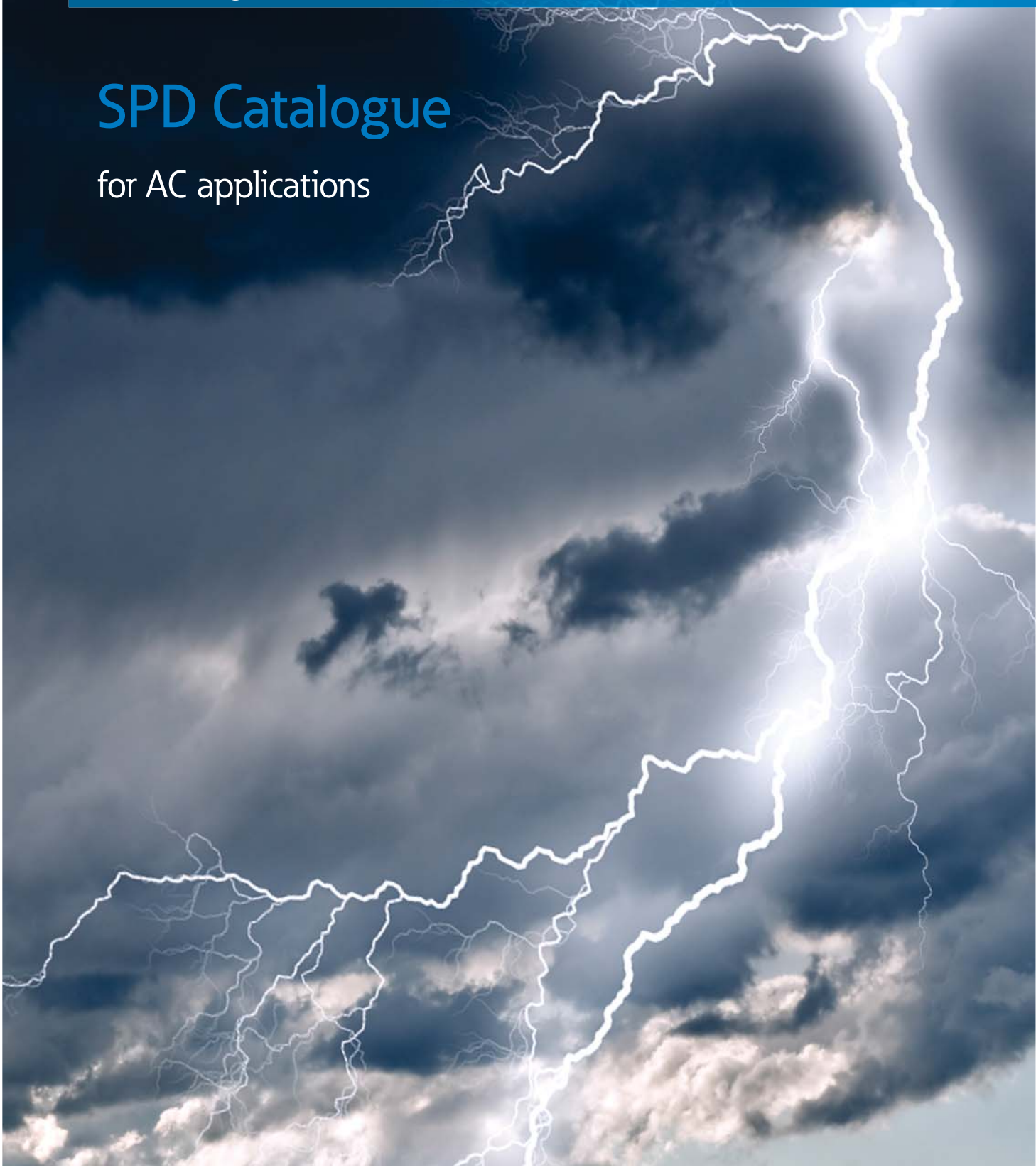
SPD Catalogue

for AC applications



Bussmann
by EATON

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The need for Surge Protection

Overvoltage surges can cause irreparable damage to electrical equipment that our infrastructure, industry and homes are becoming increasingly reliant upon. These transient events can lead to corrupted software, industrial downtime and PCB damage which can be catastrophic due to the loss of information, loss of output and high replacement cost.

Surges can be caused by a variety of different sources; such as lightning strikes, industrial machinery and power switching.

It is essential to protect electrical equipment against these events to ensure power quality and maximise the lifetime of the electrical devices.

After extensive research and development has been conducted, Bussmann is able to offer a comprehensive protective solution for your equipment, eliminating the disruptive and damaging effects that surge and overvoltage conditions can cause.

Causes of transients and surges

- **Lightning strikes:**
  - Large scale impact with high current and voltage but the least common occurrence.
- **Power switching:**
  - Utility and customer load switching such as motors, large loads, capacitor banks, fuse and circuit breaker operation.

Damaging effects of transients and surges

1. **Disruptive**—a voltage transient enters an electronic component and it is interpreted as a valid logic command resulting in system lock-up, malfunction, faults or corrupted files.
2. **Dissipative**—associated with short duration, low level energy surges, resulting in equipment failure over time including electronic components, ballasts, motors and controllers, service entrance equipment, panelboards and switchgear.
3. **Destructive**—associated with high level energy surges, resulting in immediate equipment failure including electronic components, motors and controllers, service entrance equipment, panelboards and switchgear.

Earthing system protection

International standard, IEC 60364 defines the three families of Earthing System protection that uses two letter codes to signify the protection that it provides, TN, TT and IT. The configuration of surge protection will depend on the Earthing System used.

TN

Within TN systems there is a direct connection point with Earth and a direct connection to neutral at the origin of the installation, usually the start point of the three-phase system.

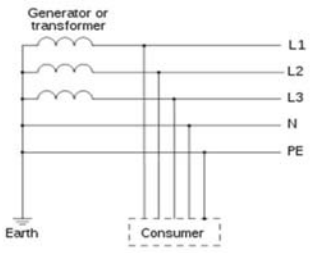


Figure 1: TN-S wiring diagram.

TN-S

Separate Protective Earth (PE) and Neutral (N) conductors from transformer to consuming device, which are not connected together at any point after the building distribution point.

