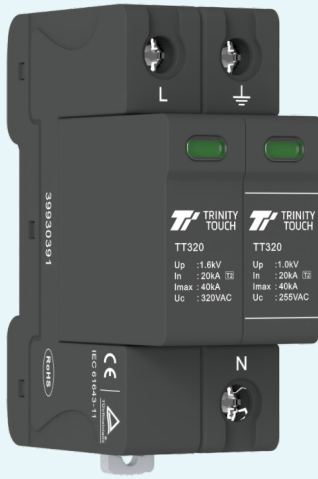


# TT 320 AC I+I

## 40kA Single-phase Power Supply Modular Surge Protector



### Application

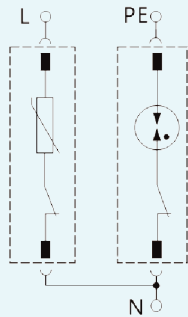
TT 320 AC I+I is a Class C Single-phase power supply modular surge protector, which is safe and reliable. With strong adaptability to the power grid, it can be widely used in various electrical occasions. When used in the power distribution system from LPZ1 to LPZ2, it can prevent the rear electrical equipment from being damaged by lightning strikes and transient overvoltage.

### Features

This product has built-in over-temperature protection function, can provide Class C (Class II classification test) lightning protection for low-voltage power distribution system.

- Large discharge-current capacity and low limiting voltage.
- Appropriate start-up voltage, stable protective circuit.
- Built-in over-temperature protection, reliability and safety.
- Integrated base and pluggable module, easy to replace and maintain.
- Equipped with status indication and remote signaling alarm function.
- Fixed with standard 35mm DIN guide rail, which is easy to install and maintain.
- Exquisite production process, can work for a long time in harsh environments.

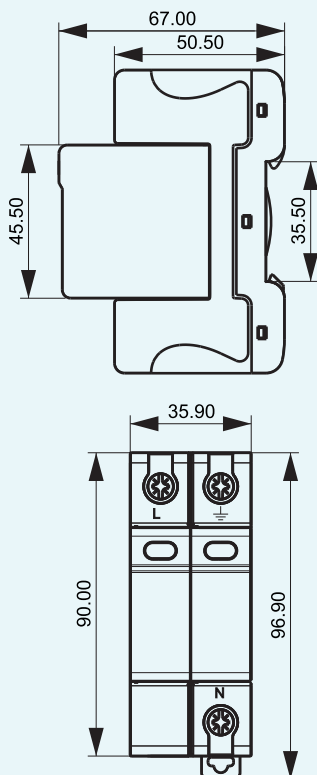
### Protection Principle



Protection schematic

### Dimensions

This product belongs to one-port parallel lightning protection module, using a modular structure, fixed with 35mm DIN rail, and the wiring hole can be connected up to 25mm<sup>2</sup> flexible wire and 35mm<sup>2</sup> rigid wire.



### Technical Data

Parameter	Model	TT 320 AC I+I
SPD classification according to IEC61643-11		Class II
SPD classification according to GB/T18802.11		Class II
Modes of protection		L-N, N-PE
Nominal voltage $U_n$		230/400V, 50/60Hz
Maximum continuous operating voltage $U_c$		L-N:320V~, N-PE:255V~
Voltage protection level $U_p$		L-N $\leq$ 1.6kV, N-PE $\leq$ 1.0kV
Nominal discharge current, $I_n$ 8/20 $\mu$ s		20kA
Maximum discharge current $I_{max}$ 8/20 $\mu$ s		40kA
Leakage Current (@75% of $V_N$ )		$\leq$ 20 $\mu$ A
Response time		L-N $\leq$ 25ns, N-PE $\leq$ 100ns
Internal protective devices		Built- in thermal tripping device
Access wire cross-section		6 ~ 35mm <sup>2</sup>
Bare wire crimp length		12.5mm
Installation wiring torque		3Nm
Deterioration failure indication		The indication window turns red when it fails
Installation mode		Using 35mm standard DIN rail
Flammability Rating		UL94-V0
Enclosure protection degree		IP20
Electrical clearance and creepage distance to EN 60664-1:2003		$\geq$ 6mm
Operating temperature		-40°C ~ +80°C
Relative humidity		5% ~ 95%
Altitude		-500 m ~ + 4000 m
Dimensions (without terminals)		90.0mm×72.0mm×67.0mm
Environmental requirements		RoHS compliant
Approvals		TUV, CE

