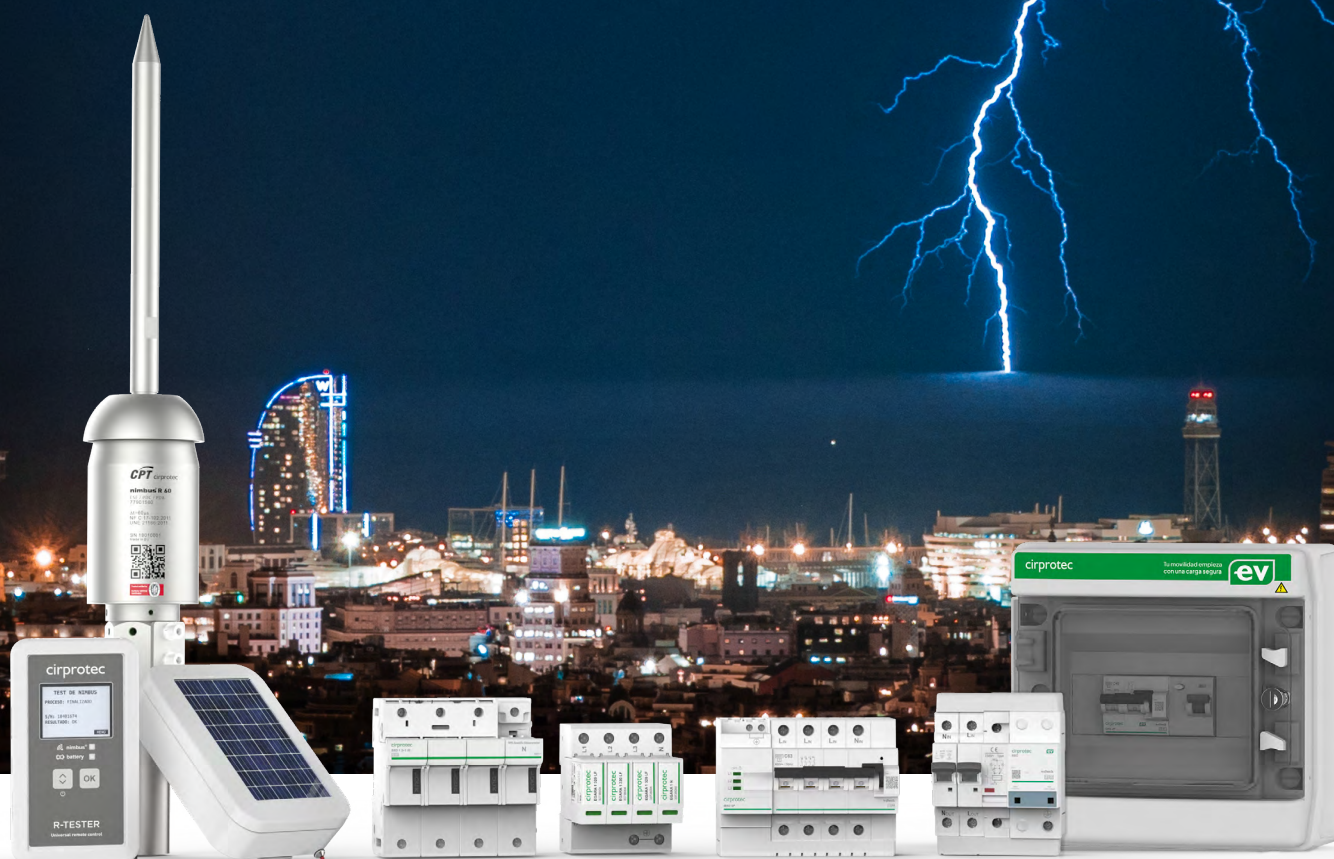


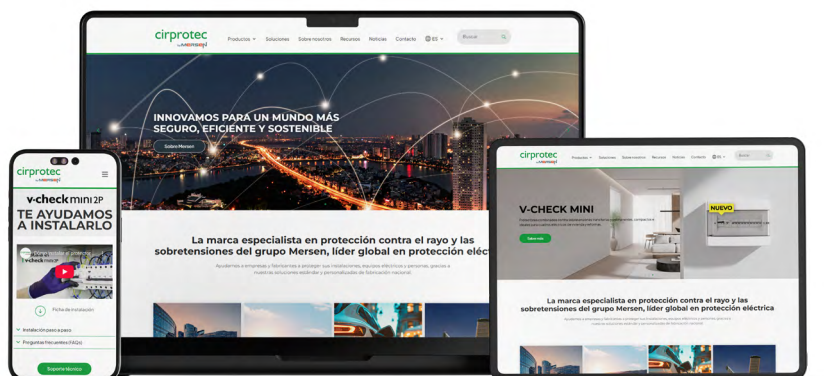
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LIGHTNING AND SURGE  
PROTECTION

PRODUCT  
CATALOGUE



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WHY CHOOSE CIRPROTEC



The specialist brand  
in lightning and surge  
protection

We protect electrical installations with reliable, certified,  
and easy-to-install solutions that ensure maximum safety.



We design.

We manufacture.

We protect.

50  
INDUSTRIAL  
PLANTS

21  
R+D+I  
CENTERS

4  
TESTING  
LABORATORIES

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CIRPROTEC  
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MERSEN CENTRE OF EXCELLENCE IN  
SURGE PROTECTION

As part of the Mersen Group, a global leader in electrical protection and a benchmark in surge and overcurrent protection, we strengthen our ability to provide safe, comprehensive, and high-quality solutions. Being part of the group gives us greater technological strength, industrial capacity, and a long-term strategic vision.



## Reliability

### Experience that powers trust

More than 30 years of manufacturing surge protection devices support our track record focused on technical excellence and performance.

Our production relies on highly automated processes that ensure strict control and full traceability at every stage. In addition, we actively participate in international standardization committees, enabling us to anticipate regulatory developments and deliver solutions aligned with the most demanding standards.

## Peace of mind

### In every installation

We act as a single, trusted partner ensuring technical consistency and full compatibility within the electrical panel.

All products are tested in the group's certified laboratories and backed by third-party certifications, guaranteeing compliance with major international standards and facilitating technical specification and approval in both national and international projects.

## Sustainability

### A responsible partner wherever we operate

We design and manufacture in Europe, with strategic production centers that ensure proximity, industrial control and high-quality standards.

We proactively address regulatory and environmental challenges and have received international recognition for corporate social responsibility, reflecting responsible management and a commitment to positive impact.

Find out more about us

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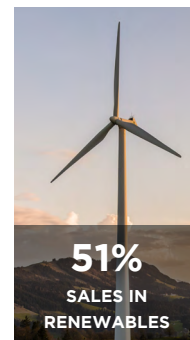
**+9%**  
INVESTMENT  
IN R+D+i



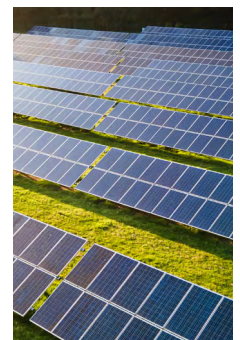
**+30**  
YEARS OF  
EXPERTISE



**100%**  
QUALITY  
CONTROLS



**51%**  
SALES IN  
RENEWABLES



**ENERGY TO INNOVATE**

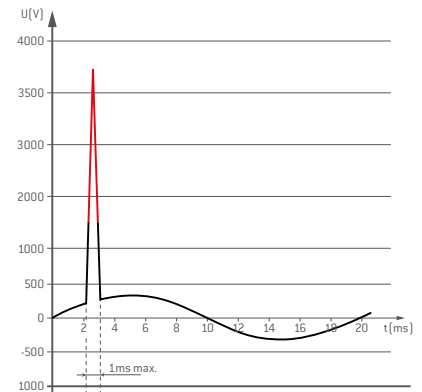
# INTRODUCTION TO Surge protection

## What are surges?

Surges are transient overvoltages that can reach tens of kilovolts with durations in the order of microseconds. Despite their short duration, the high energy content can cause serious problems to equipment connected to the line like premature ageing of electronic components, equipment failure or disruptions to service and financial loss.