Typical Applications:

- Residential
- Industrial

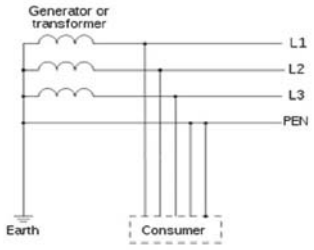


Figure 2: TN-C wiring diagram.

TN-C

Combined PE and N conductor from the transformer to the consuming element. This system is not permitted for conductors of less than 10mm² or for portable equipment. The PEN conductor must be connected to a number of Earth electrodes in the installation.

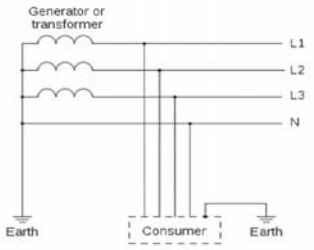


Figure 3: TT wiring diagram.

TT

In a TT earthing system the customer must provide their own connection to Earth, independent of any Earth connection at the generator.

Typical Applications:

- Telecommunications

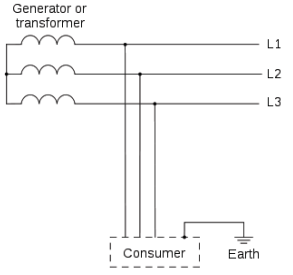


Figure 4: IT wiring diagram.

IT

In an IT network the electrical distribution system has no connection to Earth or it only has a high impedance connection. In an IT system, an insulation monitoring device is used to monitor the impedance.

Degrees of protection

SPDs are divided into three different levels of protection , Type 1, Type 2 and Type 3, depending on their function application, as determined by IEC 61643-1.

SPD Type 1

T1

A Type 1 SPD protects electrical installations to the lightning grid or rod. It can discharge the surge current from the effect of lightning spreading from the Earth conductor to the network conductors.

Figure 5 characterises the current wave from a direct lightning strike.

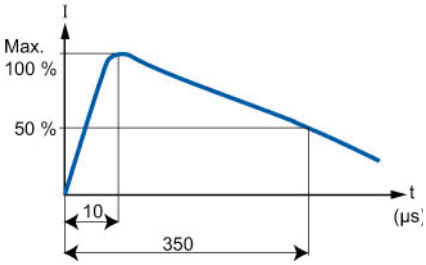


Figure 5: 10/350µs current wave.

SPD Type 2

T2

A Type 2 SPD is the secondary protection system for all low voltage electric installations. This is installed into each electrical switchboard and prevents the spread of overvoltage's in the electrical systems, protecting the loads.

Figure 6 characterises the current wave from the effects of an indirect lightning strike.

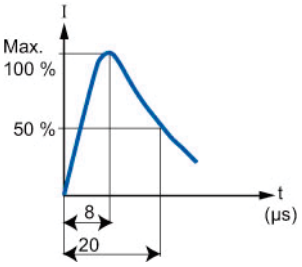


Figure 6: 8/20µs current wave

SPD Type 3

T3

A Type 3 SPD has a low discharge current capacity. They must therefore be installed as a supplement to a Type 2 SPD in the vicinity of sensitive loads.

Type 3 SPDs are characterised by the wave form shown in Figure 7.

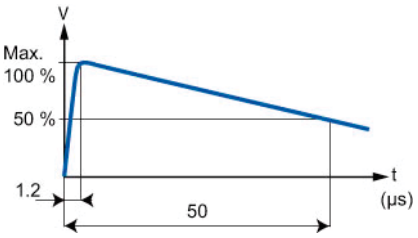


Figure 7: 1.2/ 50µs voltage wave

Plug-in modules

Description

When an SPD reaches the end of its life and indicates that it needs to replaced, Bussmann is able to provide replacement modules for the entire voltage range on offer.

These thermoplastic modules are IEC certified to IEC61643 and save both time and money by simply clipping into the place of the operated module. This swift exchange of parts ensures that the system is protected which prevents industrial downtime or periods when the electrical equipment is left vulnerable to voltage surges.

SPCT2-335

Ordering information

Part numbers	SPCT2-075	SPCT2-135	SPCT2-175	SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460	SPCT2-580	SPCT2-NPE60
System voltage	75 V	135 V	175 V	280 V	335 V	385 V	460 V	580 V	260V
Article numbers	167577	167582	167587	167592	167597	167602	167607	167612	167617
Specifications									
Max.continuous operating AC voltage [U_c]	75 VAC	135 VAC	175 VAC	280 VAC	335 VAC	385 VAC	460 VAC	580 VAC	260 VAC
Voltage protection level [U_p]	< 550 V	< 800 V	< 1.0 kV	< 1.4 kV	< 1.6 kV	< 1.8 kV	< 2.2 kV	< 2.6 kV	1.0 Kv
Voltage protection level at 5kA [U_p]	400 V	550 V	700 V	1000 V	1200 V	1350 V	1700 V	2000 V	-
Max. mains-side overcurrent protection	125 A gL/gG -	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	-
Short circuit withstand capability for max. mains-side overcurrent protection	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	-
Temporary overvoltage (TOV) U_T	75 VAC	135 VAC	175 VAC	350 VAC	415 VAC	415 VAC	580 VAC	580 VAC	-
Temporary overvoltage NPE									1200 VAC (200 ms)
Response time [tA]	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 100 ns
Follow current extinguishing capability [I_f]	-	-	-	-	-	-	-	-	100 A rms
Nominal discharge current (8/20µs) I_n	15 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Max discharge current [I_{max}]	30 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
Standards information	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
SPD according to EN 61643-11	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2
SPD according to IEC 61643-1	Class II	Class II	Class II	Class II	Class II	Class II	Class II	Class II	Class II
Operating temperature range	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C
Operating state/Fault indication	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	Blue, good.
Cross sectional area (min.)	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4mm^2
Cross sectional area (max.)	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25mm^2
Mounting	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715
Enclosure material	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Location category	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Rated frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50/ 60 Hz
Degree of protection	IP40	IP40	IP40	IP40	IP40	IP40	IP40	IP40	IP40

Single pole T1 and T1/T2

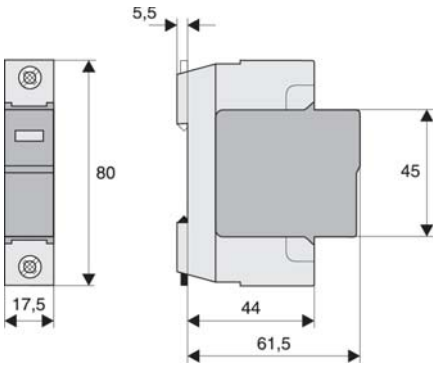
Description

Bussmann is able to provide SPDs to meet a variety of applications and requirements. This range is specifically designed and manufactured for customised protective system solutions.