# TT320ACI+I

## 40kA Single-phase Power Supply Modular Surge Protector



### Installation & Maintenance Precautions

1. This product is installed and fixed with a 35mm standard DIN rail, and the V-shaped wiring shown in Figure 7-1 is recommended for wiring, or the conventional direct parallel wiring as shown in Figure 7-2 can also be used. In order to achieve a better protection effect, when using direct parallel wiring, the wiring should be as short as possible, and the total length should not exceed 0.5m.
2. If remote alarm is required, choose the alarming port based on the alarm system, as shown in 7-3.
3. The front end of the power surge protector should be connected in series with a suitable fuse or circuit breaker.
4. The power supply must be disconnected during installation, and live operation is strictly prohibited. When connected to the power supply, it must be wired in strict accordance with the wiring identification L, N and PE on the product, and it is strictly forbidden to reverse the connection, otherwise the surge protector module will be damaged.
5. After installation, insert the surge protector module into place and check whether it works properly. When the SPD is working normally, its working status indication should be green, the alarm dry contact NC-COM is in a short circuit state, and the alarm dry contact NO-COM is in an open circuit state; when the power surge protector fails, the status indication turns red. At the same time, the alarm dry contact NC-COM is in an open circuit state, and the alarm dry contact NO-COM is in a short circuit state.
6. After installation, insert the surge protector module into place and check if it is working properly. When the power surge protector is working normally, its working status indicator should be green, the alarm dry contact NC-COM is closed, and the alarm dry junction NO-COM is disconnected; When it fails, the status indicator turns red, and the alarm dry contact NC-COM is in the disconnected state, and the alarm dry junction NO-COM is closed.
7. The power surge protector does not require special maintenance, and only needs to periodically check whether its module is loose and whether the status indication is normal.
8. If one of the following phenomena occurs, it can be determined that the power surge protector has failed and needs to be replaced in time:
  - a. The status indication of the power surge protector turns red.
  - b. The alarm dry contact NC-COM of the power surge protector becomes open, and NO-COM becomes closed.
9. The storage temperature of the product is  $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$ , and the relative humidity is not more than 85%. The warehouse is required to have good air circulation, dry floors, and no corrosive gases or direct sunlight. Products with a storage period of more than 1 year should be re-inspected and can only be used after passing the inspection.

### Wiring

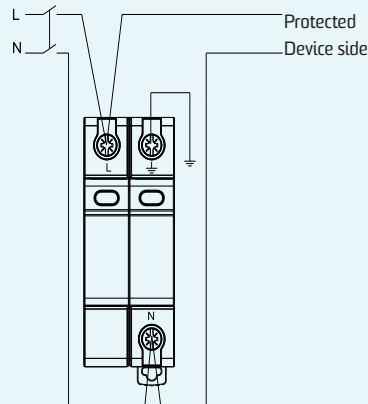


Figure 7-1 Wiring diagram -- V-shaped wiring

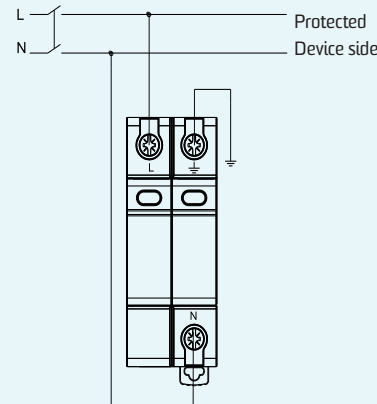


Figure 7-2 Wiring diagram -- conventional wiring

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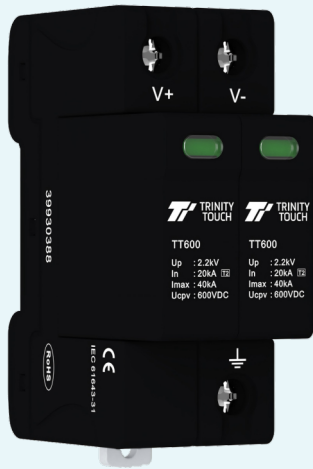
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# TT 600DC PT2

## 40kA DC Power Supply Modular Surge Protector



### Application

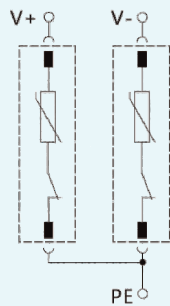
TT 600DC PT2 products belong to the solar system DC power surge protector, safe and reliable, strong power grid adaptability, for the DC power port to provide inter-line, line and protection ground (PE) protection, used to prevent lightning induced overvoltage and ground potential counterattack caused by damage.