## Origin of surges

- **Lightning:** The most destructive source of surge. Based on the IEC 61643-12 standard, energy from lightning can reach up to 200 kA. However for reference, estimates indicate 65% are less than 20 kA and 85% are less than 35 kA.
- **Induction:** Sources include cloud-to-cloud lightning or nearby lightning impacts where the current flow induces an overvoltage on supply lines or other metallic conductors.



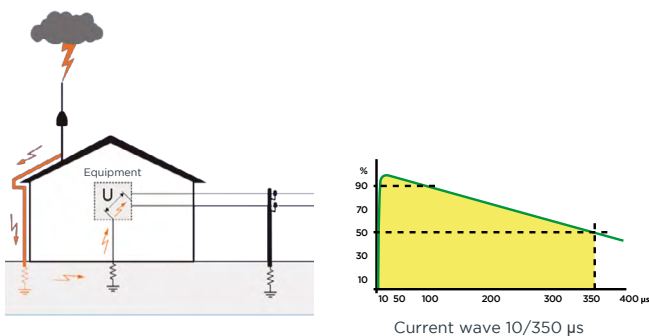
When the peak voltage exceeds the withstand capability of the equipment, permanent damage may occur.

## Types of surges

It is impossible to predict the exact timing, location, magnitude or waveform of a surge event. Therefore, within the Standards, some assumptions have been made and 2 main waveforms have been chosen to simulate different surge events.

### Conduction

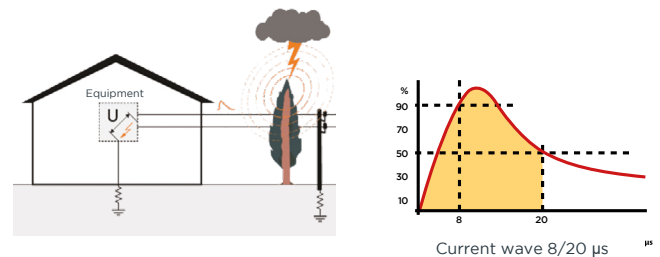
Conduction or 10/350  $\mu$ s simulates energy from direct lightning impact



Lightning is the most destructive source of surges. According to the International Electrotechnical Commission IEC 61643-12 standard, the energy of a lightning strike can reach up to 200 kA. However, as a reference, estimates indicate that 65% of lightning currents are below 20 kA and 85% are below 35 kA.

### Induction

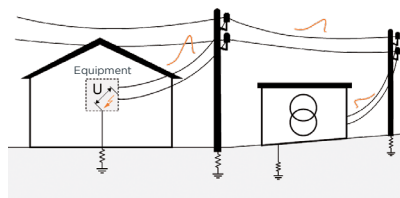
Induction or 8/20  $\mu$ s simulates energy from indirect lightning impact.



These surges can originate from cloud-to-cloud discharges or nearby lightning strikes, where the induced current generates an overvoltage in power lines or other metallic conductors.

### Internal surges:

These are the main sources of surge in real life. They come from utility grid switching, disconnection of motors or other inductive loads. Energy from these sources is also analysed with the 8/20  $\mu$ s waveform.

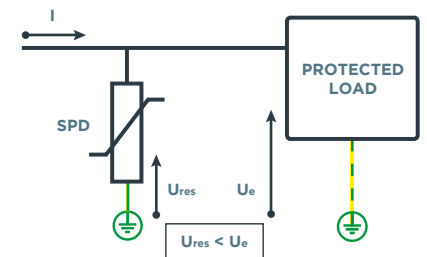


Transient overvoltages do not occur solely in power distribution lines, they are also common in any line formed by metal conductors, such as telephony, communications, measurement and data.

## SPD (Surge Protection Device)

A surge protection device acts as a voltage controlled switch and is **installed between the active conductors and ground in parallel with the equipment to be protected**. When the supply voltage is lower than its activation voltage, the protector acts as a high-impedance element so that no current flows through it. When the supply voltage is higher than the activation voltage, the protector acts as an element with an impedance close to zero, diverting the overvoltage to earth and preventing it from affecting equipment downstream.

Nevertheless, in the terminals of the SPD **there will always be a residual voltage ( $U_{res}$ )**. This is not a fixed value. Because of the surge current, there will be a residual voltage across the SPD, this means, **the higher the surge current, the higher the residual voltage**. To protect your electrical equipment the residual voltage across the SPD, including the wires and connections, needs to be less than the overvoltage withstand of the equipment.



$I$ : peak current

$U_{res}$ : voltage protection level (Residual voltage at  $I_n$ )

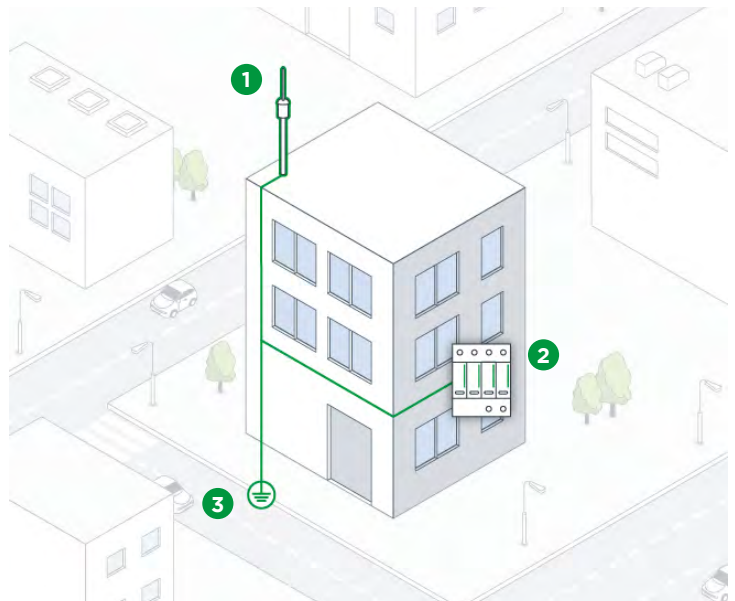
$U_e$ : impulse voltage the equipment can withstand

## What is the best way of protecting an installation against surges?

Effective protection does not depend on a single device, but on a comprehensive system with three key elements:

- 1. External protection:** captures and safely channels lightning to earth.
- 2. Internal protection:** protects equipment against transient and permanent power surges.
- 3. Earthing system:** dissipates energy to earth.

If one of these elements is missing or incorrectly sized, the protection will not be effective.



# SPD features based on the IEC 61643 standard

## Classification of SPDs

Protection devices are classified into types according to discharge capacity:

### **T1** Type 1:

Tested with a 10/350  $\mu\text{s}$  waveform (Class I test), which simulates the current produced by a direct lightning strike.

Ability to discharge very high currents to earth, providing a high Up - voltage protection level.

Must be accompanied by downstream Type 2 protectors. Designed for use in incoming power supply panels where the risk of lightning strike is high, for example in buildings with an external protection system.

### **T2** Type 2:

Tested with an 8/20  $\mu\text{s}$  waveform (Class II test), which simulates the current produced in the event of a switching or lightning strike on the distribution line or its vicinity.

Ability to discharge high currents to earth, providing a medium Up - voltage protection level. Designed for use in distribution panels located downstream of Type 1 protectors or in incoming power supply panels in areas with low exposure to lightning strikes.

### **T3** Type 3:

Tested with a combined 1.2/50  $\mu\text{s}$  - 8/20  $\mu\text{s}$  waveform (Class III test), which simulates the current and voltage that can reach the equipment to be protected.

Ability to discharge medium currents to earth, providing a low Up voltage protection level.

Always installed downstream of a Type 2 protection, it is designed to protect sensitive equipment or equipment located more than 20 m downstream of the Type 2 device.

The technology can provide protection solutions that combine different types of protection: Type 1+2 and Type 2+3.

## Protection parameters according to IEC 61643

### **Iimp**

#### **Impulse current**

Peak current with 10/350  $\mu\text{s}$  waveform that the protection device can withstand without reaching end of life

### **Itotal**

#### **Total discharge current**

Current with 10/350  $\mu\text{s}$  waveform that flows through the earth conductor of a multipole SPD during the total discharge current test.