The modular designs feature integrated fault indication which turns from green to red, visually alerting the operator to whether or not the device has reached the end of its life and needs to be replaced with a new module. Manufactured from thermoplastic, the SPDs are IEC certified for use in environments with an operational temperature range from –40°C to +70°C.

Configurations of SPDs can be customised for the application or for the installation location, the module locking system with module release buttons make the replacement easy and without tools by depressing the buttons and lifting the module out.

SPBT12-280



General arrangement

Ordering information	**T1**			**T1 /T2**		
Part numbers	**SPI-35-400**	**SPI-50-NPE**	**SPI-100-NPE**	**SPBT12-280-1**	**SPBT12-280-1-NPE**	**SPBT12-NPE100**
System voltage/poles	440 V / 1	260 V / 1+NPE	260 V / 1+NPE	280 V / 1	280 V /1 + NPE	255 V
Article numbers	267487	263138	263139	158306	158308	158307
Replacement modules	-	-	-	SPBT12-280	SPBT12-280	SPBT12-NPE100
Specifications						
Max. continuous operating AC voltage [U_c]	440 VAC	260 VAC	260 VAC	280 VAC	280 VAC / 255 VAC	255 VAC
Voltage protection level [U_p]	1.5 kV	1.5 kV	1.5 kV	< 1.5 kV	< 1.5 kV	< 1.5 kV
Voltage protection level at 5 kA [U_p]	-	-	-	950 V	950 V	-
Max. mains-side overcurrent protection	125 A gL	-	-	160 A gL/gG	160 A gL/gG	-
Short circuit withstand capability for max. mains-side overcurrent protection	-	-	-	50 kA rms	50 kA rms	-
Temporary overvoltage test value U_T (5 s)	25 kA rms	-	-	370 VAC	348 / 370 VAC	-
Temporary overvoltage NPE	440 VAC	1200 VAC	1200 VAC	-	1200 VAC	1200 VAC (200 ms)
Response time (rate of voltage rise 5 kV/µs)	< 100 ns	< 100 ns	< 100 ns	< 25 ns	< 25 ns/ < 100 ns	< 100 ns
Follow current interrupt rating [I_fi]	3 kA rms	500 A rms	100 A rms	-	100 A rms	100A rms
Lightning impulse current (10/350µs) [I_{imp}]	35 kA	50 kA	100 kA	12.5 kA	12.5 kA / 100 kA	100 kA
Nominal discharge current (8/20µs) I_n	35 kA	50 kA	100 kA	25 kA	25 kA / 100 kA	100 kA
Max discharge current [I_{max}]	35 kA	50 kA	100 kA	50 kA	50 kA / 100 kA	100 kA
Standards information	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
SPD according to EN 61643-11	Type 1	Type 1	Type 1	Type 1 & 2	Type 1 & 2	Type 1 & 2
SPD according to IEC 61643-1	Class I	Class I	Class I	Class I & II	Class I & II	Class I & II
Operating temperature range	-40°C to +85°C	-40°C to +85°C	40°C to +85°C	-40°C to +70°C	-40°C to +70°C	-40°C to + 70°C
Operating state/Fault indication	-	-	-	green (good) / red (replace)	green (good) / red (replace)	green (good)/ red (replace)
Cross sectional area (min.)	45 mm²	45 mm²	45 mm²	4 mm²	4 mm²	4 mm²
Cross sectional area (max.)	90 mm²	90 mm²	90 mm²	25 mm²	25 mm²	25 mm²
Mounting	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/EN 60715
Enclosure material	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Location category	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Rated frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50/60Hz
Degree of protection	IP40	IP40	IP40	IP40	IP40	IP40
Product warranty	2 Years	2 Years	2 Years	2 Years	2 Years	2 years
Auxiliary switch	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSX-SPM	ASAUXSX-SPM	ASAUXSC-SPM

Single pole T2

Description

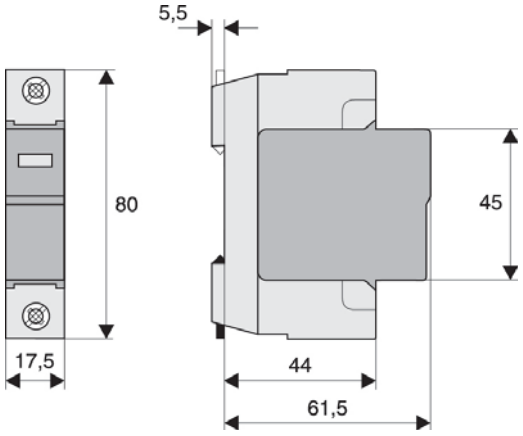
Bussmann is able to offer a variety of T2 single pole and single pole plus neutral SPDs. These devices are suitable for use within a range of applications, allowing the customisation of the configuration of SPDs within a specific system. The neutral and protective earth unit incorporates a spark gap device, shown by the blue indicator screen built into the unit, adding extra levels of protection into the configuration of SPDs.

Additionally, there are local and remote monitoring options available. The ASAUXC-SPM device clips onto the end of any configuration of SPDs, providing real time information to the operator's computer system on the status of the SPDs.

