◆Some installation diagrams are shown in (Figure 3, Figure 4, Figure 5, Figure 6)

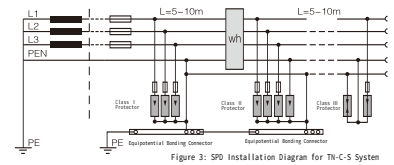



Figure 3: SPD Installation Diagram for TN-C-S System

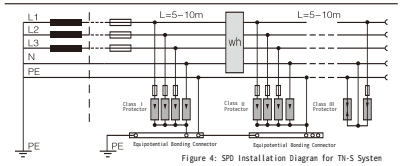



Figure 4: SPD Installation Diagram for TN-S System

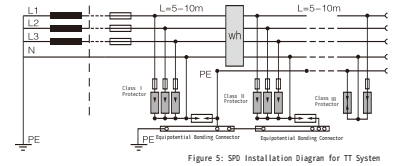



Figure 5: SPD Installation Diagram for TT System

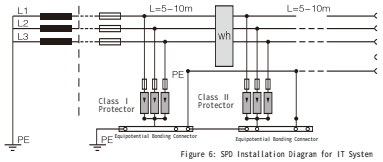
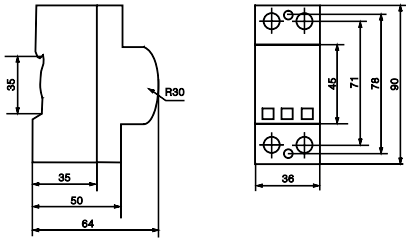



Figure 6: SPD Installation Diagram for IT System

## VII Outline and Installation Dimensions of SP9 Protector

Note: The dimensions in brackets are for SP1-B type




## VIII Adjustment, Use and Maintenance

◆The protector does not need adjustment after being installed as required.
◆As long as the SPD is properly installed and wired correctly, it can automatically protect the power grid.
◆During operation, regularly check whether the module label indicates red, and at the same time observe whether the indicator light of the fuse is on, and replace the failed components in time.

## IX Ordering Information

◆When placing an order, the model and quantity should be specified; e.g.: SP9-H25-4-385V = 24 units
◆The following documents and accessories are included in the product packaging box when shipped:
Product Certificate, 1 copy (per unit)
Operation Manual, 1 copy (per unit)
Packing List, 1 copy (per large packing box)

C-Lin
欣灵电气股份有限公司
XINLING ELECTRIC CO.,LTD
Address: No. 328, Weishi 19th Road, Yueqing Economic Development Zone, Zhejiang Province
Hotline: 0577-62735555 Fax: 0577-62722963
Http: //www.c-lin.cn Email: C-Lin@xinling.com
Technical Service Hotline: 400 1663 188

Zhejiang Provincial Famous Brand - National High-tech Enterprise

C-Lin 欣灵

使用说明书
Products Instructions

# SP9
# Surge Protective Device

**Thank you very much for using Xinling Brand Surge Protective Device. Please read the operation manual before using the product!**

31A006E0

## I Application and Scope of Application

The SP9 Series Surge Protector (hereinafter referred to as "protector") is suitable for three - phase power distribution systems with AC 50Hz and a rated operating voltage of 230/400V. It meets the SPD Class I test, with a peak impulse current of 25KA (10/350μs) and a charge of up to 20As. It suppresses direct lightning, induced lightning or other instantaneous overvoltages, discharges surge energy, thereby protecting system circuits and load equipment.
It is suitable to be used in conjunction with other series of surge protectors to realize a cascaded protection system, so that the low - voltage power distribution system can be protected more extensively and effectively.
Compliance with Standards: GB18802.1, IEC61643 - 1

## II Model/Specification and Operating Conditions

SP 9 I – □ – □
① ② ③ ④ ⑤

| | |
|---|---|
| ① | Surge Protector (SPD) |
| ② | Design Code |
| ③ | Impulse Test Category |
| ④ | Discharge Current Correction of the Product: 25kA |
| ⑤ | Combination Method (1P/2P/3P/4P) |

### ☐ Normal Operating Conditions of the Protector

◇Altitude not exceeding 2000m (derating is recommended when exceeding 2000m)
◇Relative air humidity not greater than 95%
◇ Ambient air temperature: -40~+85℃
◇ Locations without significant shaking and impact vibration
◇Inclination from the vertical plane not exceeding 5 °
◇In a medium without explosion hazard, and the medium is free of gases and dust (including conductive dust) that are sufficient to corrode metals and damage insulation

