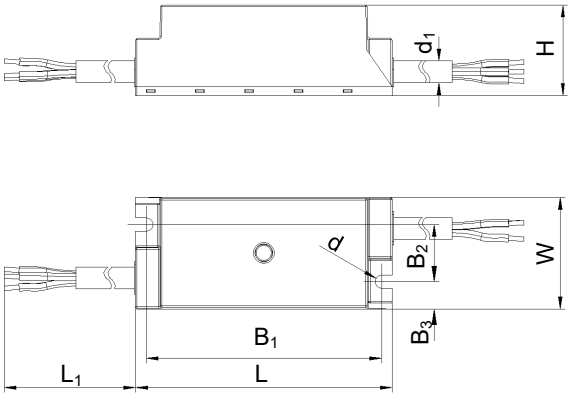
## Description

SD10K series is specifically designed for outdoor lighting. The products facilitate surge immunity compliant with IEEE C62.41.2 Location Category C high exposure and protect LED street lighting from lightning surge damage. With built-in mechanical trip thermal protection, tripping current up to 100 A, SD10K series could fail safely when suffering sustained overvoltage or its internal varistor degradation. SD10K series is designed with 1+1 protection mode and the GDT applied between the neutral line and the ground, that improves the safety of the product. SD10K series is two-port Surge Protective Device (SPD), which is convenient for wiring and installing

## Features

- Sealed Enclosure, IP66
- 1+1 Protections Mode, High Protection Performance
- Two-port Surge Protective Device (SPD), Convenient for Wiring
- Fast Tripping Thermally Protected MOV and Thermally Protected GDT Technology, Tripping Current up to 100 A, High Safety
- GDT Follow Current Interrupt Rating $I_{fi}$: 100 A

## Dimensions (mm)




| L | $L_1$ | W | H |
|---|---|---|---|
| 85.0±0.5 | 200.0±10.0 | 37.0±0.5 | 30.0±0.5 |
| **d** | **$d_1$** | **$B_1$** | **$B_2$** |
| 4.5±0.5 | 7.2±0.5 | 78.0±0.5 | 19.0±0.5 |
| **$B_3$** | | | |
| 9.0±0.5 | | | |

Note:
The wire length "$L_1$" can be customized as required.

## Applications

- Outdoor Street Lighting
- Parking Lighting
- Highway Lighting
- Landscape Lighting
- Traffic and Signal Lighting

## Agency Approvals

| Agency | Standards | No. |
|---|---|---|
| CE | EN 61643-11 | on request |
| TÜVRheinland | EN 61643-11 | on request |
| CQC | GB/T 18802.11 | On-going |
| Environment | RoHS & REACH | Compliant |

Alpha Therm GmbH
Gewerbering 7
68723 Plankstadt

Tel: +49 (0) 6202 / 575688 - 0 Fax: -10
E-Mail: sales@alpha-therm.de
Web: www.alpha-therm.com

## Part Numbering System

SD 10 K 277 A H T - 385 - 001

**Other Options**

**Max. Continuous Operating Voltage**
300 V, 320 V, 385 V

**Wire Connection**
T: Two-port

**Surge Capacity**
H: High

**Circuit Characteristic**
A: With GDT and Failure Indicator

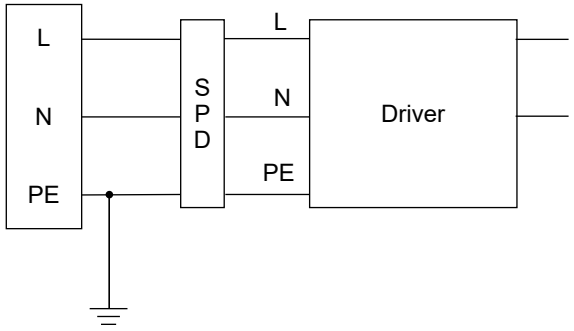
**Nominal System Voltage**
230 V, 277 V

**Design Sequence**

**Nominal Discharge Current**
10: 10 kA

**Product Category**
SPD

## Wiring Diagram

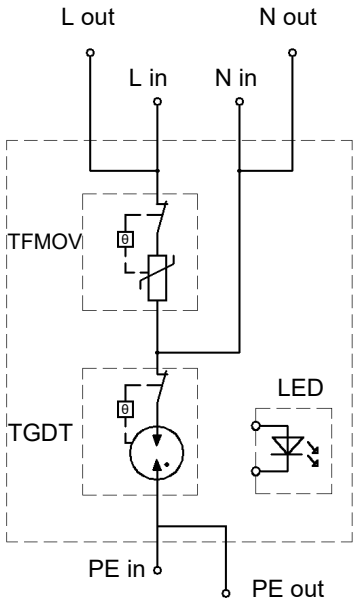



" Kevin " Connection (Two-port)

Notes:

- Internal thermal protection.
- Two-port " Kevin " connection SPD can reduce the effect of inductance and achieve optimum overvoltage protection.