### **Imax**

#### **Maximum discharge current**

Peak current with 8/20  $\mu\text{s}$  waveform that the protection device can withstand.

### **In**

#### **Nominal current**

Peak current in 8/20  $\mu\text{s}$  waveform that the protection device can withstand 20 times without reaching end of life.

### **Up**

#### **Voltage protection level**

**Maximum residual voltage** between the terminals of the protection device during the application of a peak current equal to the nominal current ( $I_n$ ).

### **Uc**

#### **Maximum continuous operating voltage**

**Maximum effective voltage** that can be applied permanently to the terminals of the protection device.

### **Uoc**

#### **Open circuit voltage (combined voltage pulse)**

This parameter is used only for the Class III test and is applicable to a Type 3 SPD. It consists of the application of a combination wave (1.2/50  $\mu\text{s}$  in open circuit - 8/20  $\mu\text{s}$  in short circuit).

### **Ifi**

#### **Follow current extinction capability**

This parameter is only devoted to surge protectors using "air gap" technology. Once they have "switched", these surge protectors conduct part of the network current (follow current) and need to interrupt it.



# Typical current ( $I_{typ}$ )

## Typical current ( $I_{typ}$ )

### SPD performance that guarantees the surge protection in real-world conditions

$I_{imp}$ ,  $I_{max}$  and  $I_n$  show the one-off maximum robustness of the SPDs in heavy conditions. However, most surge currents are in practice lower and repetitive because of network switching or because of lightning inductions onto the power grid.

**The Typical Surge Current ( $I_{typ}$ ) is the value that statistically the SPD faces in real life.** The value depends on the level of exposure.

| $I_{imp}$                                                                                 | $I_{max}$                                                                               | $I_n$                                                                                     | $I_{typ}$                                                                                                                                         |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum current the SPD is able to withstand<br><b>1 time in 10/350 <math>\mu</math>s</b> | Maximum current the SPD is able to withstand<br><b>1 time in 8/20 <math>\mu</math>s</b> | Maximum current the SPD is able to withstand<br><b>20 times in 8/20 <math>\mu</math>s</b> | Maximum current the SPD is able to withstand<br><b>200 times in 8/20 <math>\mu</math>s</b><br><small>(depending on the level of exposure)</small> |

## Lifetime of the SPDs

The lifetime is defined by the number of hits that the SPD is able to withstand at Typical Surge Current ( $I_{typ}$ ). Estimating the lifetime of the SPD is essential to guarantee protection.

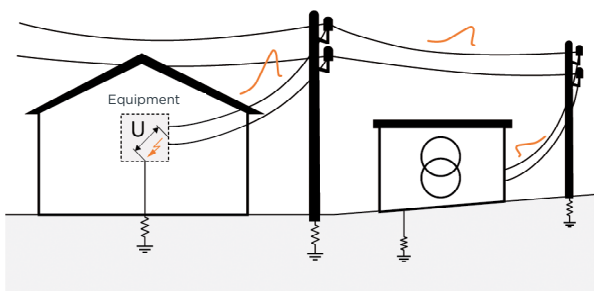
The minimum lifetime values that we can expect are:

#### High exposed locations:

##### 200 peaks

Type 1+2 SPD requirement; usually installed in the highest exposed locations.

$I_{typ} = 10 \text{ kA } 8/20 \mu\text{s}$

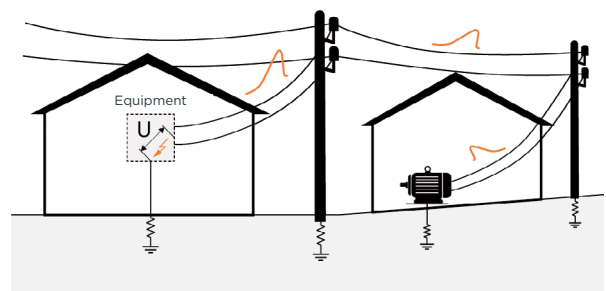


#### Low exposed locations or internal surges:

##### 200 peaks

Type 2 SPD requirement; usually installed in medium or lower exposed locations.

$I_{typ} = 5 \text{ kA } 8/20 \mu\text{s}$



The SPD must be designed in order to pass the test of the standards, but furthermore to guarantee a great performance in real life.

# Cascade protection

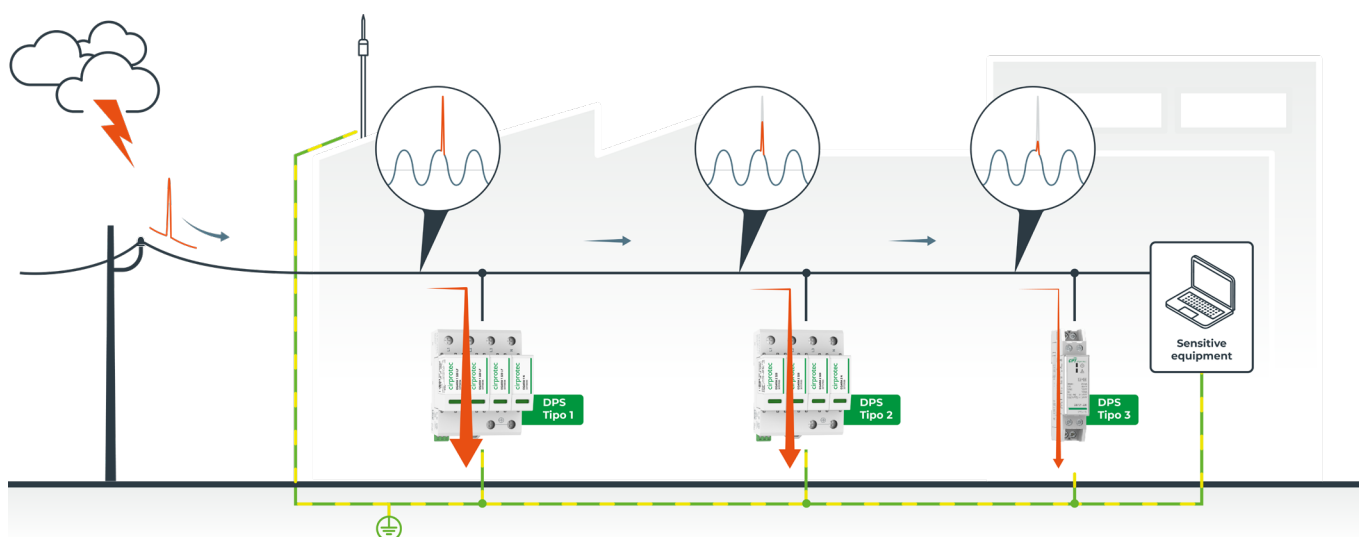
## Protection system of coordinated stages

### Type 1, Type 2 and Type 3 SPDs

The SPDs of a surge protection system must be able to withstand the discharged current and provide a  $U_{res}$  level (residual voltage) lower than the  $U_e$  peak voltage that the equipment can withstand.

As explained, most of the times it is not possible to achieve this with just one SPD, especially because the intensity of the surge is not known, and because of the induction of overvoltages when conductors exceed 10 m.