Ordering information **T2**

Part numbers	**SPCT2-075-1**	**SPCT2-135-1**	**SPCT2-175-1**	**SPCT2-280-1**	**SPCT2-335-1**	**SPCT2-385-1**	**SPCT2-460-1**
System voltage/poles	75 V / 1	135 V / 1	175 V / 1	280 V / 1	335 V / 1	385 V / 1	460 V / 1
Article numbers	167578	167583	167588	167593	167598	167603	167608
Replacement modules	SPCT2-075	SPCT2-135	SPCT2-175	SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460
Specifications							
Max. continuous operating AC voltage [U_c]	75 VAC	135 VAC	175 VAC	280 VAC	335 VAC	385 VAC	460 VAC
Voltage protection level [U_p]	< 550 V	< 800 V	< 1.0 kV	< 1.4 kV	< 1.6 kV	<1.8 kV	< 2.2 kV
Voltage protection level at 5 kA [U_p]	400 V	550 V	700 V	1000 V	1200 V	1350 V	1700 V
Max. mains-side overcurrent protection	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG
Short circuit withstand capability for max. mains-side overcurrent protection	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms
Temporary overvoltage test value U_T (5 s)	75 VAC	135 VAC	175 VAC	350 VAC	415 VAC	415 VAC	580 VAC
Temporary overvoltage NPE	-	-	-	-	-	-	-
Response time (rate of voltage rise 5 kV/µs)	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Follow current interrupt rating [I_fi]	-	-	-	-	-	-	-
Lightning impulse current (10/350µs) [I_{imp}]	-	-	-	-	-	-	-
Nominal discharge current (8/20µs) I_n	15 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Max discharge current [I_{max}]	30 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
Standards information	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
SPD according to EN 61643-11	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2
SPD according to IEC 61643-1	Class II	Class II	Class II	Class II	Class II	Class II	Class II
Operating temperature range	-40°C to +70°C	-40°C to +70°C	-40°C to + 70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Operating state/Fault indication	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)
Cross sectional area (min.)	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²
Cross sectional area (max.)	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²
Mounting	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715
Enclosure material	Thermoplastic UL 94 V2	Thermoplastic UL 94V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Location category	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Rated frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Degree of protection	IP40	IP40	IP40	IP40	IP40	IP40	IP40
Product warranty	2 Years	2 Years	2 years	2 years	2 years	2 years	2 years
Auxiliary switch	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM

SPCT2-280-1



General arrangement

SPCT2-580-1	SPCT2-NPE60-1	SPCT2-280-1-NPE	SPCT2-335-1-NPE	SPCT2-385-1-NPE	SPCT2-460-1-NPE	SPCT2-580-1-NPE
580 V / 1	260V/ 1	280 V / 1 + NPE	335 V / 1 + NPE	385 V / 1 + NPE	460 V / 1 + NPE	580 V / 1 + NPE
167613	167618	167619	167621	167623	167625	167627
SPCT2-580	SPCT2-NPE60	SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460	SPCT2-580
580 VAC	260 VAC	280 VAC	335 VAC	385 VAC	460 VAC	580 VAC
< 2.6 kV	1.0 Kv	< 1.4 kV	< 1.6 kV	< 1.8 kV	< 2.2 kV	< 2.6 kV
2000 V	-	1000 V	1200 V	1350 V	1700 V	2000 V
125 A gL/gG	-	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG
50 kA rms	-	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms
580 VAC	-	350 VAC	415 VAC	415 VAC	580 VAC	580 VAC
-	1200 VAC (200 ms)	1200 VAC	1200 VAC	1200 VAC	1200 VAC	1200 VAC
< 25 ns	<100 ns	< 25 ns / < 100 ns	< 25 ns / < 100 ns	< 25 ns / < 100 ns	< 25 ns / < 100 ns	< 25 ns / < 100 ns
-	100 A rms	100 A rms	100 A rms	100 A rms	100 A rms	100 A rms
-	-	-	-	-	-	-
20 kA	20 kA	20 kA / 100 kA	20 kA / 100 kA	20 kA / 100 kA	20 kA / 100 kA	20 kA / 100 kA
40 kA	40 kA	40 kA / 100 kA	40 kA / 100 kA	40 kA / 100 kA	40 kA / 100 kA	40 kA / 100 kA
IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2
Class II	Class II	Class II	Class II	Class II	Class II	Class II
-40°C to +70°C	-40°C to + 70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
green (good) / red (replace)	Blue, good.	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)
4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2
25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2
Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715
Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
50 / 60 Hz	50/ 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
IP40	IP40	IP40	IP40	IP40	IP40	IP40
2 years	2 Years	2 years	2 years	2 years	2 years	2 years
ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM

TN-S protection systems

Description

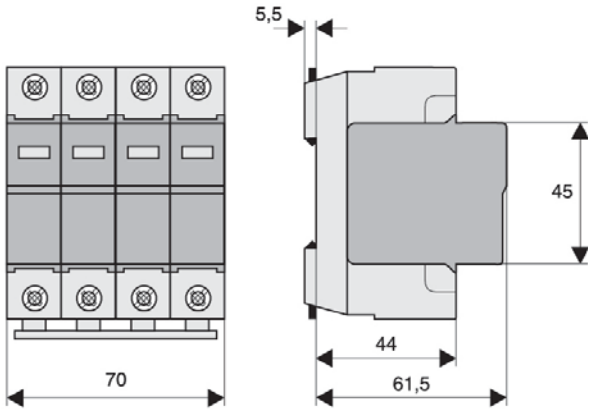
Bussmann is able to provide a range of SPDs that are certified for use within TN-S protection systems. The TN-S system is appropriate within the many residential and industrial electric systems, especially in Europe. This is because the PE and N are separate conductors which are connected together only near a power source.

The modular designs feature integrated fault indication which turns from green to red, visually alerting the operator to whether or not the device has reached the end of its life and needs to be replaced with a new module. Manufactured from thermoplastic, the SPDs are IEC certified for use in environments with an operational temperature range from –40°C to +70°C

Configurations of SPDs can be customised for the application or for the installation location, the module locking system with module release buttons make the replacement easy and without tools by depressing the buttons and lifting the module out.