### Features

This product has built-in overheat protection and can provide T2 lightning protection for photovoltaic power systems.

- Large discharge-current capacity and low limiting voltage.
- Appropriate start-up voltage, stable protective circuit.
- Built-in over-temperature protection, no freewheeling current, reliability and safety.
- Integrated base and pluggable module, easy to replace and maintain.
- Equipped with status indication function.
- Fixed with standard 35mm DIN guide rail, which is easy to install and maintain.
- Exquisite production process, can work for a long time in harsh environments.

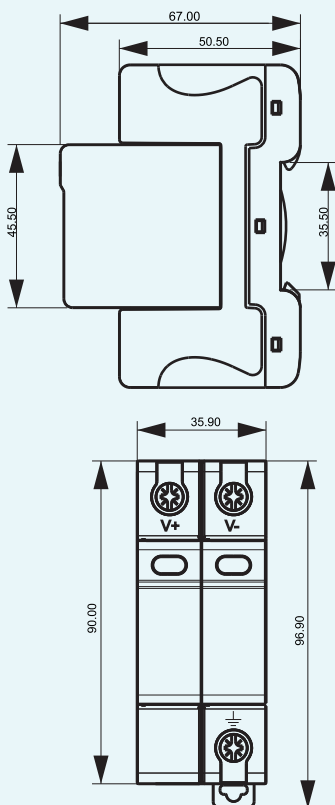
### Protection Principle



Protection schematic

### Dimensions

This product belongs to one-port parallel lightning protection module, using a modular structure, fixed with 35mm DIN rail, and the wiring hole can be connected up to 2.5mm<sup>2</sup> flexible wire and 3.5mm<sup>2</sup> rigid wire.



### Technical Data

Parameter	Model	TT 600DC PT2
SPD classification according to IEC61643-31/EN61643-31		Class II/ Type 2
SPD classification according to GB/T18802.31		Class II
Modes of protection		V+ - PE, V- - PE
maximum continuous operating voltage for PV application Ucpv		DC600V
Voltage protection level Up		≤2.2kV
Nominal discharge current, In 8/20μs		20kA
Maximum discharge current Imax 8/20μs		40kA
Leakage Current (@75% of VN)		≤20μA
Response time		≤25ns
Internal protective devices		Built- in thermal tripping device
Access wire cross-section		6 ~ 35mm <sup>2</sup>
Bare wire crimp length		12.5mm
Installation wiring torque		3Nm
Deterioration failure indication		The indication window turns red when it fails
Installation mode		Using 35mm standard DIN rail
Flammability Rating		UL94-V0
Enclosure protection degree		IP20
Operating temperature		-40°C ~ +80°C
Relative humidity		5% ~ 95%
Altitude		-500m ~ + 4000m
Dimensions (without terminals)		90.0mm×36.0mm×67.0mm
Environmental requirements		RoHS compliant