The optimal protection system is the 3-STEP approach, in which successive stages are combined in the performance of high discharge capacity devices and devices with an optimal voltage protection level (low). This is addressed by the definition of “Types” or “Classes” of SPDs according to the type of transient pulses to which each protected zone in the installation is subject to.



|                                                                   | STAGE 1                                        | STAGE 2                                                                                                                                                                                                                        | STAGE 3                                                                                                                                  |        |
|-------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------|
|                                                                   | Direct impact of a lightning strike (current). | Indirect impact of a lightning strike on the distribution line (overhead lines) or its vicinity (rise of ground potential or induction by coupling of electromagnetic radiation of the strike) or in the event of a switching. | Indirect impact simulated by the current and voltage that can reach the long-distance circuits and individual equipment to be protected. |        |
| Location                                                          | Main switch board                              | Distribution board                                                                                                                                                                                                             | Final sub-circuits<br>Individual equipment                                                                                               |        |
| IEC/EN 61643-11                                                   | Type 1 / Class I                               | Type 2 / Class II                                                                                                                                                                                                              | Type 3 / Class III                                                                                                                       |        |
| Overvoltage category IEC 60364-4-443                              | IV                                             | III                                                                                                                                                                                                                            | II                                                                                                                                       | I      |
| Overvoltage withstand ( $U_e$ ) values for equipment at 230/400 V | 6 kV                                           | 4 kV                                                                                                                                                                                                                           | 2,5 kV                                                                                                                                   | 1,5 kV |
| LPZ IEC 62305-4 protection zone                                   | LPZ 1                                          | LPZ 2                                                                                                                                                                                                                          | LPZ 3                                                                                                                                    |        |
| Discharge capacity ( $I_{imp}$ , $I_{max}$ )                      | High                                           | Medium                                                                                                                                                                                                                         | Low                                                                                                                                      |        |
| Voltage protection level ( $U_p$ )                                | ✓ (Coarse)                                     | ✓✓ (Fine)                                                                                                                                                                                                                      | ✓✓✓ (Very fine)                                                                                                                          |        |

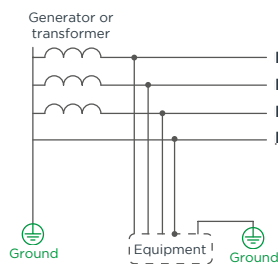
# Grounding systems

All national codes on the generation, transmission and distribution of electricity require **grounding of all the elements of the installation**.

This ground connection ensures a sufficiently low impedance path for **protection devices to protect people and equipment**, and to prevent hazardous step and touch voltages.

As we will see, there are **several systems** for making this ground connection, depending on the interconnection between the installation components.

## TT arrangement

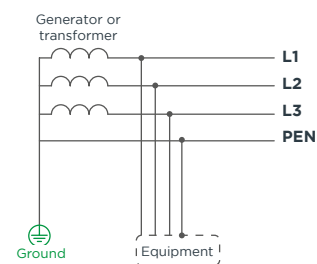


- Individual ground connection at the consumer level, separated from the transformer. Without distributed ground conductor (PE).
- The protective ground is the physical ground connection itself.

**Advantages:** Less interference. More reliable.

**Disadvantages:** High impedance L-PE fault loop, hence it requires a differential protection device.

## TN-C arrangement

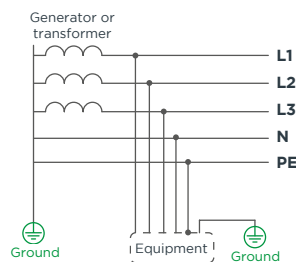


- The PEN conductor performs the functions of neutral and ground wire from transformer to the consumer.
- The protective ground connection is through the PEN conductor, generally to the transformer ground.

**Advantages:** Minimum costs for both wiring and installation.

**Disadvantages:** Cable failure may create critical safety risks. High electromagnetic interference. Need for oversizing cable.

## TN-S (or TNC-S) arrangement

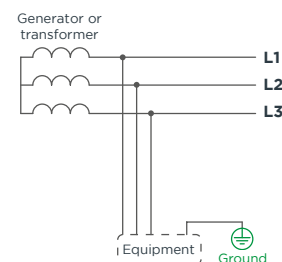


- Neutral and ground wires distributed from the installation origin (one cable performs both functions in TNC-S distribution).
- The protective ground connection is through the protection conductor itself, generally to the transformer ground.

**Advantages:** Maximum safety against cable breaks and L-PE faults.

**Disadvantages:** The most expensive system, both for cable and for installation and maintenance.

## IT arrangement



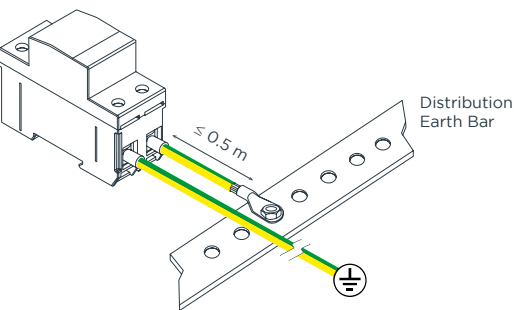
- The transformer neutral is isolated from ground. Optional distributed neutral conductor. Local ground connection at the consumer level.
- The protective ground is made via the local ground connection. There is no risk at the first L-PE fault due to the high loop impedance.

**Advantages:** No neutral breakage risk. Continuity of service in case of L-PE incidents.

**Disadvantages:** Requires connected devices to be able to work at line voltages. Needs insulation monitoring to act at the first fault.

# Installation and wiring

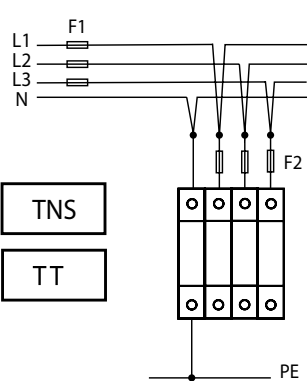
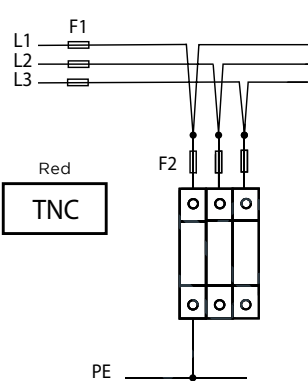
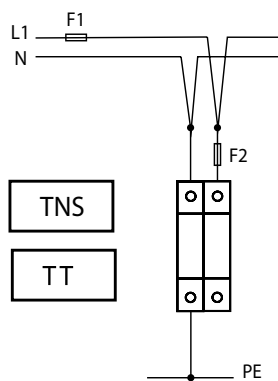
## Recommended lengths and connection types according to IEC 61643-12



In order to achieve optimum overvoltage protection, connecting conductors of SPDs shall be as short as possible. Long lead lengths will degrade the protection offered by the SPD.

When connecting an SPD in parallel, the optimal connection is a “V-type” (see image below). Whenever this is not feasible, **the maximum derivation cable length should be less than 0.5 m.**

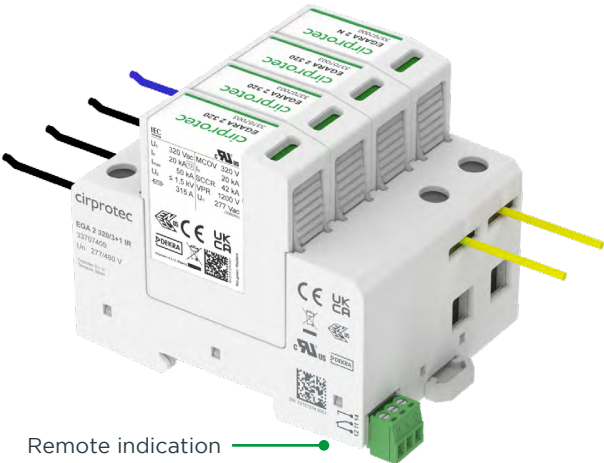
## Wiring, general considerations (lengths and sections)



| TYPE OF WIRE    | Ø min L, N        | Ø min PE                    | Ø max L, N, PE     |
|-----------------|-------------------|-----------------------------|--------------------|
| <b>STRANDED</b> | 6 mm <sup>2</sup> | 16 mm <sup>2</sup> (Type 1) | 25 mm <sup>2</sup> |
| <b>RIGID</b>    |                   | 6 mm <sup>2</sup> (Type 2)  | 35 mm <sup>2</sup> |

## Remote indication

| U <sub>max</sub> / I <sub>max</sub>                 |                                                   |
|-----------------------------------------------------|---------------------------------------------------|
|                                                     | <b>AC:</b> 50 V / 1 A<br><b>DC:</b> 125 V / 0.2 A |
| max 1.5 mm <sup>2</sup><br>min 0.05 mm <sup>2</sup> |                                                   |





# SPD placement in your design

## When selecting an SPD, several points must be considered:

### 1. Where to start the protection design?

At the origin of the installation, the main switchboard is the place to start the design of SPDs on the network.

### 2. Network typology

TNS, TNC, TT, IT, PV and No. of conductors.

### 3. Nominal voltage rating (Un) of the supply

Both features will condition **the maximum continuous operating voltage (Uc)**. IEC/HD standard 60364-5-534 sets the minimum allowed value of Uc depending on the system configuration, taking into account a safety margin of the device above the nominal voltage.

