA	40 kA	1.3 kV	125 A gL/gG	1 mod	Optional	TUV, CE, UL, CSA
PE 320-40M2-10R	91 10 23	Type 2	320 Vac	20 kA	40 kA	1.5 kV	125 A gL/gG	1 mod	Optional	TUV, CE, UL, CSA
PE 385-40M2-10R	91 10 24	Type 2	385 Vac	20 kA	40 kA	1.8 kV	125 A gL/gG	1 mod	Optional	TUV, CE, UL, CSA
PE 440-40M2-10R	91 10 25	Type 2	440 Vac	20 kA	40 kA	2.0 kV	125 A gL/gG	1 mod	Optional	TUV, CE, UL, CSA
PE 600-40M2-10R	91 10 50	Type 2	600 Vac	20 kA	40 kA	2.5 kV	125 A gL/gG	1 mod	Optional	TUV, CE, UL, CSA
PE 760-25M2-10R	91 10 26	Type 2	760 Vac	15 kA	25 kA	3.0 kV	100 A gL/gG	1 mod	Optional	TUV, CE, UL, CSA



DIN rail, Type 2 / Class II multi-purpose single-pole SPD with anti-vibration pluggable module for use in 240/415 Vac power system at boundaries from LPZ 0_B -3 and higher, and especially designed for installation between N and PE

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 255-40M2-01R	91 01 20	Type 2	255 Vac	20 kA	40 kA	1.5 kV	--	1 mod	Optional	TUV, CE, UL, CSA



DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module for use in single phase TN and TT power supply system at boundaries from LPZ 0_B -3 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p (L-N / N-PE)	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 275-40M2-11R	92 11 20	Type 2	275 Vac	20 kA	40 kA	1.3 kV / 1.5 kV	125 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 320-40M2-11R	92 11 21	Type 2	320 Vac	20 kA	40 kA	1.5 kV / 1.5 kV	125 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 385-40M2-11R	92 11 22	Type 2	385 Vac	20 kA	40 kA	1.8 kV / 1.5 kV	125 A gL/gG	2 mods	Optional	TUV, CE, UL, CSA
PE 320-60M2-11R	92 11 34	Type 2	320 Vac	30 kA	60 kA	1.8 kV / 1.5 kV	125 A gL/gG	2 mods	Optional	TUV, CE
PE 385-60M2-11R	92 11 32	Type 2	385 Vac	30 kA	60 kA	2.0 kV / 1.5 kV	125 A gL/gG	2 mods	Optional	TUV, CE



DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module for use in single phase TN power supply system at boundaries from LPZ 0_B -3 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 60-40M2-20R	92 20 26	Type 2	60 Vac	20 kA	40 kA	0.6 kV	125 A gL/gG	2 mods	Optional	TUV, CE, UL
PE 150-40M2-20R	92 20 20	Type 2	150 Vac	20 kA	40 kA	1.0 kV	125 A gL/gG	2 mods	Optional	--
PE 275-40M2-20R	92 20 21	Type 2	275 Vac	20 kA	40 kA	1.3 kV	125 A gL/gG	2 mods	Optional	TUV, CE, UL
PE 385-40M2-20R	92 20 22	Type 2	385 Vac	20 kA	40 kA	1.8 kV	125 A gL/gG	2 mods	Optional	TUV, CE, UL



DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module for use in TNC power supply system at boundaries from LPZ 0_B -3 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 275-40M2-30R	93 30 20	Type 2	275 Vac	20 kA	40 kA	1.3 kV	125 A gL/gG	3 mods	Optional	TUV, CE, UL, CSA
PE 320-40M2-30R	93 30 28	Type 2	320 Vac	20 kA	40 kA	1.5 kV	125 A gL/gG	3 mods	Optional	TUV, CE, UL, CSA
PE 385-40M2-30R	93 30 21	Type 2	385 Vac	20 kA	40 kA	1.8 kV	125 A gL/gG	3 mods	Optional	TUV, CE, UL, CSA
PE 440-40M2-30R	93 30 22	Type 2	440 Vac	20 kA	40 kA	2.0 kV	125 A gL/gG	3 mods	Optional	TUV, CE, UL, CSA
PE 600-40M2-30R	93 30 42	Type 2	440 Vac	20 kA	40 kA	2.5 kV	125 A gL/gG	3 mods	Optional	TUV, CE, UL, CSA
PE 760-25M2-30R	93 30 26	Type 2	440 Vac	15 kA	25 kA	3.0 kV	100 A gL/gG	3 mods	Optional	TUV, CE, UL, CSA



DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module for use in TT and TNS power supply system at boundaries from LPZ 0_B -3 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p (L-N / N-PE)	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 275-40M2-31R	93 31 20	Type 2	275 Vac	20 kA	40 kA	1.3 kV / 1.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 320-40M2-31R	93 31 21	Type 2	320 Vac	20 kA	40 kA	1.5 kV / 1.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 385-40M2-31R	93 31 22	Type 2	385 Vac	20 kA	40 kA	1.8 kV / 1.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 440-40M2-31R	93 31 31	Type 2	440 Vac	20 kA	40 kA	2.0 kV / 1.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 320-60M2-31R	92 31 34	Type 2	320 Vac	30 kA	60 kA	1.8 kV / 1.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE
PE 385-60M2-31R	92 31 30	Type 2	385 Vac	30 kA	60 kA	2.0 kV / 1.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE

Modular SPD - Type 2



DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module for use in TNS power supply system at boundaries from LPZ 0_s -3 and higher

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 275-40M2-40R	93 40 01	Type 2	275 Vac	20 kA	40 kA	1.3 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 385-40M2-40R	93 40 02	Type 2	385 Vac	20 kA	40 kA	1.8 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 440-40M2-40R	93 40 07	Type 2	440 Vac	20 kA	40 kA	2.0 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 600-40M2-40R	93 40 15	Type 2	600 Vac	20 kA	40 kA	2.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 760-25M2-40R	93 40 13	Type 2	760 Vac	15 kA	25 kA	3.0 kV	100 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA



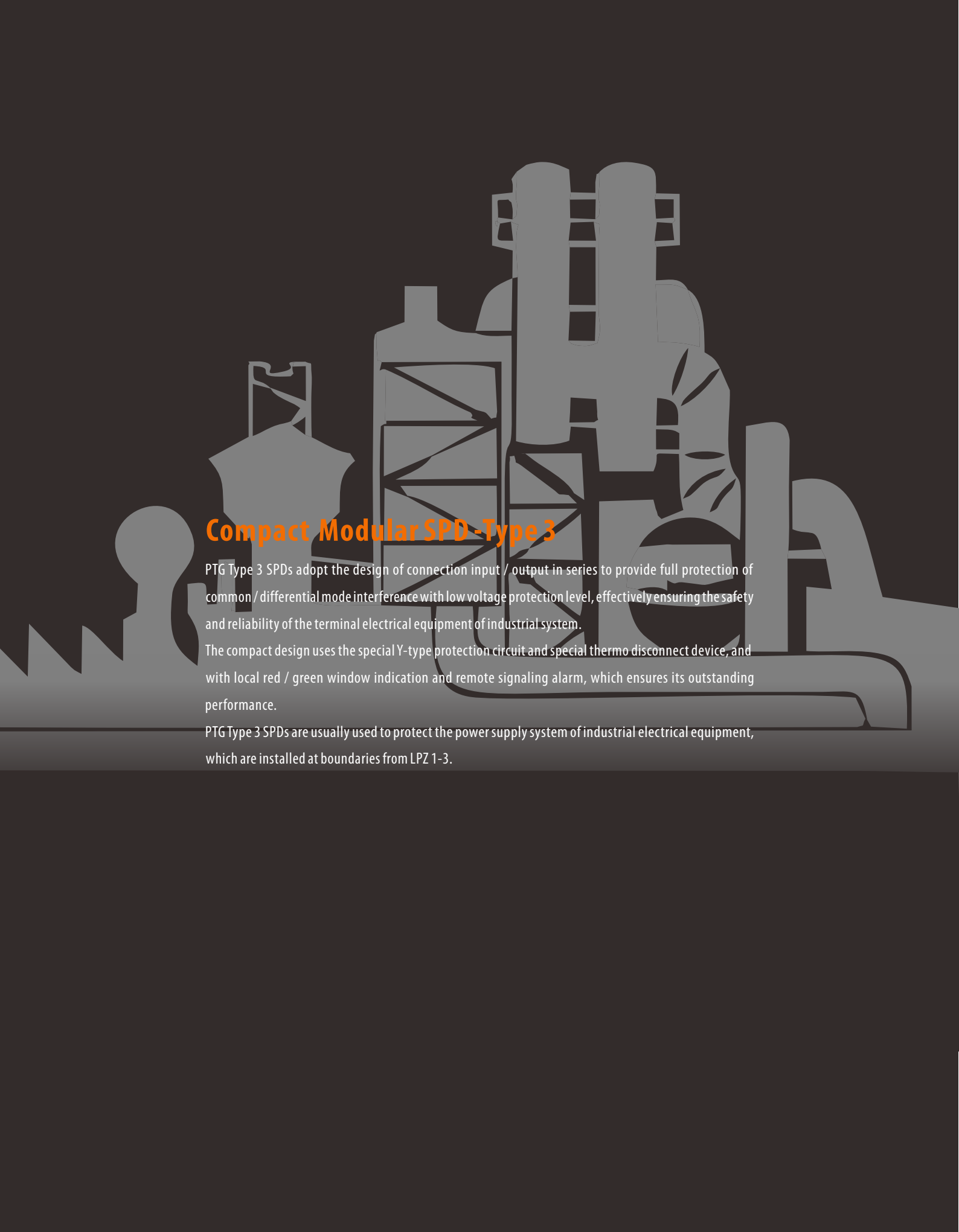
DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module for use in TNC power supply system at boundaries from LPZ 0_s -3 and higher, and especially designed isolated module to prevent the harmonic

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 385-40M2-32R	93 32 01	Type 2	385 Vac	20 kA	40 kA	3.2 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 600-40M2-32R	93 32 15	Type 2	600 Vac	20 kA	40 kA	3.5 kV	125 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA
PE 760-25M2-32R	93 32 02	Type 2	760 Vac	15 kA	25 kA	4.0 kV	100 A gL/gG	4 mods	Optional	TUV, CE, UL, CSA



DIN rail, Type 2 / Class II multi-purpose single-pole SPD with anti-vibration pluggable module for use in max. 760 Vac power supply system at boundaries from LPZ 0_s -3 and higher, and especially designed isolated module to prevent the harmonic

PTG Model	Part No.	SPD Type	U _c	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 385-40M2-12R	91 12 03	Type 2	385 Vac	20 kA	40 kA	3.2 kV	125 A gL/gG	2 mods	Optional	TUV, CE
PE 600-40M2-12R	91 12 02	Type 2	600 Vac	20 kA	40 kA	3.5 kV	125 A gL/gG	2 mods	Optional	TUV, CE
PE 760-25M2-12R	91 12 01	Type 2	760 Vac	15 kA	25 kA	4.0 kV	100 A gL/gG	2 mods	Optional	TUV, CE

The background of the page features a dark gray silhouette of industrial machinery, including what appears to be a large storage tank or silo, various pipes, and structural supports, creating a technical and industrial aesthetic.

Compact Modular SPD -Type 3

PTG Type 3 SPDs adopt the design of connection input / output in series to provide full protection of common / differential mode interference with low voltage protection level, effectively ensuring the safety and reliability of the terminal electrical equipment of industrial system.

The compact design uses the special Y-type protection circuit and special thermo disconnect device, and with local red / green window indication and remote signaling alarm, which ensures its outstanding performance.