# TT600DC2PT2

## 40kA DC Power Supply Modular Surge Protector



### Installation & Maintenance Precautions

1. This product is installed and fixed with a 35mm standard DIN rail, and the V-shaped wiring shown in Figure 7-1 is recommended for wiring, or the conventional direct parallel wiring as shown in Figure 7-2 can also be used. In order to achieve a better protection effect, when using direct parallel wiring, the wiring should be as short as possible, and the total length should not exceed 0.5m.
2. The front end of the power surge protector should be connected in series with a suitable fuse or circuit breaker.
3. The power supply must be disconnected during installation, and live operation is strictly prohibited. When connected to the power supply, it must be wired in strict accordance with the wiring identification L, N and PE on the product, and it is strictly forbidden to reverse the connection, otherwise the surge protector module will be damaged.
4. After installation, insert the surge protector module into place and check whether it works properly. When the SPD is working normally, its working status indication should be green, the alarm dry contact NC-COM is in a short circuit state, and the alarm dry contact NO-COM is in an open circuit state; when the power surge protector fails, the status indication turns red. At the same time, the alarm dry contact NC-COM is in an open circuit state, and the alarm dry contact NO-COM is in a short circuit state.
5. After installation, insert the surge protector module into place and check if it is working properly. When the power surge protector is working normally, its working status indicator should be green. When it fails, the status indicator turns red.
6. The power surge protector does not require special maintenance, and only needs to periodically check whether its module is loose and whether the status indication is normal.
7. If the status indication of the power surge protector turns red, it can be determined that the power surge protector has failed and needs to be replaced in time:
8. The storage temperature of the product is  $-40^{\circ}\text{C}\sim 85^{\circ}\text{C}$ , and the relative humidity is not more than 85%. The warehouse is required to have good air circulation, dry floors, and no corrosive gases or direct sunlight. Products with a storage period of more than 1 year should be re-inspected and can only be used after passing the inspection.

### Wiring

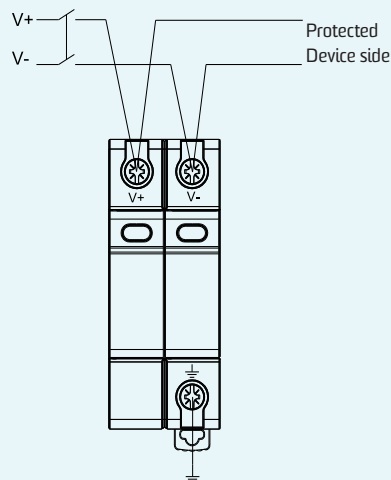


Figure 7-1 Wiring diagram -- V-shaped wiring

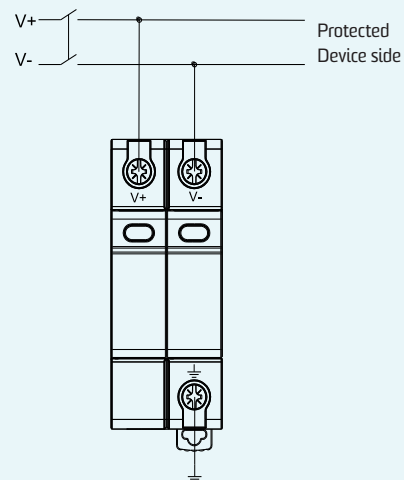


Figure 7-2 Wiring diagram -- conventional wiring

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# TT 320 AC 3+1 40kA Three-phase Power Supply Modular Surge Protector



## Application

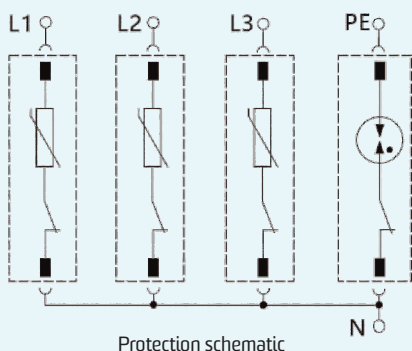
TT 320 AC 3+1 is a Class C three-phase power supply modular surge protector, which is safe and reliable. With strong adaptability to the power grid, it can be widely used in various electrical occasions. When used in the power distribution system from LPZ1 to LPZ2, it can prevent the rear electrical equipment from being damaged by lightning strikes and transient overvoltage.

## Features

This product has built-in over-temperature protection function, can provide Class C (Class II classification test) lightning protection for low-voltage power distribution system

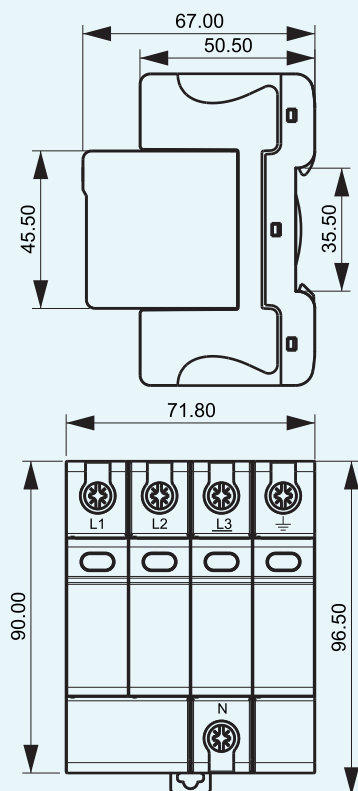
- Large discharge-current capacity and low limiting voltage.
- Appropriate start-up voltage, stable protective circuit.
- Built-in over-temperature protection, reliability and safety.
- Integrated base and pluggable module, easy to replace and maintain.
- Equipped with status indication function.
- Fixed with standard 35mm DIN guide rail, which is easy to install and maintain.
- Exquisite production process, can work for a long time in harsh environments.