### 4. Type 1, Type 2, Type 3 which one has to be selected?

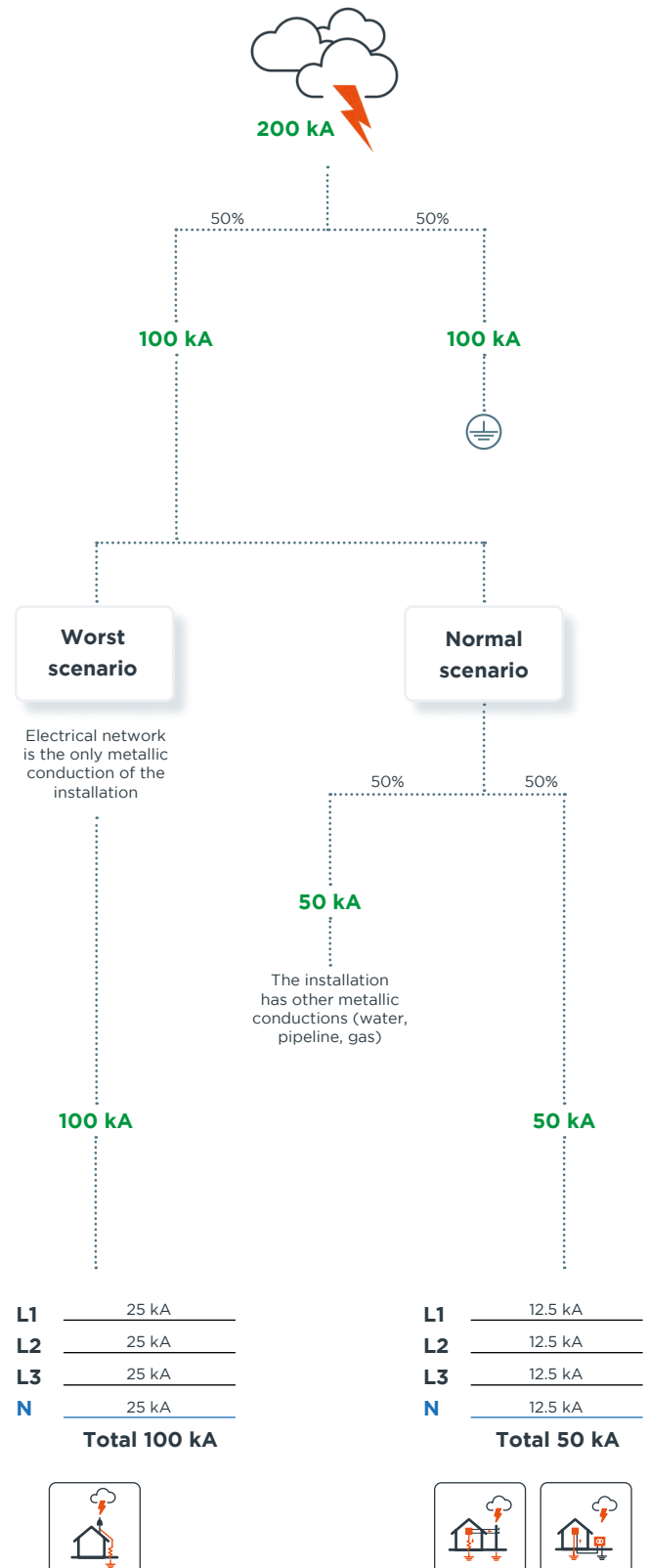
As previously stated, the SPD protection design does not depend on the fault ratings given by the transformer, it only depends on the level of exposure to surges.

## Example: Which SPD do we have to install in the main switchboard?

See the diagram below from IEC 62305-1 standard which displays the dispersion of the highest lightning considered: 200 kA at 10/350  $\mu$ s.

In the worst case scenario, 50% of this energy is conducted away to earth leaving 100 kA potential across the networks 3 phase and neutral. Here a **25 kA at 10/350  $\mu$ s (Iimp) Type 1 SPD is recommended** for insulated installations in extremely exposed locations to lightning.

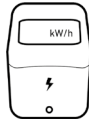
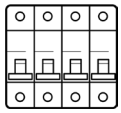
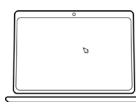
In the "Normal Scenario" it is assumed any direct lightning strike to the network will be at such a distance from the installation that another 50% of the energy is dispersed to earth via other conductors before entering your point of connection. In this scenario a device with **12.5 kA at 10/350  $\mu$ s (Iimp) Type 1 is recommended**. Furthermore, based on the **IEC 61643-12 standard and even stated in section 534.4, 12.5 kA is the minimum kA rate when a Type 1 is required**. If the level of exposure of the installation is lower than the scenarios described above. Type 2 SPD (Imax) may be considered along with risk and cost of equipment and downtime.



## Do we have to consider more SPDs?

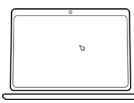
The IEC 60364-4-443 standard classifies electrical devices in categories, depending on how sensitive they are to surge overvoltage ( $U_e$ ).

Category 1 devices (electronic receivers) are the most sensitive,  $U_e$  has to be at least 1.5 kV. Whereas category 4 devices can withstand 6 kV or more. Generally, components in main switchboards are category 4 devices ie ACB, MCCB etc.

| Category                     | IV                                                                                | III                                                                                 | II                                                                                  | I                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 230/400 lines                | Counters /<br>MCCB / ACB                                                          | MCBs and<br>RCCDs                                                                   | Electrical<br>devices                                                               | Electronic<br>receivers                                                             |
| Example                      |  |  |  |  |
| Impulse voltage<br>withstand | 6 kV                                                                              | 4 kV                                                                                | 2,5 kV                                                                              | 1,5 kV                                                                              |

## Example: How will a SPD Type 1+2 act against different surges?

Then, let's consider an example below, where a Type 1+2 SPD is installed in the main distribution board of an installation. The following chart analysis the status of the SPD, the status of the category 1 loads (the most sensitive  $U_e$ : 1.5 kV) in front of different surge scenarios:

| SURGE EVENT                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                |                                                                                               |                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
|  <p><math>I_{limp} = 12.5 \text{ kA}</math><br/><math>I_{max} = 50 \text{ kA}</math><br/><math>I_n = 20 \text{ kA}</math><br/><math>U_p \leq 1.5 \text{ kV}</math></p> <p>In accordance with the IEC 61643-11</p> | $\leq 20 \text{ kA}$<br>                                                                                                                    | 50 kA<br> | $> 50 \text{ kA}$<br> |
|                                                                                                                                                                                                                                                                                                      |  <p><math>U_e = 1.5 \text{ kV}</math></p> <p>Robustness classification for electric and electronic devices according to IEC 60364-4-443</p> |            |                        |

According to the IEC 61643-1 declared  $U_p$  rate is related to  $I_n$ . Although the SPD is able to withstand  $I_{max}$  probably  $U_p$  level will be higher than  $U_e$ .

### Statements:

1. For discharges over the maximum capacity ( **$I_{max}$** ) of the SPD, the loads and the SPD itself will be damaged.
2.  $I_{limp}$  and  $I_{max}$  define the maximum surge level the SPD itself can withstand but does not describe the protection.
3. Only  $I_n$  defines the level of protection as at  $I_n$  the residual voltage seen by the equipment being protected is  $U_e$ .
4. As surges may be induced in cable between the main switchboard and distribution board, or by the final loads themselves, the switchboard may not be close enough to direct a surge in time to protect other final loads.