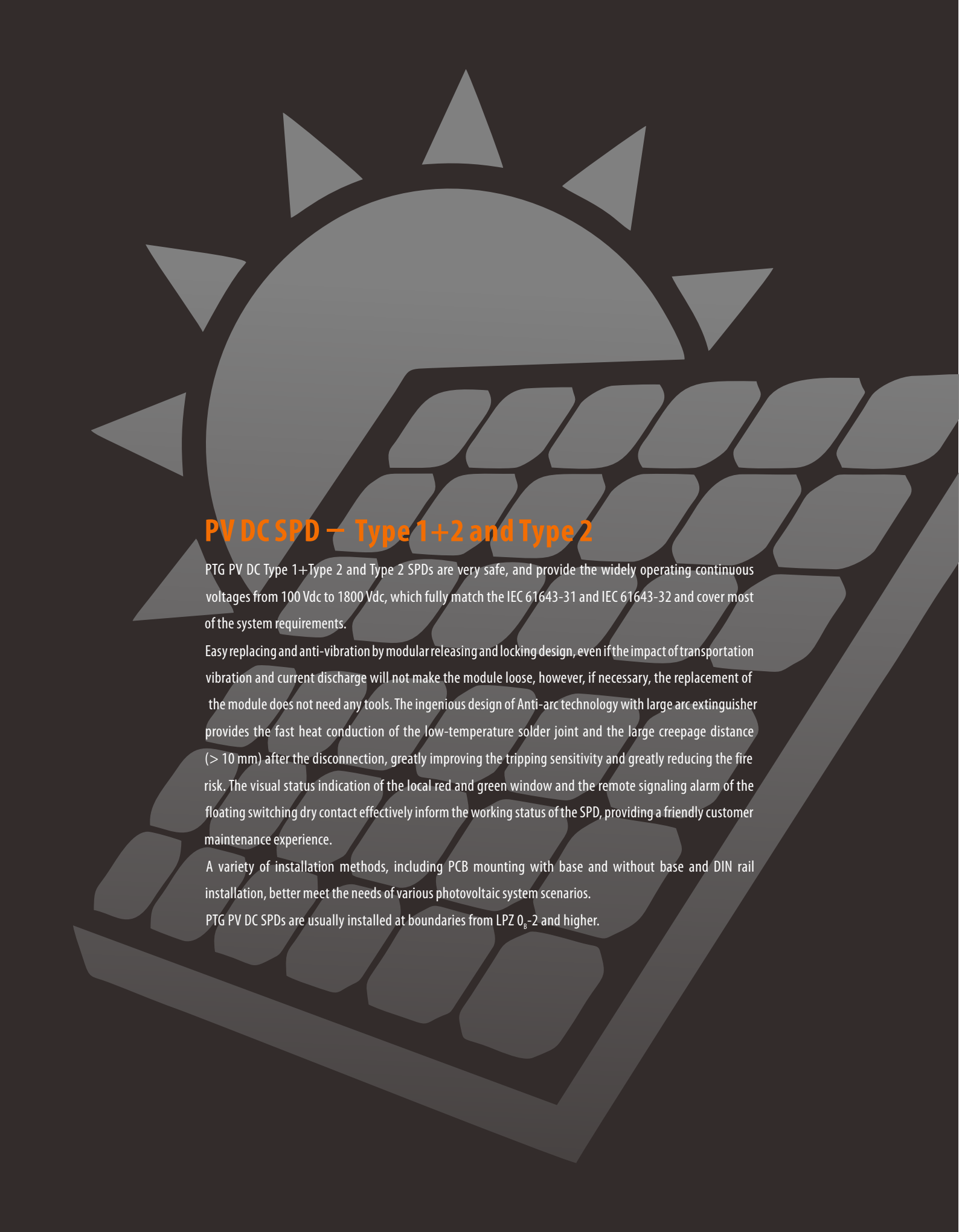
PTG Type 3 SPDs are usually used to protect the power supply system of industrial electrical equipment, which are installed at boundaries from LPZ 1-3.

Compact Modular SPD - Type 3



DIN rail, compact Type 3 / Class III SPD with MOV & GDT and narrow design for protecting industrial electronics system and equipment at boundaries from LPZ 1-3 and higher

PTG Model	Part No.	SPD Type	U_c	I_n (1-2, 1/2-PE)	U_{oc} (1-2, 1/2-PE)	I_L	U_r (1-2, 1/2-PE)	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PE 30-2W3-21R-S25	92 21 15	Type 3	30 V	1 kA	2 kV	25 A	0.18 kV, 0.60 kV	25 A gL/gG	1 mod	Optional	TUV, CE
PE 60-2W3-21R-S25	92 21 16	Type 3	60 V	1 kA	2 kV	25 A	0.35 kV, 0.73 kV	25 A gL/gG	1 mod	Optional	TUV, CE
PE 150-4W3-21R-S25	92 21 17	Type 3	150 V	2 kA	4 kV	25 A	0.60 kV, 0.80 kV	25 A gL/gG	1 mod	Optional	TUV, CE
PE 255-6W3-21R-S25	92 21 18	Type 3	255 V	3 kA	6 kV	25 A	1.25 kV, 1.50 kV	25 A gL/gG	1 mod	Optional	TUV, CE



PV DC SPD — Type 1+2 and Type 2

PTG PV DC Type 1+Type 2 and Type 2 SPDs are very safe, and provide the widely operating continuous voltages from 100 Vdc to 1800 Vdc, which fully match the IEC 61643-31 and IEC 61643-32 and cover most of the system requirements.

Easy replacing and anti-vibration by modular releasing and locking design, even if the impact of transportation vibration and current discharge will not make the module loose, however, if necessary, the replacement of the module does not need any tools. The ingenious design of Anti-arc technology with large arc extinguisher provides the fast heat conduction of the low-temperature solder joint and the large creepage distance (> 10 mm) after the disconnection, greatly improving the tripping sensitivity and greatly reducing the fire risk. The visual status indication of the local red and green window and the remote signaling alarm of the floating switching dry contact effectively inform the working status of the SPD, providing a friendly customer maintenance experience.

A variety of installation methods, including PCB mounting with base and without base and DIN rail installation, better meet the needs of various photovoltaic system scenarios.

PTG PV DC SPDs are usually installed at boundaries from LPZ 0_s-2 and higher.