## Protection Principle



## Dimensions

This product belongs to one-port parallel lightning protection module, using a modular structure, fixed with 35mm DIN rail, and the wiring hole can be connected up to 25mm<sup>2</sup> flexible wire and 35mm<sup>2</sup> rigid wire.



## Technical Data

Parameter	Model	TT 320 AC 3+1
SPD classification according to IEC61643-11		Class II
SPD classification according to GB/T18802.11		Class II
Modes of protection		L-N, N-PE
Nominal voltage $U_n$		230/400V, 50/60Hz
Maximum continuous operating voltage $U_c$		L-N:320V~, N-PE:255V~
Voltage protection level $U_p$		L-N $\leq$ 1.6kV, N-PE $\leq$ 1.0kV
Nominal discharge current, $I_n$ 8/20 $\mu$ s		20kA
Maximum discharge current $I_{max}$ 8/20 $\mu$ s		40kA
Leakage Current (@75% of $V_N$ )		$\leq$ 20 $\mu$ A
Response time		L-N $\leq$ 25ns, N-PE $\leq$ 100ns
Internal protective devices		Built-in thermal tripping device
Access wire cross-section		6 ~ 35mm <sup>2</sup>
Bare wire crimp length		12.5mm
Installation wiring torque		3Nm
Deterioration failure indication		The indication window turns red when it fails
Installation mode		Using 35mm standard DIN rail
Flammability Rating		UL94-V0
Enclosure protection degree		IP20
Electrical clearance and creepage distance to EN 60664-1:2003		$\geq$ 6mm
Operating temperature		-40°C ~ +80°C
Relative humidity		5% ~ 95%
Altitude		-500 m ~ + 4000 m
Dimensions (without terminals)		90.0mm $\times$ 72.0mm $\times$ 67.0mm
Environmental requirements		RoHS compliant
Approvals		TUV, CE

### Installation & Maintenance Precautions

1. This product is installed and fixed with a 35mm standard DIN rail, and the V-shaped wiring shown in Figure 7-1 is recommended for wiring, or the conventional direct parallel wiring as shown in Figure 7-2 can also be used. In order to achieve a better protection effect, when using direct parallel wiring, the wiring should be as short as possible, and the total length should not exceed 0.5m.
2. The front end of the power surge protector should be connected in series with a suitable fuse or circuit breaker.
3. The power supply must be disconnected during installation, and live operation is strictly prohibited. When connected to the power supply, it must be wired in strict accordance with the wiring identification L, N and PE on the product, and it is strictly forbidden to reverse the connection, otherwise the surge protector module will be damaged.
4. After installation, insert the surge protector module into place and check whether it works properly. When the SPD is working normally, its working status indication should be green. When the power surge protector fails, the status indication turns red.
5. After installation, insert the surge protector module into place and check if it is working properly. When the power surge protector is working normally, its working status indicator should be green. When it fails, the status indicator turns red.
6. The power surge protector does not require special maintenance, and only needs to periodically check whether its module is loose and whether the status indication is normal.
7. If the status indication of the power surge protector turns red, it can be determined that the power surge protector has failed and needs to be replaced in time:
8. The storage temperature of the product is  $-40^{\circ}\text{C}$ – $85^{\circ}\text{C}$ , and the relative humidity is not more than 85%. The warehouse is required to have good air circulation, dry floors, and no corrosive gases or direct sunlight. Products with a storage period of more than 1 year should be re-inspected and can only be used after passing the inspection.