Ordering information	**T1/T2**					
Part numbers	**SPBT12-280-4**	**SPBT12-280-3-NPE**	**SPCT2-280-3-NPE**	**SPCT2-335-3-NPE**	**SPCT2-385-3-NPE**	**SPCT2-460-3-NPE**
System voltage/poles	280 V / 4	280 V / 3 + NPE	280 V / 3 + NPE	335 V / 3 + NPE	385 V / 3 + NPE	460 V / 3 + NPE
Article numbers	158331	158332	167620	167622	167624	167626
Replacement modules	SPBT12-280	SPBT12-280	SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460
Specifications						
Line system type	TN-S	TN-S	TN-S	TN-S	TN-S	TN-S
Max.continuous operating AC voltage [U_c]	280 VAC	280 VAC / 255 VAC	280 VAC	335 VAC	385 VAC	460 VAC
Voltage protection level [U_p]	< 1.5 kV	< 1.5 kV	< 1.4 kV	< 1.6 kV	< 1.8 kV	< 2.2 kV
Voltage protection level at 5 kA [U_p]	950 V	950 V	1000 V	1200 V	1350 V	1700 V
Max. mains-side overcurrent protection	160A gL/gG	160 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG
Short circuit withstand capability for max. mains-side overcurrent protection	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms
Temporary overvoltage test value U_T (5 s)	370 VAC	348 /370 VAC	350 VAC	415 VAC	415 VAC	580 VAC
Temporary overvoltage NPE	-	1200 VAC	1200 VAC	1200 VAC	1200 VAC	1200 VAC
Response time (rate of voltage rise 5 kV/µs)	< 25 ns	< 25 ns / < 100 ns	< 25 ns / < 100 ns	< 25 ns / < 100 ns	< 25 ns / < 100 ns	< 25 ns / < 100 ns
Follow current extinguishing capability [I_{fi}]	-	100 A rms	100 A rms	100 A rms	100 A rms	100 A rms
Lightning impulse current (10/350µs) [I_{imp}]	12.5 kA	3 x 12.5 kA / 100 kA	-	-	-	-
Nominal discharge current (8/20µs) I_n	25 kA	3 x 25 kA / 100 kA	3 x 20 kA / 100 kA	3 x 20 kA / 100 kA	3 x 20 kA / 100 kA	3 x 20 kA / 100 kA
Max discharge current [I_{max}]	50 kA	3 x 50 kA / 100 kA	3 x 40 kA / 100 kA	3 x 40 kA / 100 kA	3 x 40 kA / 100 kA	3 x 40 kA / 100 kA
Standards information	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
SPD according to EN 61643-11	Type 1 & 2	Type 1 & 2	Type 2	Type 2	Type 2	Type 2
SPD according to IEC 61643-1	Class I & II	Class I & II	Class II	Class II	Class II	Class II
Operating temperature range	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Operating state/Fault indication	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)
Cross sectional area (min.)	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²
Cross sectional area (max.)	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²
Mounting	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/EN 60715
Enclosure material	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Location category	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Rated frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Degree of protection	IP40	IP40	IP40	IP40	IP40	IP40
Product warranty	2 Years	2 Years	2 Years	2 Years	2 Years	2 Years
Auxiliary switch	ASAUXSX-SPM	ASAUXSX-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSX-SPM	ASAUXSX-SPM

SPCT2-280-3+NPE



General arrangement

T2

SPCT2-580-3-NPE	SPCT2-135-4	SPCT2-175-4	SPCT2-280-4	SPCT2-335-4	SPCT2-385-4	SPCT2-460-4	SPCT2-580-4
580 V / 3 + NPE	135 V	175 V	280 V	335 V	385 V	460 V	580 V / 4
167628	167586	167591	167596	167601	167606	167611	167616
SPCT2-580	SPCT2-135	SPCT2-175	SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460	SPCT2-580
TN-S	TN-S	TN-S	TN-S	TN-S	TN-S	TN-S	TN-S
580 VAC	135 VAC	175 VAC	280 VAC	335 VAC	385 VAC	460 VAC	580 VAC
< 2.6 kV	< 800 V	< 1.0 kV	< 1.4 kV	< 1.6 kV	< 1.8 kV	< 2.2 kV	< 2.6 kV
2000 V	550 V	700 V	1000 V	1200 V	1350 V	1700 V	2000 V
125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG
50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms
580 VAC	135 VAC	175 VAC	350 VAC	415 VAC	415 VAC	580 VAC	580 VAC
1200 VAC	-	-	-	-	-	-	-
< 25 ns / < 100 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns
100 A rms	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
3 x 20 kA / 100 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
3 x 40 kA / 100 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2
Class II	Class II	Class II	Class II	Class II	Class II	Class II	Class II
-40°C to +70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C
green (good) / red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)
4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2
25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2
Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715	Quick fastening on DIN rail according to IEC/ EN 60715
Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
IP40	IP40	IP40	IP40	IP40	IP40	IP40	IP40
2 Years	2 years	2 years	2 years	2 years	2 years	2 years	2 years
ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM

TN-C protection systems

Description

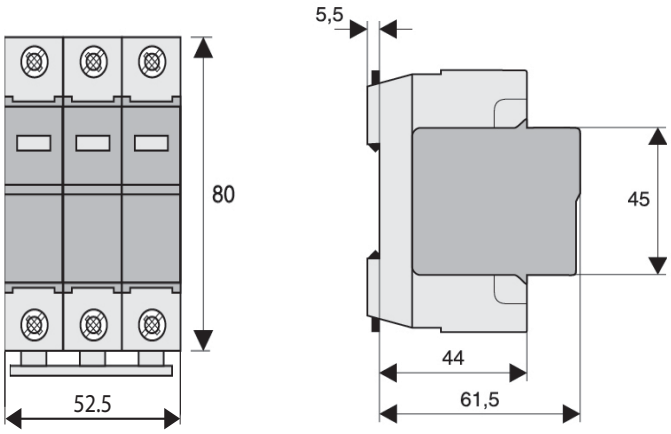
Bussmann is able to offer a range of SPDs for use within a TN-C system. This is where there is a combined PEN conductor which fulfils the role of the separate PE & N conductors.

The modular designs feature integrated fault indication which turns from red to green, visually alerting the operator to whether or not the device has reached the end of its life and needs to be replaced with a new module. Manufactured from thermoplastic, the SPDs are IEC certified for use in environments with an operational temperature range from –40°C to +70°C.

Configurations of SPDs can be customised for the application or for the installation location, the module locking system with module release buttons make the replacement easy and without tools by depressing the buttons and lifting the module out.