PV DC SPD - Type 1+2



DIN rail, Type 1+2 / Class I+II SPD with anti-vibration pluggable module for use in PV max. 750 Vdc power system at boundaries from LPZ 0_B -2 and higher

PTG Model	Part No.	SPD Type	U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTV 100-40M2-20R	94 20 81	Type 1+Type 2	100 Vdc	20 kA	40 kA	5 kA	0.6 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA
PTV 300-40M2-20R	94 20 83	Type 1+Type 2	300 Vdc	20 kA	40 kA	5 kA	1.4 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA
PTV 600-40M2-20R	94 20 86	Type 1+Type 2	600 Vdc	20 kA	40 kA	5 kA	2.0 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA
PTV 750-40M2-20R	94 20 87	Type 1+Type 2	750 Vdc	20 kA	40 kA	3 kA	2.5 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA
PTV 900-40M2-20R	94 20 88	Type 1+Type 2	900 Vdc	20 kA	40 kA	2 kA	3.0 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA



DIN rail, Type 1+2 / Class I+II SPD with anti-vibration pluggable module and Y- circuit design for use in PV max. 1200 Vdc power system at boundaries from LPZ 0_B -2 and higher

PTG Model	Part No.	SPD Type	U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTV 200-40M2-21R	94 21 34	Type 1+Type 2	200 Vdc	20 kA	40 kA	5 kA	1.2 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA
PTV 600-40M2-21R	94 21 26	Type 1+Type 2	600 Vdc	20 kA	40 kA	5 kA	2.8 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA
PTV 1000-40M2-21R	94 21 27	Type 1+Type 2	1000 Vdc	20 kA	40 kA	5 kA	3.5 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA
PTV 1200-40M2-21R	94 21 35	Type 1+Type 2	1200 Vdc	20 kA	40 kA	5 kA	4.0 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA



DIN rail, Type 1+2 / Class I+II SPD with anti-vibration pluggable module and Y- circuit design for use in PV max. 1800 Vdc power system at boundaries from LPZ 0_B -2 and higher

PTG Model	Part No.	SPD Type	U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	I _{imp} (10/350 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTV 1500-40M2-21R	94 21 33	Type 1+Type 2	1500 Vdc	20 kA	40 kA	3 kA	5.0 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA
PTV 1800-40M2-21R	94 21 80	Type 1+Type 2	1800 Vdc	20 kA	40 kA	2 kA	6.0 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA



PCB on board, Type 1+2 /Class I+II multi-purpose single-pole SPD with anti-vibration plug-gable module for use in d.c. system at boundaries from LPZ 0_B-1 and higher

PTG Model	Part No.	SPD Type	U_{CPV}	I_n (8/20 μ s)	I_{max} (8/20 μ s)	I_{imp} (10/350 μ s)	U_p	I_{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTV 300-40M2-10	94 10 75	Type 1+Type 2	300 Vdc	20 kA	40 kA	5 kA	1.4 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA
PTV 500-40M2-10	94 10 76	Type 1+Type 2	500 Vdc	20 kA	40 kA	5 kA	1.75 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA
PTV 600-40M2-10	94 10 77	Type 1+Type 2	600 Vdc	20 kA	40 kA	5 kA	2.0 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA
PTV 750-40M2-10	94 10 78	Type 1+Type 2	750 Vdc	20 kA	40 kA	3 kA	2.5 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA
PTV 900-40M2-10	94 10 79	Type 1+Type 2	900 Vdc	20 kA	40 kA	2 kA	3.0 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA



PCB on board, Type 1+2 /Class I+II multi-purpose single-pole SPD for use ind.c. system at boundaries from LPZ 0_B-1 and higher

PTG Model	Part No.	SPD Type	U_{CPV}	I_n (8/20 μ s)	I_{max} (8/20 μ s)	I_{imp} (10/350 μ s)	U_p	I_{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PTV 600-40M2-M	94 10 93	Type 1+Type 2	600 Vdc	20 kA	40 kA	5 kA	2.0 kV	1000 A	Not required	18 mm	Optional	TUV, CE, UL, CSA
PTV 750-40M2-M	94 10 94	Type 1+Type 2	750 Vdc	20 kA	40 kA	3 kA	2.5 kV	1000 A	Not required	18 mm	Optional	TUV, CE, UL, CSA
PTV 900-40M2-M	94 10 95	Type 1+Type 2	900 Vdc	20 kA	40 kA	2 kA	3.0 kV	1000 A	Not required	18 mm	Optional	TUV, CE, UL, CSA

PV DC SPD - Type 2



DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module for use in PV max. 750 Vdc power system at boundaries from LPZ 0_B -2 and higher

PTG Model	Part No.	SPD Type	U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PV 100-40M2-20R	94 20 04	Type 2	100 Vdc	20 kA	40 kA	0.6 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA
PV 300-40M2-20R	94 20 03	Type 2	300 Vdc	20 kA	40 kA	1.4 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA
PV 600-40M2-20R	94 20 02	Type 2	600 Vdc	20 kA	40 kA	2.0 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA
PV 750-40M2-20R	94 20 01	Type 2	750 Vdc	20 kA	40 kA	2.5 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA
PV 900-40M2-20R	94 20 00	Type 2	900 Vdc	20 kA	40 kA	3.0 kV	1000 A	Not required	2 mods	Optional	TUV, CE, UL, CSA



DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module and Y- circuit design for use in PV max. 1200 Vdc power system at boundaries from LPZ 0_B -2 and higher

PTG Model	Part No.	SPD Type	U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PV 200-40M2-21R	94 21 28	Type 2	200 Vdc	20 kA	40 kA	1.2 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA
PV 600-40M2-21R	94 21 20	Type 2	600 Vdc	20 kA	40 kA	2.8 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA
PV 1000-40M2-21R	94 21 21	Type 2	1000 Vdc	20 kA	40 kA	3.5 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA
PV 1200-40M2-21R	94 21 22	Type 2	1200 Vdc	20 kA	40 kA	4.0 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA



DIN rail, Type 2 / Class II SPD with anti-vibration pluggable module and Y- circuit design for use in PV max. 1800 Vdc power system at boundaries from LPZ 0_B -2 and higher

PTG Model	Part No.	SPD Type	U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PV 1500-40M2-21R	94 21 44A	Type 2	1500 Vdc	20 kA	40 kA	5.0 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA
PV 1800-40M2-21R	94 21 59	Type 2	1800 Vdc	20 kA	40 kA	6.0 kV	1000 A	Not required	3 mods	Optional	TUV, CE, UL, CSA