### Conclusions:

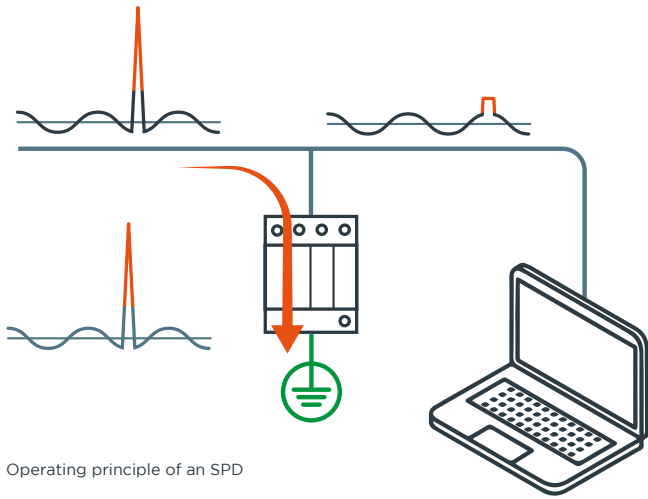
- With just one stage of protection only equipment close to the SPD is protected and only up to a surge of  $I_n$ .
- To improve the protection possibilities, at least a second stage of protection in a distribution board is a must. This SPD design is called cascading protection.
- **Further SPDs (Type 2 and Type 3) are required to protect sensitive and critical equipment downstream of the origin of the installation when a Type 1 is fitted at the origin of installation (534.4.1.1)**

# Effectiveness of an SPD depending on the earth connection

## The importance of the earth connection

Surge protection devices discharge excess energy to earth, thus limiting the peak voltage to a value acceptable for the electrical equipment connected.

An **earth in proper conditions** is therefore an aspect not to overlook when it comes to **effective surge protection**. **Continuously monitoring the state of the earth connection** ensures proper operation of surge protection devices.



Operating principle of an SPD

## Impedance loop method

The loop impedance method is a system for checking the entire earthing system by acting physically not on earth rods, but solely on the low voltage line.

Sending pulses and measuring the voltage response makes it possible to measure the impedance of the path, which usually includes the earthing system and wiring and the return path through the transformer coil.

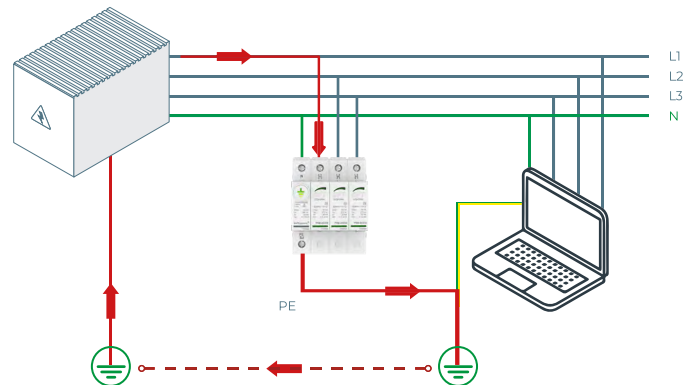
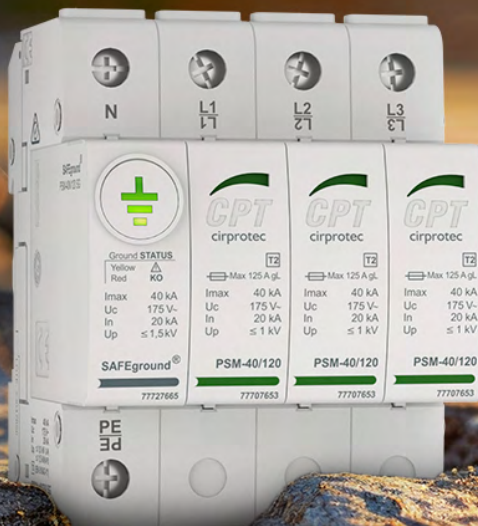


Diagram of loop impedance measuring used by SAFEGROUND



# SAFE GROUND®

*no earth, no protection*

## No earth, no protection

If the surge protection device does not have an adequate path to earth for discharging voltage peaks, the protector will be forced to operate under sub-optimal conditions.

**The effectiveness of surge protectors is indeed closely linked to the earthing system**, since a high impedance path may increase the exposure of sensitive equipment to the effects of the overvoltage.

## Hydraulic simile

To understand the relationship between the quality of the earth connection and the effectiveness of overvoltage protection, people often use a very intuitive hydraulic simile.

If we equate the energy of the overvoltage to a specific volume of liquid, the earth connection may be thought of like a funnel. There is a direct relationship between the diameter of the funnel opening and the quality of the earth connection. Once the funnel has drained the entire volume of liquid, the overvoltage will have been shunted to earth and the equipment will see a completely normal voltage.

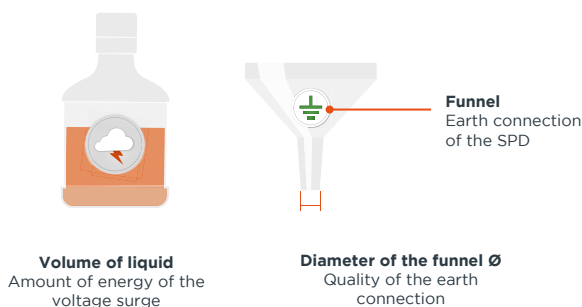
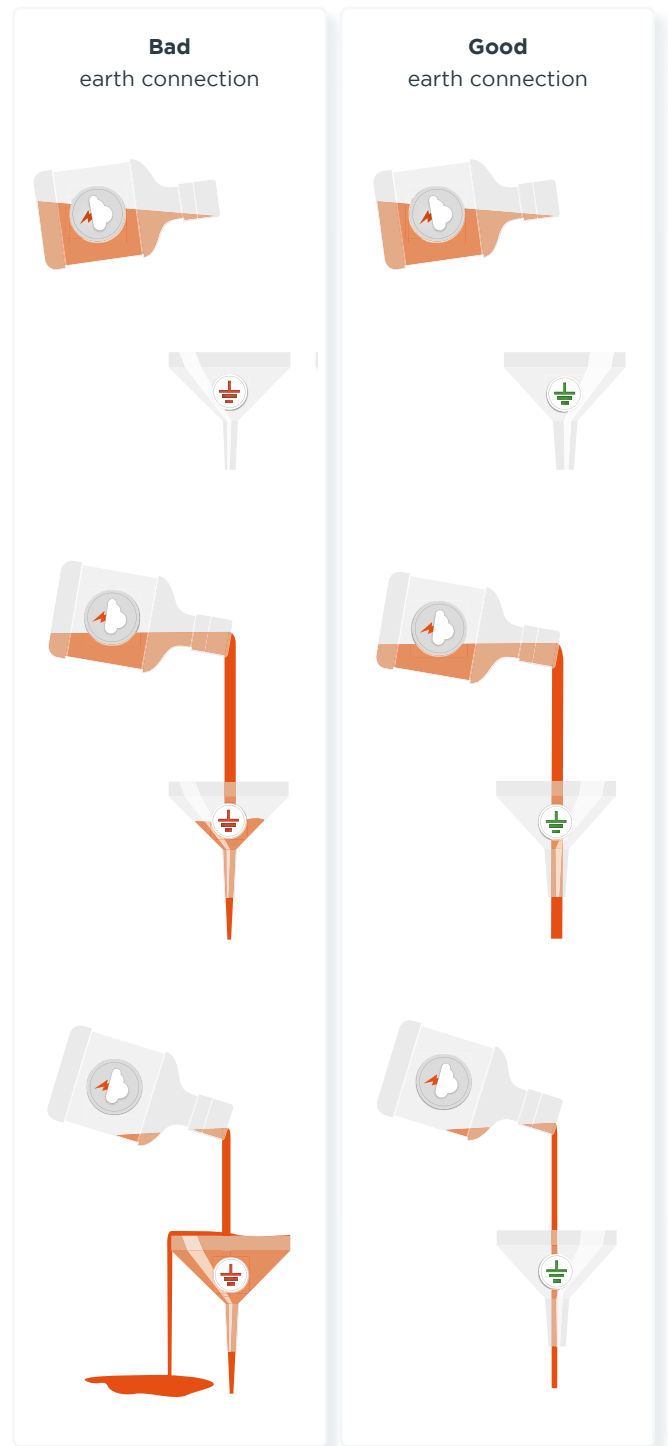


Figure 2 compares what happens to a bad earth connection (funnel on the left - small opening) to what happens to a good one (funnel on the right - big opening) in the event of an overvoltage. We can see how an earth connection with higher resistance (funnel on the left) is saturated with the energy of the discharge (the funnel overflows because it is incapable of draining fast enough). Intuitively, **this prolongs the time during which the equipment to be protected is subjected to the effects of overvoltage**, and which therefore suffer more wear (the funnel takes longer to empty due to its smaller opening).