## Schematics



## Glossary

| Item | Description |
|---|---|
| $U_p$ | **Voltage Protection Level**<br>Maximum voltage to be expected at the SPD terminals due to an impulse stress with defined voltage steepness and an impulse stress with a discharge current with given amplitude and wave shape.<br>— (IEC 61643-11) |
| **8/20 µs** | **8/20 Current Impulse**<br>Current impulse with a nominal virtual front time of 8 µs and a nominal time to half-value of 20 µs.<br>— (IEC 61643-11) |
| **1.2/50 µs** | **1.2/50 Voltage Impulse**<br>Voltage impulse with a nominal virtual front time of 1.2 µs and a nominal time to half-value of 50 µs.<br>— (IEC 61643-11) |
| $U_c$ | **Maximum Continuous Operating Voltage**<br>Maximum r.m.s. voltage, which may be continuously applied to the SPD's mode of protection.<br>— (IEC 61643-11) |
| $I_n$ | **Nominal Discharge Current**<br>Crest value of the current through the SPD having a current waveshape of 8/20 µs.<br>— (IEC 61643-11) |
| $I_{max}$ | **Maximum Discharge Current**<br>Crest value of a current through the SPD having an 8/20 µs waveshape and magnitude according to the manufacturers specification. $I_{max}$ is equal to or greater than $I_n$.<br>— (IEC 61643-11) |
| **Modes of Protection** | **Modes of Protection**<br>An intended current path, between terminals that contains protective components, e.g. line-to-line, line-to-earth, line-to-neutral, neutral-to-earth.<br>— (IEC 61643-11) |
| **IP** | **Degrees of Protection Provided by Enclosure (IP Code)**<br>Classification preceded by the symbol IP indicating the extent of protection provided by an enclosure against access to hazardous parts, against ingress of solid foreign objects and possibly harmful ingress of water. |


SPD

## Specifications

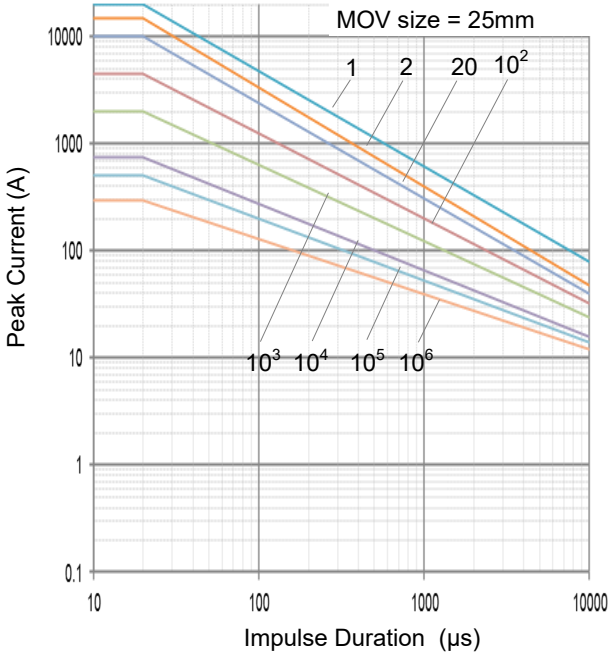
| Model | System Voltage | Max. Continuous Operating Voltage | | Nominal Discharge Current (8/20 μs) | Max. Discharge Current (8/20 μs) | Voltage Protection Level | | Response Time | External Overcurrent Protection[a] |
|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $U_c$ （VAC） | | $I_n$ | $I_{max}$ | $U_p$ (V) | | | |
| | (VAC) | L-N | N-PE | (kA) | (kA ) | L-N | N-PE | (ns) | (A) |
| SD10K230AHT-300 | 230 | 300 | 255 | 10 | 20 | 1200 | 1200 | <100 | 32 |
| SD10K230AHT-320 | 230 | 320 | 255 | 10 | 20 | 1500 | 1200 | <100 | 32 |
| SD10K230AHT-385 | 230 | 385 | 255 | 10 | 20 | 1800 | 1200 | <100 | 32 |
| SD10K277AHT-320 | 277 | 320 | 255 | 10 | 20 | 1500 | 1200 | <100 | 32 |
| SD10K277AHT-385 | 277 | 385 | 255 | 10 | 20 | 1800 | 1200 | <100 | 32 |

Note：
a: Recommended External Circuit Breaker Model C 32 A, Curve C.