### Wiring

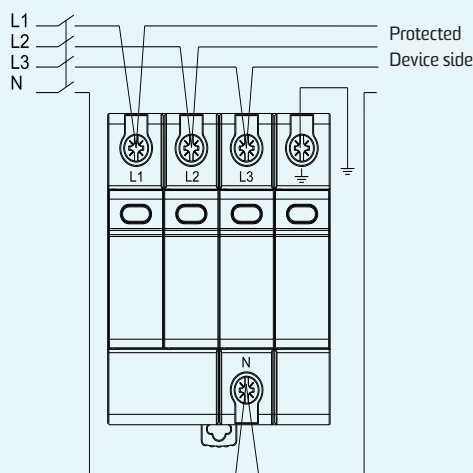


Figure 7-1 Wiring diagram -- V-shaped wiring

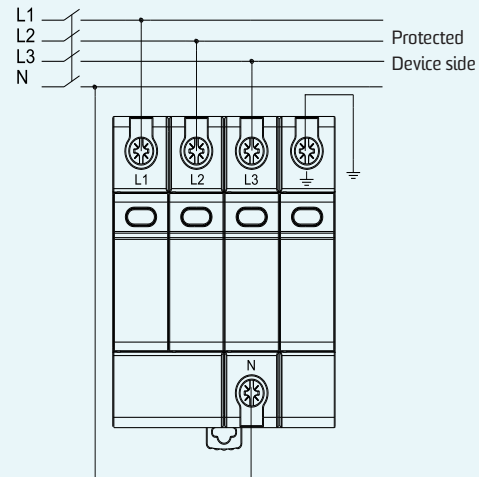


Figure 7-2 Wiring diagram -- conventional wiring

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# TT 1000DC 3P T2 Solar System DC Power Surge Protector



## Application

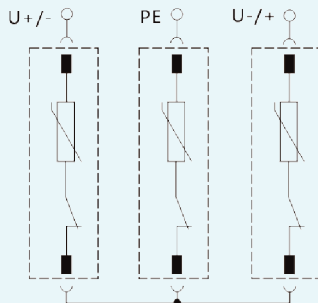
TT 1000DC 3P T2 products belong to the solar system DC power surge protector, safe and reliable, strong power grid adaptability, for the DC power port to provide inter-line, line and protection ground (PE) protection, used to prevent lightning induced overvoltage and ground potential counterattack caused by damage.

## Features

This product has built-in overheat protection and can provide T2 lightning protection for photovoltaic power systems.

- It is specially designed for surge protection of photovoltaic series, and is suitable for photovoltaic grid-connected power generation system.
- Appropriate start-up voltage, stable protective circuit.
- Built-in over-temperature protection, no freewheeling current, reliability and safety.
- Integrated base and pluggable module, easy to replace and maintain.
- Equipped with status indication function.
- Fixed with standard 35mm DIN guide rail, which is easy to install and maintain.
- Exquisite production process, can work for a long time in harsh environments.

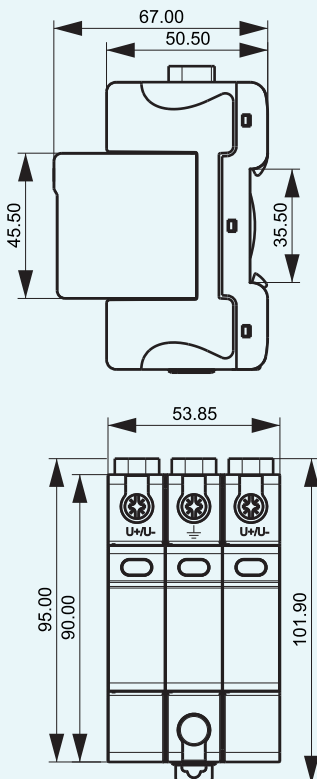
## Protection Principle



Protection schematic

## Dimensions

This product belongs to one-port parallel lightning protection module, using a modular structure, fixed with 35mm DIN rail, and the wiring hole can be connected up to 25mm<sup>2</sup> flexible wire and 35mm<sup>2</sup> rigid wire.