PCB on board, Type 2 /Class II multi-purpose single-pole SPD with anti-vibration pluggable module for use in d.c. system at boundaries from LPZ 0_B-1 and higher

PTG Model	Part No.	SPD Type	U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PV 300-40M2-10	94 10 47	Type 2	300 Vdc	20 kA	40 kA	1.4 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA
PV 500-40M2-10	94 10 48	Type 2	500 Vdc	20 kA	40 kA	1.75 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA
PV 600-40M2-10	94 10 49	Type 2	600 Vdc	20 kA	40 kA	2.0 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA
PV 750-40M2-10	94 10 50A	Type 2	750 Vdc	20 kA	40 kA	2.5 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA
PV 900-40M2-10	94 10 45	Type 2	900 Vdc	20 kA	40 kA	3.0 kV	1000 A	Not required	21 mm	Optional	TUV, CE, UL, CSA



PCB on board, Type 2 /Class II multi-purpose single-pole SPD for use in d.c. system at boundaries from LPZ 0_B-1 and higher

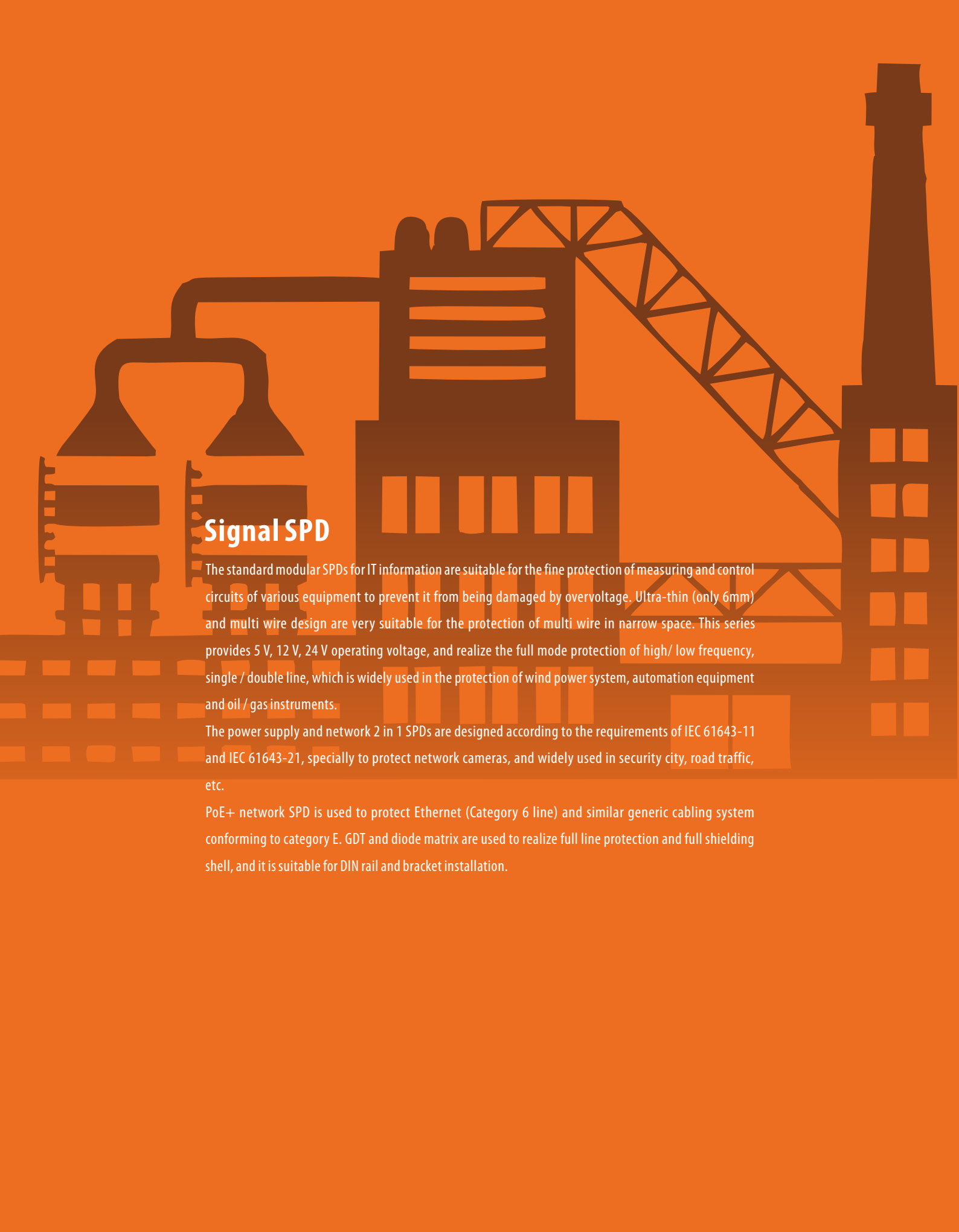
PTG Model	Part No.	SPD Type	U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PV 600-40M2-M	94 10 81	Type 2	600 Vdc	20 kA	40 kA	2.0 kV	1000 A	Not required	18 mm	Optional	TUV, CE, UL, CSA
PV 750-40M2-M	94 10 80	Type 2	750 Vdc	20 kA	40 kA	2.5 kV	1000 A	Not required	18 mm	Optional	TUV, CE, UL, CSA
PV 900-40M2-M	94 10 86	Type 2	900 Vdc	20 kA	40 kA	3.0 kV	1000 A	Not required	18 mm	Optional	TUV, CE, UL, CSA



PCB on board, Type 2 /Class II multi-purpose single-pole compact SPD with very slim size for use in a.c. and d.c. system at boundaries from LPZ 0_B-1 and higher

PTG Model	Part No.	SPD Type	U _c / U _{CPV}	I _n (8/20 μs)	I _{max} (8/20 μs)	U _p	I _{SCPV}	Backup Fuse (Max.)	Width	Remote Indicator	Approvals
PV 500-20M2-10	94 10 48	Type 2	385 Vac / 500 Vdc	10 kA	20 kA	1.5 kV	1000 A	Not required	14 mm	Optional	TUV, CE, UL, CSA
PV 670-20M2-10	94 10 51	Type 2	510 Vac / 670 Vdc	10 kA	20 kA	1.8 kV	1000 A	Not required	14 mm	Optional	TUV, CE, UL, CSA
PV 900-20M2-10	94 10 62	Type 2	760 Vac / 900 Vdc	10 kA	20 kA	2.8 kV	1000 A	Not required	15 mm	Optional	TUV, CE, ETL





Signal SPD

The standard modular SPDs for IT information are suitable for the fine protection of measuring and control circuits of various equipment to prevent it from being damaged by overvoltage. Ultra-thin (only 6mm) and multi wire design are very suitable for the protection of multi wire in narrow space. This series provides 5 V, 12 V, 24 V operating voltage, and realize the full mode protection of high/ low frequency, single / double line, which is widely used in the protection of wind power system, automation equipment and oil / gas instruments.