## TOV Test

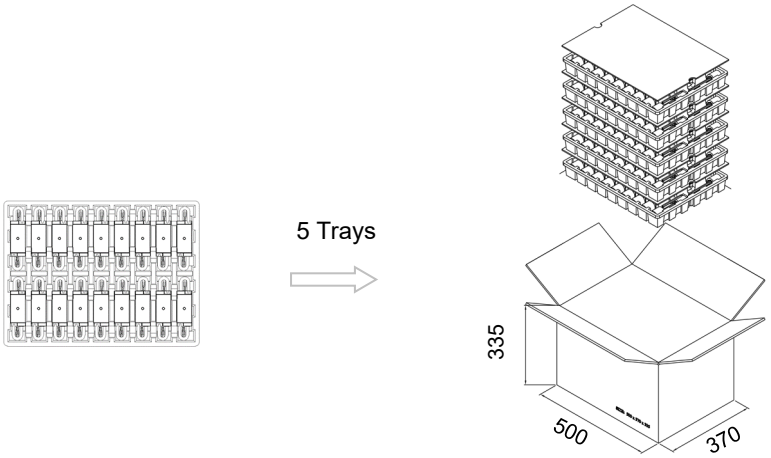
| Specification | Value | Condition |
|---|---|---|
| Temporary Overvoltage (V) TOV @ $t_T$ = 5 s | 336 V@ $U_n$ 230 V,<br>403 V @$U_n$ 277 V | LV system fault for TN power grid |
| Temporary Overvoltage (V) TOV @ $t_T$ = 120 min | 442 V@ $U_n$ 230 V,<br>529 V @$U_n$ 277 V | LV system fault for TN power grid |
| Max leakage current at $U_c$ (μA) | 40 | - |
| End of life indication | Yes | Light on: SPD is functional, Light off: SPD has reached end-of-life |
| EN 61643-11 Test Classification | Test class II | - |
| UL 1449 Type Classification | Type 4CA | - |

## Repetitive Surge Capability




| Pulse Rating (8/20 μs) | |
|---|---|
| **Strikes** | **Surge** |
| 1 | 20000 A |
| 2 | 15000 A |
| 20 | 10000 A |
| 100 | 4500 A |
| 1000 | 2000 A |
| 10,000 | 750 A |
| 100,000 | 500 A |
| 1,000,000 | 300 A |

## Packaging Information




- Unit: mm
- Please contact us if you have special packaging requirement.

| Item | Tray | Carton |
|---|---|---|
| Dimensions (mm) | 470×350×57 | 500×370×335 |
| Quantity (PCS) | 18 | 90 |
| Gross Weight (kg) | | 12.7±10% |

Note:
The gross weight of each carton will be different because of the difference of product model, It depends on the voltage of the product and the number of wires. The gross weight is for reference only, please contact us for more details.

# ATTENTION

## Usage

1. Frequency range is from 47 Hz to 63 Hz.
2. The voltage applied continuously to the SPD must not exceed its maximum continuous operating voltage $U_c$.
3. When atmosphere press is from 80 kPa to 106 kPa, the related altitude shall be from 2000 m to - 500 m.
4. Do not touch the product body or wires directly when power is on, to avoid electric shock.

## Replacement

As SPD is a non-repairable product, for safety sake, please use the same type of SPD for replacement.

## Storage

Do not store SPD at high temperature, high humidity or corrosive gas environment, to avoid oxidation of the wires. Use them up within 1 year after receiving the goods.

## Installation

1. Installation and startup may only be carried out by qualified personnel. The relevant country-specific regulations must be observed.
2. Check the device for external damage before installation. If the device is defective, it must not be used.
3. Pay attention to risk of electric shock. Please cutoff all electrical power before installation or service.
4. Lay the output cables to the surge protective devices (SPDs) as short as possible, without loops.
5. Please install proper backup protection devices in front of SPD.
6. Do not apply mechanical stress to the SPD body during or after the installation.

## Maintenance

1. Check SPD status according to instructions before and after the thunderstorm season each year.
2. If the indicator of "failure state" appears, the SPD is damaged. Replace the SPD with same type.
3. Ensure electrical connections and mountings are correct before energizing the circuit.
4. SPD`s quality is well controlled and strictly inspected before delivery. If non-functional ones are found during operation, please contact us early enough.

Alpha Therm GmbH
Gewerbering 7
68723 Plankstadt
Tel: +49 (0) 6202 / 575688 - 0 Fax: -10
E-Mail: sales@alpha-therm.de
Web: www.alpha-therm.com