## Technical Data

Parameter	Model	TT 1000DC 3P T2
SPD classification according to IEC61643-31/EN61643-31		Class II/ Type 2
SPD classification according to GB/T18802.31		Class II
Modes of protection		U+ - U-, U+ - PE, U- - PE
Maximum continuous operating voltage for PV application U <sub>cpv</sub>		DC1300V
Voltage protection level U <sub>p</sub>		≤4.0kV
Nominal discharge current, I <sub>n</sub> 8/20μs		20kA
Maximum discharge current I <sub>max</sub> 8/20μs		40kA
Leakage Current (@75% of V <sub>N</sub> )		≤20μA
Response time		≤25ns
Internal protective devices		Built- in thermal tripping device
Short-circuit current rating, I <sub>scpv</sub>		1000A
Access wire cross-section		6 ~ 35mm <sup>2</sup>
Bare wire crimp length		12.5mm
Installation wiring torque		3Nm
Deterioration failure indication		The indication window turns red when it fails
Installation mode		Using 35mm standard DIN rail
Flammability Rating		UL94-V0
Enclosure protection degree		IP20
Operating temperature		-40°C ~ +80°C
Relative humidity		5% ~ 95%
Altitude		-500m ~ + 5000m
Dimensions (without terminals)		95mm×54mm×67mm
Environmental requirements		RoHS compliant

**Installation & Maintenance Precautions**

1. This product is installed and fixed with a 35mm standard DIN rail, and the V-shaped wiring shown in Figure 7-1 is recommended for wiring, or the conventional direct parallel wiring as shown in Figure 7-2 can also be used. In order to achieve a better protection effect, when using direct parallel wiring, the wiring should be as short as possible, and the total length should not exceed 0.5m.
2. The front end of the power surge protector should be connected in series with a suitable fuse or circuit breaker.
3. The power supply must be disconnected during installation, and live operation is strictly prohibited. When connected to the power supply, it must be wired in strict accordance with the wiring identification L, N and PE on the product, and it is strictly forbidden to reverse the connection, otherwise the surge protector module will be damaged.
4. After installation, insert the surge protector module into place and check whether it works properly. When the SPD is working normally, its working status indication should be green, the alarm dry contact NC-COM is in a short circuit state, and the alarm dry contact NO-COM is in an open circuit state; when the power surge protector fails, the status indication turns red. At the same time, the alarm dry contact NC-COM is in an open circuit state, and the alarm dry contact NO-COM is in a short circuit state.
5. After installation, insert the surge protector module into place and check if it is working properly. When the power surge protector is working normally, its working status indicator should be green. When it fails, the status indicator turns red.
6. The power surge protector does not require special maintenance, and only needs to periodically check whether its module is loose and whether the status indication is normal.
7. If the status indication of the power surge protector turns red, it can be determined that the power surge protector has failed and needs to be replaced in time:
8. The storage temperature of the product is -40°C~85°C, and the relative humidity is not more than 85%. The warehouse is required to have good air circulation, dry floors, and no corrosive gases or direct sunlight. Products with a storage period of more than 1 year should be re-inspected and can only be used after passing the inspection.

**Wiring**

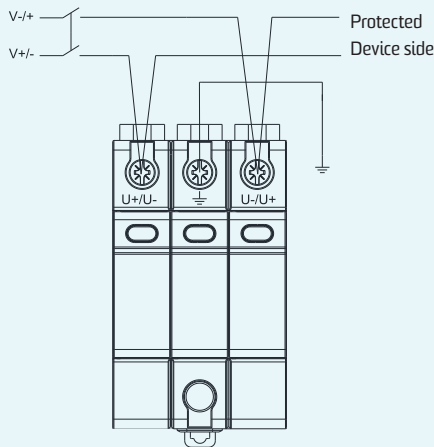


Figure 7-1 Wiring diagram -- V-shaped wiring

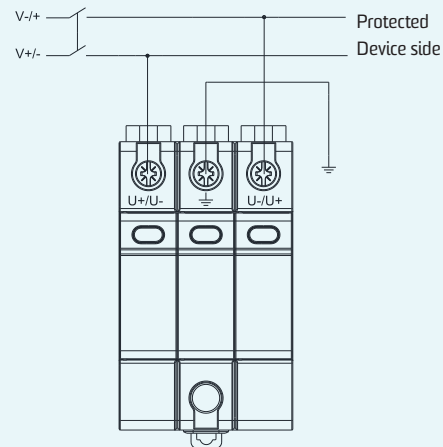


Figure 7-2 Wiring diagram -- conventional wiring

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