The power supply and network 2 in 1 SPDs are designed according to the requirements of IEC 61643-11 and IEC 61643-21, specially to protect network cameras, and widely used in security city, road traffic, etc.

PoE+ network SPD is used to protect Ethernet (Category 6 line) and similar generic cabling system conforming to category E. GDT and diode matrix are used to realize full line protection and full shielding shell, and it is suitable for DIN rail and bracket installation.



DIN rail, compact SPD with slim size and single pair lines for protecting high-frequency transmission system at boundaries from LPZ 0_E -2 and higher

PTG Model	Part No.	SPD Type	U _N	U _C	I _n / I _{total} (8/20 μs)	I _{imp} (10/350 μs)	I _L	Cut-off Frequency	Width	Approvals
PD LA-5WS	97 21 25S	C2, D1	5V	6V	10 kA / 20 kA	2 kA	1 A	10 MHz	7 mm	TUV, CE
PD LA-12WS	97 21 24S	C2, D1	12V	15V	10 kA / 20 kA	2 kA	1 A	10 MHz	7 mm	TUV, CE
PD LA-24WS	97 21 23S	C2, D1	24V	33V	10 kA / 20 kA	2 kA	1 A	10 MHz	7 mm	TUV, CE
PD HA-5WS	97 21 22S	C2, D1	5V	6V	10 kA / 20 kA	2 kA	1 A	100 MHz	7 mm	TUV, CE
PD LA-12WS	97 21 21S	C2, D1	12V	15V	10 kA / 20 kA	2 kA	1 A	100 MHz	7 mm	TUV, CE
PD LA-24WS	97 21 20S	C2, D1	24V	33V	10 kA / 20 kA	2 kA	1 A	100 MHz	7 mm	TUV, CE



DIN rail, compact SPD with slim size and double pair lines for protecting high-frequency transmission system at boundaries from LPZ 0_E -2 and higher

PTG Model	Part No.	SPD Type	U _N	U _C	I _n / I _{total} (8/20 μs)	I _{imp} (10/350 μs)	I _L	Cut-off Frequency	Width	Approvals
PD LA-5WS-2	97 21 54S	C2, D1	5V	6V	10 kA / 20 kA	2 kA	1 A	10 MHz	12 mm	TUV, CE
PD LA-12WS-2	97 21 55S	C2, D1	12V	15V	10 kA / 20 kA	2 kA	1 A	10 MHz	12 mm	TUV, CE
PD LA-24WS-2	97 21 56S	C2, D1	24V	33V	10 kA / 20 kA	2 kA	1 A	10 MHz	12 mm	TUV, CE
PD HA-5WS-2	97 21 51S	C2, D1	5V	6V	10 kA / 20 kA	2 kA	1 A	100 MHz	12 mm	TUV, CE
PD LA-12WS-2	97 21 52S	C2, D1	12V	15V	10 kA / 20 kA	2 kA	1 A	100 MHz	12 mm	TUV, CE
PD LA-24WS-2	97 21 53S	C2, D1	24V	33V	10 kA / 20 kA	2 kA	1 A	100 MHz	12 mm	TUV, CE



DIN rail, compact SPD with slim size for protecting unearthed DC power supply system at boundaries from LPZ 0_E -3 and higher

PTG Model	Part No.	SPD Type	U _N	U _C	I _n / I _{total} (8/20 μs)	I _{imp} / I _{total} (10/350 μs)	I _L	Series Impedance	Width	Approvals
PD LD-36W	97 21 80	C2, D1	36V	45V	10 kA / 20 kA	2.5 kA / 5 kA	10 A	22 μH	1 mod	New Product
PD LD-60W	97 21 81	C2, D1	60V	75V	10 kA / 20 kA	2.5 kA / 5 kA	10 A	22 μH	1 mod	New Product



Classic SPD for use in internet according to IEEE 802.3at to protect the CAT.5 patch cable and downstream equipment at boundaries from LPZ 1-2 and higher

PTG Model	Part No.	SPD Type	U_c	I_n (8/20 μ s)	I_L	Cut-off Frequency	Connection
PD J5-2X1000-4	97 12 03	C2, D1	3.5 Vac / 5 Vdc	200 A(per line), 2.5 kA (line to PE)	100 mA	250 MHz	RJ 45 socket / RJ 45 socket



Classic SPD for use in PoE+ system according to IEEE 802.3at to protect the Cat. 6 A patch cable and downstream equipment at boundaries from LPZ 1-2 and higher

PTG Model	Part No.	SPD Type	U_c	I_n (8/20 μ s)	I_{imp} (10/350 μ s)	I_L	Cut-off Frequency	Connection
PD J48-2X1000-4	97 12 04	C2, D1	34 Vac / 57 Vdc	200 A(per line), 2.5 kA (line to PE)	0.5 kA	1 A	250 MHz	RJ 45 socket / RJ 45 socket



Compact SPD with BNC interface for protecting coaxial system, such as video and camera systems, and installation at the boundaries from LPZ 0_s-2 and higher

PTG Model	Part No.	SPD Type	U_N	U_c	I_n (8/20 μ s)	I_L	Frequency Range	Connection
PD B5-3W75	97 11 04	C2, D1	5 V	8 V	3 kA (per line), 10 kA(line to PE)	1 A	0~250 MHz	BNC Female / BNC Male