Ordering information	**T1**	**T1 /T2**			
Part numbers	**SPI-35-440-3**	**SPBT12-280-3**	**SPCT2-075-3**	**SPCT2-135-3**	**SPCT2-175-3**
System voltage/poles	440 V / 3	280/3	75 V/3	135 V/3	175 V/3
Article numbers	267487	158330	167580	167585	167590
Replacement modules	-	SPBT12-280	SPCT2-075	SPCT2-135	SPCT2-175
Specifications					
Line system type	TN-C	TN-C	TN-C	TN-C	TN-C
Max.continuous operating AC voltage [U_c]	440 VAC	280 VAC	75 VAC	135 VAC	175 VAC
Voltage protection level [U_p]	1.5 kV	< 1.5 kV	< 550 V	< 800 V	< 1.0 kV
Voltage protection level at 5kA [U_p]	-	950 V	400 V	550 V	700 V
Max. mains-side overcurrent protection	125 A gL	160 A gL/gG	125A gL/gG	125A gL/gG	125A gL/gG
Short circuit withstand capability for max. mains-side overcurrent protection	25 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms
Temporary overvoltage test value U_T (5 s)	440 VAC	370 VAC	75 VAC	135 VAC	175 VAC
Response time (rate of voltage rise 5 kV/ µs)	< 100 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Follow current extinguishing capability [I_f]	3 kA rms	-	-	-	-
Lightning impulse current (10/350µs) [I_{imp}]	35 kA	12.5 kA	-	-	-
Nominal discharge current (8/20µs) I_n	35 kA	25 kA	15 kA	20 kA	20 kA
Max discharge current [I_{max}]	35 kA	50 kA	30 kA	40 kA	40 kA
Standards information	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
SPD according to EN 61643-11	Type 1	Type 1 & 2	Type 2	Type 2	Type 2
SPD according to IEC 61643-1	Class I	Class I & II	Class II	Class II	Class II
Operating temperature range	-40°C to +85°C	40°C to +70°C	-40°C to + 70°C	-40°C to +70°C	-40°C to +70°C
Operating state/Fault indication	-	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)
Cross sectional area (min.)	45 mm²	4 mm²	4 mm²	4 mm²	4 mm²
Cross sectional area (max.)	90 mm²	25 mm²	25 mm²	25 mm²	25 mm²
Mounting	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715
Enclosure material	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Location category	Indoor	Indoor	Indoor	Indoor	Indoor
Rated frequency	50 / 60 Hz	50 / 60 Hz	50/60 Hz	50 / 60 Hz	50 / 60 Hz
Degree of protection	IP40	IP40	IP40	IP40	IP40
Product warranty	2 Years	2 Years	2 years	2 years	2 years
Auxiliary switch	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM

SPCT2-280-3



General arrangement

T2

SPCT2-280-3	SPCT2-335-3	SPCT2-385-3	SPCT2-460-3	SPCT2-580-3
280 V/3	335 V/3	385 V/3	460 V/3	580 V/3
167595	167600	167605	167610	167615
SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460	SPCT2-580
TN-C	TN-C	TN-C	TN-C	TN-C
280 VAC	335 VAC	385 VAC	460 VAC	580 VAC
< 1.4 kV	< 1.6 kV	< 1.8 kV	< 2.2 kV	< 2.6 kV
1000 V	1200 V	1350 V	1700 V	2000 V
125A gL/gG	125A gL/gG	125A gL/gG	125A gL/gG	125A gL/gG
50 kA rms	50 kA rms	50 kA rms	50kA rms	50kA rms
350 VAC	415 VAC	415 VAC	580 VAC	580 VAC
< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25ns
-	-	-	-	-
-	-	-	-	-
20 kA	20 kA	20 kA	20 kA	20 kA
40 kA	40 kA	40 kA	40 kA	40 kA
IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
Type 2	Type 2	Type 2	Type 2	Type 2
Class II	Class II	Class II	Class II	Class II
-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)
4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2
25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2
Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715
Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Indoor	Indoor	Indoor	Indoor	Indoor
50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 /60 Hz
IP40	IP40	IP40	IP40	IP40
2 years	2 years	2 years	2 years	2 years
ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM

TT protection systems

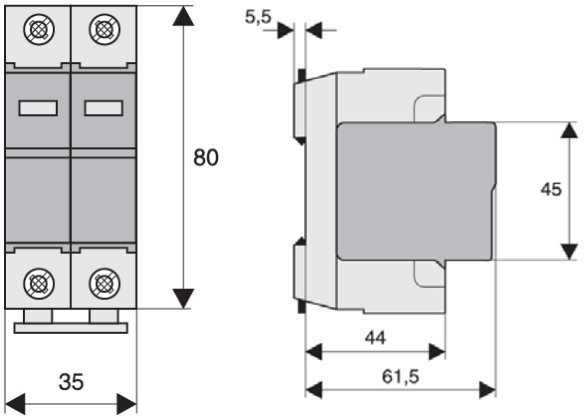
Description

Bussmann is able to offer a selection of IEC certified thermoplastic SPDs for the TT earthing system. The TT system is often used in the telecommunication industry where interference-free earthing is required. One of the main advantages of the TT earthing system is that it is clear of both high and low frequency noises that come through the neutral wire of connected electrical equipment.

The modular designs feature integrated fault indication which turns from green to red, visually alerting the operator to whether or not the device has reached the end of its life and needs to be replaced with a new module. Manufactured from thermoplastic, the SPDs are IEC certified for use in environments with an operational temperature range from –40°C to +70°C

Ordering information	**T1 & T2**							
Part numbers	**SPBT12-280-2**	**SPCT2-075-2**	**SPCT2-135-2**	**SPCT2-175-2**	**SPCT2-280-2**	**SPCT2-335-2**	**SPCT2-385-2**	**SPCT2-460-2**
System voltage	280 V / 2	75 V	135 V	175 V	280 V	335 V	385 V	460 V
Article numbers	158309	167579	167584	167589	167594	167599	167604	167609
Replacement modules	SPBT12-280	SPCT2-075	SPCT2-135	SPCT2-175	SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460
Specifications								
Line system type	TT	TT	TT	TT	TT	TT	TT	TT
Max.continuous operating AC voltage [U_C]	280 VAC	75 VAC	135 VAC	175 VAC	280 VAC	335 VAC	385 VAC	460 VAC
Voltage protection level [U_p]	< 1.5 kV	< 550 V	< 800 V	< 1.0 kV	< 1.4 kV	< 1.6 kV	< 1.8 kV	< 2.2 kV
Voltage protection level at 5kA [U_p]	950 V	400 V	550 V	700 V	1000 V	1200 V	1350 V	1700 V
Max. mains-side overcurrent protection	160 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG
Short circuit withstand capability for max. mains-side overcurrent protection	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms
Temporary overvoltage (TOV) U_T	370 VAC	75 VAC	135 VAC	175 VAC	350 VAC	415 VAC	415 VAC	580 VAC
Response time [tA]	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns
Lightning impulse current (10/350µs) [I_{imp}]	12.5 kA	-	-	-	-	-	-	-
Nominal discharge current (8/20µs) I_n	25 kA	15 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Max discharge current [I_{max}]	50 kA	30 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
Standards information	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
SPD according to EN 61643-11	Type 1 & 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2
SPD according to IEC 61643-11	Class I & II	Class II	Class II	Class II	Class II	Class II	Class II	Class II
Operating temperature range	-40°C to +70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C
Operating state/Fault indication	green (good) / red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)
Cross sectional area (min.)	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²	4 mm²
Cross sectional area (max.)	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²	25 mm²
Mounting	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715
Enclosure material	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Location category	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Rated frequency	50 / 60 Hz	50/60Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Degree of protection	IP40	IP40	IP40	IP40	IP40	IP40	IP40	IP40
Product warranty	2 Years	2 years	2 years	2 years	2 years	2 years	2 years	2 years
Auxiliary switch	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM

SPCT2-280-2



General arrangement

T2

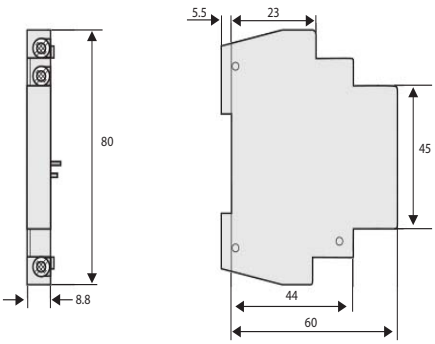
SPCT2-580-2	SPCT2-075-4	SPCT2-135-4	SPCT2-175-4	SPCT2-280-4	SPCT2-335-4	SPCT2-385-4	SPCT2-460-4	SPCT2-580-4
580 V	75 V	135 V	175 V	280 V	335 V	385 V	460 V	580 V / 4
167614	167581	167586	167591	167596	167601	167606	167611	167616
SPCT2-580	SPCT2-075	SPCT2-135	SPCT2-175	SPCT2-280	SPCT2-335	SPCT2-385	SPCT2-460	SPCT2-580
TT	TT	TT	TT	TT	TT	TT	TT	TT
580 VAC	75 VAC	135 VAC	175 VAC	280 VAC	335 VAC	385 VAC	460 VAC	580 VAC
< 2.6 kV	< 550 V	< 800 V	< 1.0 kV	< 1.4 kV	< 1.6 kV	< 1.8 kV	< 2.2 kV	< 2.6 kV
2000 V	400 V	550 V	700 V	1000 V	1200 V	1350 V	1700 V	2000 V
125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG	125 A gL/gG
50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms	50 kA rms
580 VAC	75 VAC	135 VAC	175 VAC	350 VAC	415 VAC	415 VAC	580 VAC	580 VAC
< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns	< 25 ns
-	-	-	-	-	-	-	-	-
20 kA	15 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
40 kA	30 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643	IEC 61643
Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2	Type 2
Class II	Class II	Class II	Class II	Class II	Class II	Class II	Class II	Class II
-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C	-40°C to + 70°C
green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)	green (good)/ red (replace)
4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2	4 mm^2
25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2	25 mm^2
Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715
Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2	Thermoplastic UL 94 V2
Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
IP40	IP40	IP40	IP40	IP40	IP40	IP40	IP40	IP40
2 years	2 years	2 years	2 years	2 years	2 years	2 years	2 years	2 years
ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM	ASAUXSC-SPM

Remote signalling contact

Description

Bussmann is also able to offer an additional plug in Auxiliary Switch which is designed to be easily installed within each configuration of SPDs on offer. When SPDs are located in different areas of a facility or in hard to reach places, the Auxiliary Switch transmits a signal into the operators computer system to clearly indicate that the specific device needs to be changed when visual identification is not practical. The signalling occurs instantaneously when the device has functioned, providing an up to date status of the system to ensure that the equipment is secure against future strikes.

ASAUXSC-SPM



General arrangement

Ordering information

Part numbers	**ASAUXSC-SPM**
Article number	131785
Specifications	
Rated insulation voltage	250 VAC
Rated frequency	50 / 60 Hz
Switching contact	1 CO
Minimum voltage per contact	24 VAC
Rated operational current AC12	2 A / 250 VAC
Maximum back up fuse	2A gL
Overvoltage category	IV
Pollution degree	2
Frame size	45 mm
Device height	80 mm
Device width	8.8 mm
Weight	41 g
Mounting	DIN rail mounting with screw fixing
Degree of protection	IP 40
Finger and hand touch safe acc. to	BGV A3, ÖVE-EN 6
Upper and lower terminals	Lift terminals
Terminal capacity	2 x 2.5 mm^2
Tightening torque of terminal screws	0.8 - 1 Nm

Lead through terminals

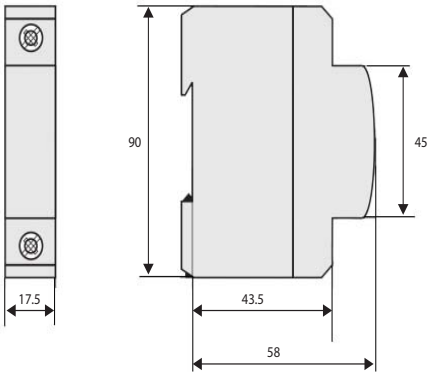
Description

There are two different Lead Through Terminals available for the range of SPDs (excluding 690 VAC). They permit the orderly wiring of the SPDs and serve to act as a lead through for circuits which require vertical connections from the upper to the lower SPD connection level.

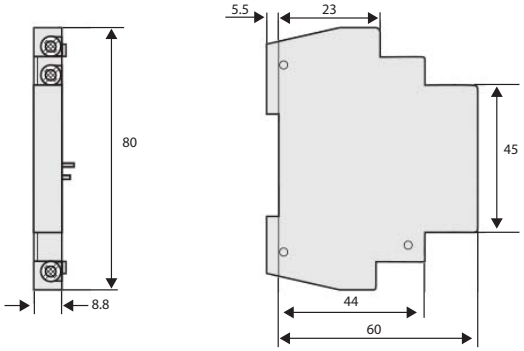
The ASLTT-63 is suitable for use alongside all T2 devices and the SPB-D-125 is suitable alongside all T1 devices.