Since all the equipment is referenced to earth, this can even lead to **the current, unable to find a better escape route**, doing direct **damage to the equipment** and rendering the protection ineffective.

In the extreme case of loss or **lack of an earth connection**, the **surge protection device becomes totally ineffective**.

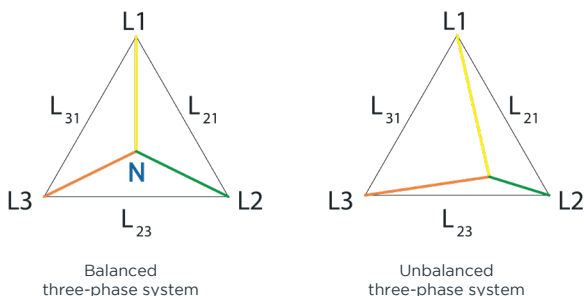
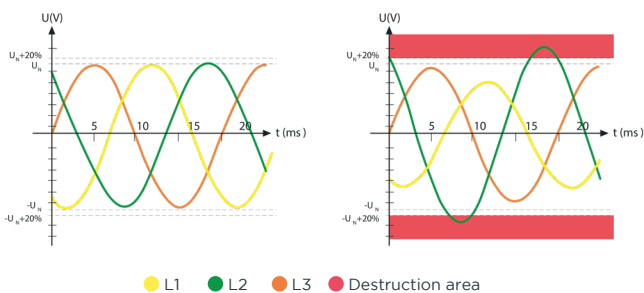


A poor earth connection means reduced capacity to discharge the overvoltage compared to a good connection. Slower dissipation of the overvoltage means the equipment is exposed to its effects for longer. In the absence of an optimum discharge path, the voltage surge will overwhelm sensitive equipment.

# What they are and how to protect against them

## How is a power frequency overvoltage generated?

Power frequency overvoltages (POP) are increases in power-frequency voltage (50/60 Hz) that reach values between 300 and 400 V in 230 V networks. Unlike transient surges, these overvoltages persist for a prolonged period, from several seconds to indefinitely, and therefore require the disconnection of the power supply to prevent damage to the installation. Their most common origin lies in anomalies in the electrical distribution network, with a broken or poor neutral conductor connection being especially critical.



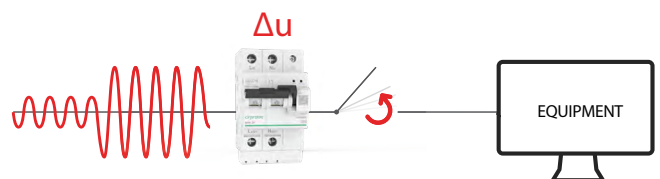
## What happens when a neutral conductor breaks?

In a properly balanced 400/230 V three-phase network, the neutral conductor acts as a reference point that keeps phase voltages stable with respect to the connected loads. However, when this conductor is accidentally interrupted, the system loses its balance and a neutral point shift occurs, directly affecting the voltage distribution throughout the installation.

This imbalance causes the phase voltages to become unstable, resulting in lower loads rising to values close to 350–400 V, while more heavily loaded phases experience a significant voltage drop. As a result, connected equipment may suffer immediate damage, a drastic reduction in service life, or even severe failures associated with overheating, with the consequent risk of fire. This phenomenon is especially critical in installations with multiple single-phase loads distributed across the phases.

## Operation of the POP protector

Power frequency overvoltage protectors (POP) are designed to protect the installation against this type of anomaly by continuously monitoring the network voltage. When a voltage increase above safe levels is detected — typically more than 20% above the nominal voltage — they automatically disconnect the power supply, either through an integrated disconnection system or by acting on an external device. In this way, the overvoltage is prevented from reaching the equipment, ensuring the safety of the installation.



Operating principle of a POP protector



# UNE-EN IEC 63052 Standard

## Regulatory evolution: From UNE-EN 50550 to UNE-EN IEC 63052

The regulations applicable to permanent overvoltage protection devices have evolved to ensure the safety of electrical installations.

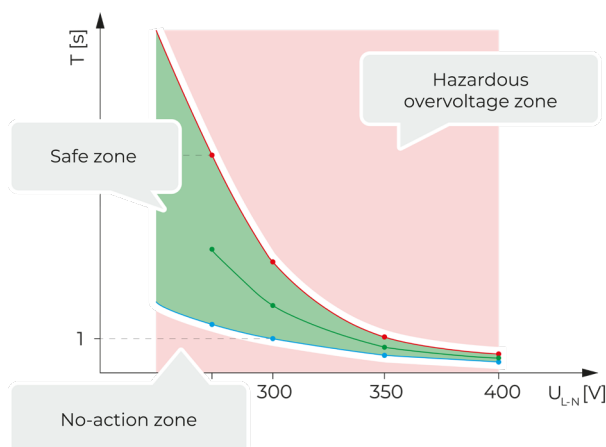
The UNE-EN 50550 standard has been replaced by the new International Electrotechnical Commission UNE-EN IEC 63052 standard, which introduces updated requirements and aligns with international standards. Published on March 30, 2022, this standard is already in force, following a period of coexistence with the previous one.

## Changes introduced by the new standard

The main change and improvement introduced by the new UNE-EN IEC 63052 standard is its alignment with international standards, facilitating the global certification of protection devices.

The new standard now distinguishes four types of protectors according to their construction

- POP unit assembled by the manufacturer together with the main protective device as a single device.
- POP unit with a tripping unit mechanically coupled on site to a main protective device.
- POP unit electrically coupled on site, with the tripping unit connected to the main protective device.
- POP as a standalone device intended to be connected in series with a short-circuit protective device, as specified by the manufacturer.



## What does the standard imply? Main requirements and criteria

The application of the UNE-EN IEC 63052 standard has a direct impact on the manufacturing and installation of permanent overvoltage protection devices, which are generally used in residential and industrial environments. Its main implications are:

### Voltage/Time operating curve

The standard defines the operating times according to the magnitude of the overvoltage, establishing when the protection must be activated. This curve has been determined based on empirical data and validated through extensive laboratory testing, with the aim of defining a precise, safe, and effective operating range against permanent overvoltages.

Permanent overvoltage protectors must be designed to comply with the operating times specified in the standard:

- Responding quickly and effectively to severe overvoltages.
- Avoiding nuisance tripping during small voltage variations to ensure service continuity.

### Incorporation of a disconnection element

The protector must operate through a disconnection element. This disconnection element typically performs the function of a main circuit breaker (MCB/IGA).

### Technical characteristics and testing methods to ensure effective and safe protection in residential environments.

- Compliance with operating times, verifying that the device disconnects correctly in response to overvoltages within the established limits.
- Overstress and endurance tests: the device is subjected to different overvoltage cycles and durations to evaluate its resistance and continuous operation.
- Electromagnetic compatibility (EMC): ensuring compliance with the International Electrotechnical Commission IEC 61000-4 standard without generating or suffering electromagnetic interference.

|                            | Standardized operating and non-operating time values at a voltage ( $U_n$ ) equal to |       |       |        |        |
|----------------------------|--------------------------------------------------------------------------------------|-------|-------|--------|--------|
|                            | 255 V                                                                                | 275 V | 300 V | 350 V  | 400 V  |
| Maximum operating time     | No tripping                                                                          | 15 s  | 5 s   | 0.75 s | 0.20 s |
| Minimum non-operating time |                                                                                      | 3 s   | 1 s   | 0.25 s | 0.07 s |

Technical characteristics and testing methods to ensure effective and safe protection in residential environments.