Compact 2 in 1 SPD for use in power supply and network & video monitoring systems, and installation at the boundaries from LPZ 0_s-2 and higher

PTG Model	Part No.	U_c	I_n / I_{max} (8/20 μ s)	I_L	Cut-off frequency	Transmission Rate (Max.)	Indication
PC 30-10W2-21/J5-2X100-2	99 11 04	30 Vdc (power), 5 Vdc (network)	5 kA / 10 kA (power), 0.5 kA / 3 kA (network)	5 A (power)	250 MHz	100 Mbps	Light on/off
PC 385-10W2-21/J5-2X100-2	99 11 03	385 Vac (power), 5 Vdc (network)	5 kA / 10 kA (power), 0.5 kA / 3 kA (network)	5 A (power)	250 MHz	100 Mbps	Light on/off





Coaxial RF SPD

PTG coaxial RF SPD provides a complete range of coaxial protection to CCTV, Tower equipment, GPS, Base station, etc. The products have great performance, which is high discharge capacity, low voltage protection level, low insertion loss, low let-through voltage, low let-through energy, and multi-interface for options. Spark gap SPD, with built-in GDT, performs as low-pass filter, which is suitable for applications where DC is carried through the coax cable such as remote amplifiers, LNA's and antenna power supply. Due to its superior RF performance it is also good for IEEE 802.11a and other 5.2-5.8 GHz ISM and UNII applications, as well as 3.5 GHz WLL applications. According to the characteristics of the GDT and the ingenious internal structure design, the fire risk is minimized and the stability of signal transmission is ensured. The spark gap type RF SPD supports the GDT replacement.

The $1/4\lambda$ SPD can also be considered as a signal band-pass filter, which can only be transmitted when the signal is in the specified frequency range (such as 800 MHz ~ 2.5 GHz or 2.0 GHz ~ 6.0 GHz). Due to the low-frequency characteristics of lightning interference, SPD shows short circuit when lightning strikes and low-frequency surge pass through, and discharge energy to the ground. This SPD is a non-GDT design, with great discharge capability and short response time, which makes it widely used and maintenance free. The SPD housing is directly grounded and both interfaces are equally protected, and making installation easier.

Note: The $1/4\lambda$ SPD is not suitable for coaxial cables with DC voltage, such as remote amplifiers or LNAs.

PTG coaxial RF SPD is usually installed at boundaries from LPZ 0_A-1 and higher.



High performance GDT SPD with N type male/female interface used for transmission wide frequency of 6 GHz to protect applicaiton of IEEE 802.11a, 5.2-5.8 GHz ISM, UNII and 3.5 GHz WLL etc. at boundaries from LPZ 0_A-1 and higher

PTG Model	Part No.	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	I _L	Frequency Range	Transmission Capacity (Max.)	Connection
PD N70-10FM	97 13 22	70 Vdc	10 kA	1 kA	10 A	d.c. ~ 6 GHz	700 W	N Male to N Female Bulkhead
PD N135-10FM	97 13 23	135 Vdc	10 kA	1 kA	10 A	d.c. ~ 6 GHz	700 W	N Male to N Female Bulkhead
PD N180-10FM	97 13 24	180 Vdc	10 kA	1 kA	10 A	d.c. ~ 6 GHz	700 W	N Male to N Female Bulkhead



High performance GDT SPD with SMA type male/female interface used for transmission wide frequency of 3.0 GHz for protecting Land Mobile Radio, VHF/UHF, Cellular and wireless LAN, etc, at boundaries from LPZ 0_A -1 and higher

PTG Model	Part No.	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	I _L	Frequency Range	Transmission Capacity (Max.)	Connection
PD S70-10FM	97 13 91	70 Vdc	5 kA	1 kA	10 A	d.c. ~ 3.0 GHz	36 W	SMA Male to SMA Female Bulkhead



High performance 1/4λ SPD with N type male/female interface used for transmission in frequency 0.8~2.5 GHz for protecting DAS, wireless LAN, etc, at boundaries from LPZ 0_A-1 and higher

PTG Model	Part No.	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	I _L	Frequency Range	Transmission Capacity (Max.)	Connection
PD N0-0FM	97 13 21	0 V	80 kA	40 kA	0 A	0.8 GHz ~ 2.5 GHz	2000 W	N Male to N Female Bulkhead



High performance 1/4λ SPD with 7/16 DIN male/female interface used for transmission in frequency 0.8~2.5 GHz for protecting DAS, wireless LAN, etc, at boundaries from LPZ 0_A-1 and higher

PTG Model	Part No.	U _c	I _n (8/20 μs)	I _{imp} (10/350 μs)	I _L	Frequency Range	Transmission Capacity (Max.)	Connection
PD D0-0FM	97 13 61	0 V	80 kA	40 kA	0 A	0.8 GHz ~ 2.5 GHz	2000 W	7/16 Male to 7/16 Female Bulkhead



Accessories

PTG Intelligent Lightning Protection Monitoring (PM) System uses advanced sensor detection and network communication technology to monitor, alarm and manage the LP system in real time. Provide three-level alarm before thunderstorm, inform relevant personnel to take preventive measures to reduce the lightning hazard; detect and analyze the magnitude of lightning current energy, number of surge, and record; monitor the SPD status in the whole process, analyze the condition of equipment through the data monitored online, and recognize the distribution of lightning strike in the workplace, and put forward a more comprehensive lightning protection plan.

PTG SPD Specific Disconnecter (SSD), a SPD special backup protection device of low-voltage power system can withstand the expected surge current of the protected SPD, and can break the device that passes through the power current due to the SPD fault, and has the characteristics of small power current action.

PTG provides a series standard busbar to make the free combination of SPDs more convenient.