## III Technical Parameters

| Item Parameter \ Specification Level | SP9- I 15 | | | | SP9-I 25 | | | |
|---|---|---|---|---|---|---|---|---|
| Rated Operating Voltage Un | 230V/400V | | | | 230V/400V | | | |
| Nominal Discharge Current In (8/20μs) | 15kA | | | | 25kA | | | |
| Maximum Continuous Operating Voltage Uc | 275V | 320V | 385V | 440V | 275V | 320V | 385V | 440V |
| Voltage Protection Level Up | ≤ 1.5kV | ≤ 1.6kV | ≤ 1.7kV | ≤ 1.8kV | ≤ 1.8kV | ≤ 2.0kV | ≤ 2.2kV | ≤ 2.4kV |
| Peak Current Ipmak(10/350μs) | 15kA | | | | 25kA | | | |
| Charge Q | 7.5As | | | | 12.5As | | | |
| Impulse Current Iimp | 15kA | | | | 25kA | | | |
| Test Classification | I | | | | I | | | |
| Protection Class | IP20 | | | | IP20 | | | |
| Protection Mode | L/N-PE | | | | L/N-PE | | | |
| Environmental Limit Temperature | -40℃ ~+80℃ | | | | -40℃ ~+80℃ | | | |
| Insulation Housing Material | PBT/PA66 | | | | PBT/PA66 | | | |
| Mounting Type | 35mm Standard Rail | | | | 35mm Standard Rail | | | |

## IV Failure Disconnection Device, Alarm and Remote Signaling Device

### ☐ Failure Disconnection Device

The SPD module is equipped with a failure disconnection device. When the protector is overheated or broken down, the failure disconnection device can automatically disconnect it from the power grid and give an indication signal at the same time. The label displays green when the protector is normal and red after failure disconnection. (The SPD module can be replaced under working voltage.)

### ☐ Alarm

The alarm is powered by AC230V. When the SPD works normally, the indicator light displays green, the normally open contact is closed, and the normally closed contact is open. Audible and visual alarm function: When the SPD module fails, the alarm will emit a buzzer sound, and at the same time, the green light during normal operation will turn into a red light. If the maintenance personnel press the stop button, the buzzer sound will temporarily stop (but the red light will continue to display). If the fault is still not eliminated after 24 hours, the alarm will emit a buzzer sound again.

### ☐ Remote Signaling Contact

SPD can be made into a type with remote signaling contacts. The remote signaling contact is a normally open contact. If one or more modules of the SPD fail, the contact will close and send out fault information. Rated value of remote signaling contact: AC36V, 1A.

## V Main Structure and Working Principle

In the three-phase four-wire system, a protector is connected between each of the three phase wires, one neutral wire and the ground wire (see Figure 1) . Under normal conditions, the SPD (Surge Protective Device) is in a high-resistance state. When a surge overvoltage occurs in the power grid due to lightning strike or other reasons, the SPD will immediately conduct rapidly within nanoseconds, diverting the surge overvoltage to the earth Thus protecting the electrical equipment on the power grid. When the surge voltage passes through the SPD and disappears, the SPD returns to a high-resistance state, so that it does not affect the normal operation of the power grid. The electrical schematic diagram of the surge protector is shown in (Figure 2) 400V Network Diagram.

400V Network Diagram

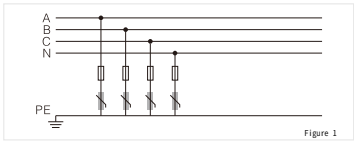
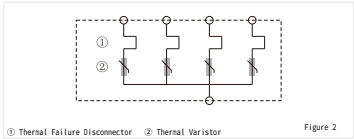



Figure 1

Electrical Schematic Diagram of Surge Protector




① Thermal Failure Disconnector ② Thermal Varistor

Figure 2

## VI Installation and Diagram

◇ Installation location and method of SPD: indoor, fixed type;
◇ SPD is installed on a standard 35mm rail;
◇ SPD is connected with 2.5-25mm copper wires;
◇ The grounding wire should use a two-color wire with a cross-sectional area of more than 4mm2, and the length should not exceed 500mm;
◇ In order to prevent the surge protector from affecting the normal operation of the power grid after failure, the SPD connected to the phase wire and N wire should be connected in series with a fuse or circuit breaker.