Ordering information

Part numbers	**SPB-D-125**	**ASLTT-63**
Article number	248145	131784
Specifications		
Rated voltage U_c	500 V AC/DC	500 V AC/DC
Rated current I_N	125 A / 30°C	63A
Peak impulse current (10/350) µs	100 kA	-
Overvoltage category	III	-
Frame size	45 mm	45 mm
Device height	90 mm	90 mm
Device width	17.5 mm	17.5 mm
Mounting	Quick fastening on DIN rail IEC / EN 60715	Quick fastening on DIN rail IEC / EN 60715
Degree of protection	IP 40	IP 40
Upper and lower terminals	Lift and open-mouthed terminals	Lift and open-mouthed terminals
Terminal capacity	1 - 25 mm² (flexible) 1 - 35 mm² (rigid)	1 - 25 mm²
Tightening torque of terminals screws	4 - 4.5 Nm	2.4 - 3 Nm



SPB-D-125



ASLTT-63

690 VAC wind and industrial applications

Description

Bussmann range of 690 VAC surge protection devices are designed specifically for higher voltage industrial applications and installation into wind power applications.

Specifically designed for the higher system voltage of wind and industrial applications the 690 VAC SPDs have a high surge discharge capability due to heavy-duty zinc oxide varistor and spark-gap technology; and includes both Type 1 and Type 2 devices for protection against lightning strikes and voltage surges.

As well as meeting the requirements of the EN 61643-11 standard for low voltage Surge Protection Devices, the 690 VAC SPDs are also vibration and shock resistant according to the EN60068-2 standard making them especially suitable for industrial and wind applications.

BSPS1690WER

Ordering information	T1	T2	
Part numbers without remote signaliing	**BSPS1690WE**	**BSPM1690WE**	**BSPM3690WE**
Part numbers with remote signalling	**BSPS1690WER**	**BSPM1690WER**	**BSPM3690WER**
System voltage/poles	690 V / 1	690 V / 1	690 V / 3
Replacement modules	-	BPM750WE	BPM750WE
Specifications			
Line system type	TNS, TNC, IT	TN, TT	TNC
Max.continuous operating AC voltage [U_c]	760 VAC	600 VAC	600 VAC
Voltage protection level [U_p]	≤ 4 kV	≤ 3 kV	≤ 3 kV
Voltage protection level at 5kA [U_p]	-	≤ 2.5 kV	≤ 2.5 kV
Max. mains-side overcurrent protection	125 A gL/gG (L-L)	100 A gL/gG	100 A gL/gG
Temporary overvoltage test value (TOV) [U_T]	1000 V / 5 sec	900 V / 5 sec	900 V / 5 sec
Follow current extinguishing capability [I_f]	25 kA rms	25 kA rms	25 kA rms
Lightning impulse current (10/350µs) [I_{imp}]	25 kA	-	-
Nominal discharge current (8/20µs) I_n	25 kA	15 kA	15 kA
Max discharge current [I_{max}]		25 kA	25 kA
Standards information	IEC 61643	IEC 61643	IEC 61643
SPD according to EN 61643-11	Type 1	Type 2	Type 2
SPD according to IEC 61643-1	Class I	Class II	Class II
Number of poles	1	1	3
Operating temperature range	-40°C to +80°C (parallel) -40°C to +60°C (series)	-40°C to +80°C	-40°C to +80°C
Operating state/Fault indication	green (good) / red (replace)	green (good) / red (replace)	green (good) / red (replace)
Cross sectional area (min.)	10 mm² solid / flexible	1.5 mm² solid / flexible	1.5 mm² solid / flexible
Cross sectional area (max.)	50 mm² stranded / 35 mm² flexible	35 mm² stranded 25 mm² flexible	35 mm² stranded 25 mm² flexible
Mounting	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715	Quick fastening on DIN rail according to IEC/EN 60715
Enclosure material	Thermoplastic UL 94 V0	Thermoplastic UL 94 V0	Thermoplastic UL 94 V0
Location category	Indoor	Indoor	Indoor
Degree of protection	IP 20	IP 20	IP 20
Product warranty	2 Years	2 Years	2 Years

Frequently asked questions (FAQs)

What is a surge protector?

A surge protector is a device that limits transient overvoltage's to a safe level, thus protecting equipment it is connected to from damage.

How does an SPD work?

A surge protector works by momentarily "switching" from an open circuit mode into a low impedance mode and shunting the surge energy to the ground and in doing so, it limits the overvoltage to a safe level.

When the surge event is over, the protector returns to its open circuit mode, ready for the next event or if it has reached the end of life then it remains open circuit safely until it is replaced. The visual indicator or remote signalling unit will clearly alert the operator when the SPD has reached the end of life

What is shunting?

Shunting is the term used to describe the process by which an SPD redirects voltage transient energy to the ground through a low impedance path.

How to size an SPD

An SPD size is determined by a variety of factors including geography, electrical environment, cost of downtime and the importance of equipment in operation, amongst others.

Call Bussmann to discuss your requirements on +44 (0)1509 882699

What is an MOV?

A Metal Oxide Varistor is a variable resistor typically made of a large block of zinc oxide grains. They act like semiconductors, an insulator below the conduction voltage and a low value resistor above it.

In conduction mode, the MOV diverts and dissipates the transient to earth. MOVs generally connect from the line conductors to earth. The thickness of the MOV determines the clamping voltage and diameter determines the current capacity.

How long does an SPD last?

How long an MOV based SPD lasts usually depends upon how often the MOV experiences an overvoltage event and for how long. Every time an MOV switches, its life is degraded. The greater the transient hit, the greater the degradation of the MOV.

Eaton is dedicated to ensuring that reliable, efficient and safe power is available when it's needed most. With unparalleled knowledge of electrical power management across industries, experts at Eaton deliver customized, integrated solutions to solve our customers' most critical challenges.

Our focus is on delivering the right solution for the application. But, decision makers demand more than just innovative products. They turn to Eaton for an unwavering commitment to personal support that makes customer success a top priority. For more information, visit www.eaton.com/electrical.

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