DIN rail, integrated multi-monitoring module, such as SPD status, backup-fuse status, surge counting and occurrence time, RS 485 signal output, 4-digit display, etc

PTG Model	Part No.	Power Supply	Counting Current Range	Sequence of Surge	Output Type
PM 100W2-011	99 80 11	200 ~ 400 Vac	0.5 kA ~ 100 kA (8/20 μs), 0.5 kA ~ 100 kA (10/350 μs)	1 s	RS 485 with Modbus RTU



Built-in long-life Li-battery, outdoor (IP68) lightning current counter with large memory, display up to 9999, and counting surge up to 160 kA

PTG Model	Part No.	Power Supply	Counting Current Range	Sequence of Surge	Method of Mounting
PM LC-010	99 80 12	Built-in 1000 mA Li-battery	0.5 kA ~ 160 kA (8/20 μs), 0.5 kA ~ 100 kA (10/350 μs)	1 s	Fixed by screw



PTG SSD perfectly co-operate with PTG SPD, thus achieves excellent protection performance, and designed with a single-pole assembly free structure, which makes it user-friendly

PTG Model	Part No.	Used for Type of SPD	U_c	I_n (8/20 μ s)	I_{max} (8/20 μ s)	I_{imp} (10/350 μ s)	I_t	Remote Indicator	Assembly Type (Width)
PTS 25W1-11	10 05 P1	Type 1	690 Vac	25 kA	--	25 kA	3 A	Optional	1 P (2 mods) 2 P (4 mods) 3 P (6 mods) 4 P (8 mods)
PTS 25W1-10	10 02 P1	Type 1	230 Vac	25 kA	--	25 kA	3 A	Optional	
PTS 120W2-10	20 08 P1	Type 2	230 Vac	60 kA	120 kA	--	3 A	Optional	
PTS 100W2-10	20 07 P1	Type 2	230 Vac	50 kA	100 kA	--	3 A	Optional	



PTG SSD perfectly co-operate with PTG SPD, thus achieves excellent protection performance, and designed with a single-pole assembly free structure, which makes it user-friendly

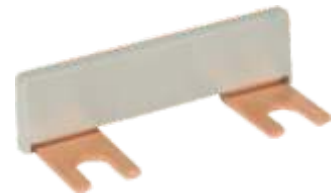
PTG Model	Part No.	Used for Type of SPD	U_c	I_n (8/20 μ s)	I_{max} (8/20 μ s)	I_{imp} (10/350 μ s)	I_t	Remote Indicator	Assembly Type (Width)
PTS 15W1-11	10 04 P1	Type 1	690 Vac	15 kA	--	15 kA	3 A	Optional	1 P (1 mods) 2 P (2 mods) 3 P (3 mods) 4 P (4 mods)
PTS 15W1-10	10 01 P1	Type 1	230 Vac	15 kA	--	15 kA	3 A	Optional	
PTS 80W2-11	20 05 P1	Type 2	690 Vac	40 kA	80 kA	--	3 A	Optional	
PTS 80W2-10	20 01 P1	Type 2	230 Vac	40 kA	80 kA	--	3 A	Optional	
PTS 40W2-11	20 06 P1	Type 2	690 Vac	20 kA	40 kA	--	3 A	Optional	
PTS 40W2-10	20 02 P1	Type 2	230 Vac	20 kA	40 kA	--	3 A	Optional	

Busbars

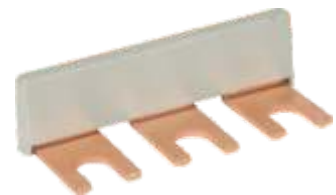
Type	BUSBAR 2P-2
Part No.	99 90 01
Structure	Single layer
Number of contacts	2
Installation length	2 modules
Nominal cross - section	10.5 mm ²



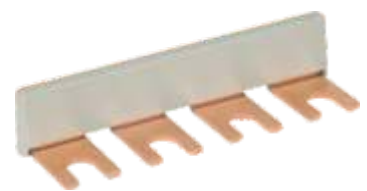
Type	BUSBAR 3P-2
Part No.	99 90 02
Structure	Single layer
Number of contacts	2
Installation length	3 modules
Nominal cross - section	10.5 mm ²



Type	BUSBAR 3P-3
Part No.	99 90 03
Structure	Single layer
Number of contacts	3
Installation length	3 modules
Nominal cross - section	10.5 mm ²



Type	BUSBAR 4P-4
Part No.	99 90 04
Structure	Single layer
Number of contacts	4
Installation length	4 modules
Nominal cross - section	10.5 mm ²



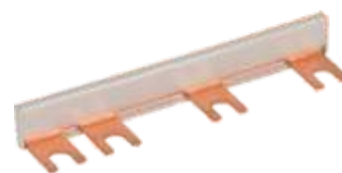
Type	BUSBAR 5P-3
Part No.	99 90 05
Structure	Single layer
Number of contacts	3
Installation length	5 modules
Nominal cross-section	10.5 mm ²



Type	BUSBAR 5P-5
Part No.	99 90 06
Structure	Single layer
Number of contacts	5
Installation length	5 modules
Nominal cross-section	10.5 mm ²



Type	BUSBAR 6P-4
Part No.	99 90 07
Structure	Single layer
Number of contacts	4
Installation length	6 modules
Nominal cross-section	10.5 mm ²



Type	BUSBAR 7P-4
Part No.	99 90 08
Structure	Single layer
Number of contacts	4
Installation length	7 modules
Nominal cross-section	10.5 mm ²



Type	BUSBAR 7P-3
Part No.	99 90 09
Structure	Single layer
Number of contacts	3
Installation length	7 modules
Nominal cross-section	10.5 mm ²



Symbol	Description	Symbol	Description
	Series connection spark gaps (L-N)		Electric resistance
	Series connection spark gaps (N-PE)		Bilateral diode (TVS)
	Single spark gap		Diode
	Thermo disconnect device		Light-emitting diode
	Thermo disconnect device with extinguish plate		The diodes bridge
	TVS		Indication light
	Parallel connection MOVs		Contact of pluggable module
	Parallel connection GDTs		Contact of cable
	MOV		Changeover contact (open/close)
	Diode discharge tube (GDT)		Changeover contact (close)
	Gas discharge tube (GDT)		Female contact of BNC
	Electric inductance		Male contact of BNC

* Remark: Product in kind prevail, final interpretation belongs to PTG Corporation.



Your Partner for Safety

PTG CORPORATION

Mingdao Building, #28 Cuibao Road, Longgang, Shenzhen, China

+86 755 2978 5926

info@ptgcorporation.com

www.ptgcorporation.com