SURGE PROTECTION DEVICES

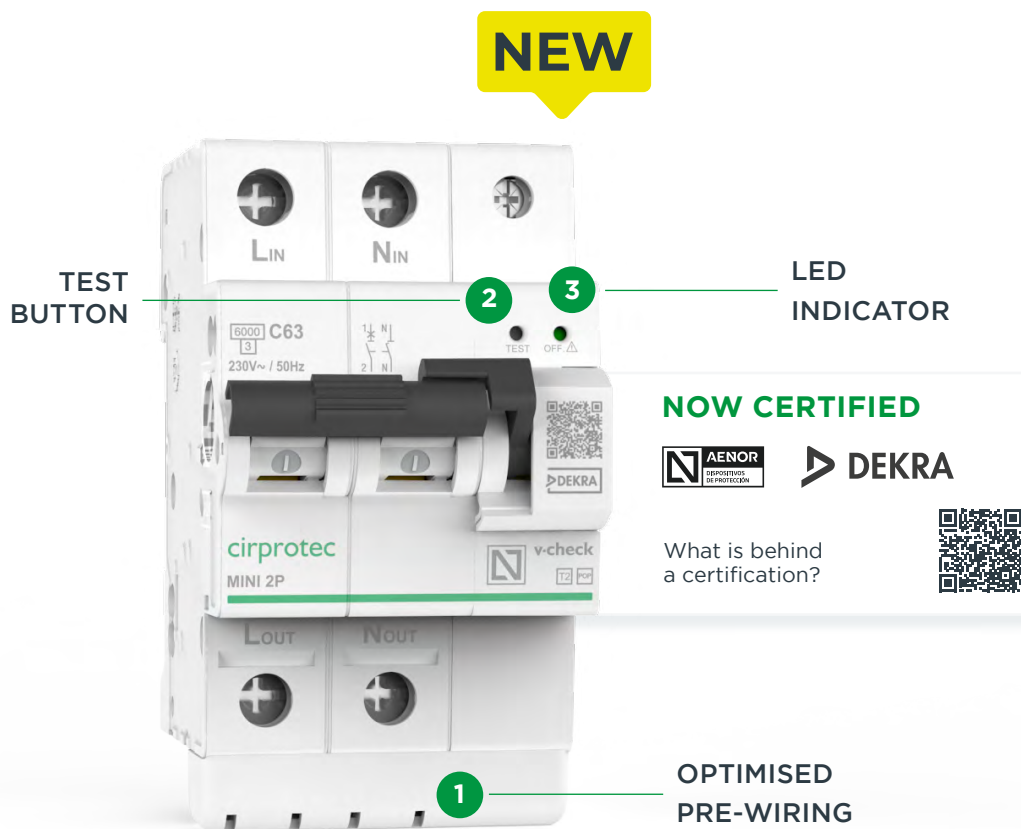
# **POWER FREQUENCY OVERVOLTAGE PROTECTION DEVICES (POP)**

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## v-check mini

The safest, easiest, and **most** <sup>+</sup> reliable protector

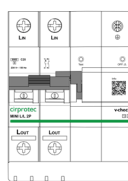
Combined protection against transient and power frequency overvoltage in a compact design, specifically engineered for panels inside homes and common service panels with limited space. An efficient solution that combines safety, regulatory compliance, and ease of installation in the smallest possible space.



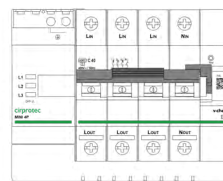
The most complete range



SINGLE-PHASE



TWO-PHASE



THREE-PHASE





## The safest protector

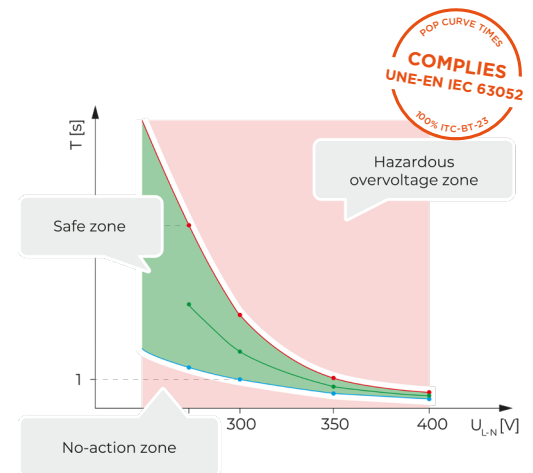
### Complies with the POP standard (UNE-EN IEC 63052)

V-CHECK MINI is the only protector tested in an ENAC-accredited laboratory, ensuring trip times that comply with regulations. This prevents false tripping and ensures proper protection of equipment.

### Complies with the DPS standard (IEC 61643-11)

Designed in accordance with international standards, it guarantees high levels of safety and reliability.

## COMPLY = PROTECT



|                            | Standardized operating and non-operating time values at a voltage ( $U_n$ ) equal to |       |       |        |        |
|----------------------------|--------------------------------------------------------------------------------------|-------|-------|--------|--------|
|                            | 255 V                                                                                | 275 V | 300 V | 350 V  | 400 V  |
| Maximum operating time     | No tripping                                                                          | 15 s  | 5 s   | 0.75 s | 0.20 s |
| Minimum non-operating time |                                                                                      | 3 s   | 1 s   | 0.25 s | 0.07 s |

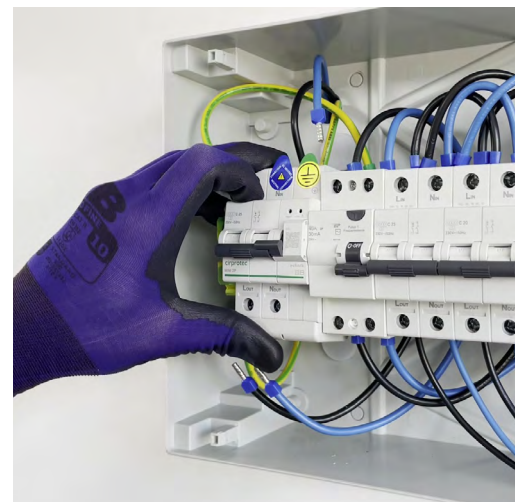
Technical characteristics and testing methods to ensure effective and safe protection in residential environments.



## The easiest protector to install

A compact design that includes status indicators for your peace of mind after installation.

- **Optimised pre-wiring:** Designed to facilitate cable entry and reduce installation time.
- **LED indicator:** Visually confirms that protection is active.
- **Test button:** Allows you to easily verify that the device's protective features are working properly.



## The most reliable protector

Entirely designed in our R&D lab and manufactured locally to ensure maximum traceability and quality control. 100% of units are electronically, mechanically, and electrically tested in accordance with the most stringent international standards.

### Responsible design and manufacturing

With an eco-design approach and a carbon footprint 40% lower than equivalent products on the market with PEP Ecopassport environmental certification (EPD), it offers a 20-year service life, and is fully recyclable.





## V-CHECK MINI



Combined protector against permanent (POP) and Type 2 transient overvoltages (SPD), prewired and compact design. The V-CHECK MINI range is a prewired and compact solution, with MCB included, for the protection of low-voltage installations against permanent and transient overvoltages.

## Standards

- EN IEC 63052
- EN IEC 61643-11

More info



## Part numbers

## Single-phase

| Item number | Item description     | N° poles+ conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Uc (L-N) [V] | Un [V] | I <sub>max</sub> [kA] | In (L-N) [kA] |
|-------------|----------------------|----------------|---------------------|--------------|--------------------------------------|--------------|--------|-----------------------|---------------|
| 79706102    | V-CHECK MINI 2P - 10 | 2 Poles, 1P+N  | 3                   | 10           | 6000                                 | 320          | 230    | 15                    | 5             |
| 79706103    | V-CHECK MINI 2P - 16 | 2 Poles, 1P+N  | 3                   | 16           | 6000                                 | 320          | 230    | 15                    | 5             |
| 79706104    | V-CHECK MINI 2P - 20 | 2 Poles, 1P+N  | 3                   | 20           | 6000                                 | 320          | 230    | 15                    | 5             |
| 79706105    | V-CHECK MINI 2P - 25 | 2 Poles, 1P+N  | 3                   | 25           | 6000                                 | 320          | 230    | 15                    | 5             |
| 79706106    | V-CHECK MINI 2P - 32 | 2 Poles, 1P+N  | 3                   | 32           | 6000                                 | 320          | 230    | 15                    | 5             |
| 79706107    | V-CHECK MINI 2P - 40 | 2 Poles, 1P+N  | 3                   | 40           | 6000                                 | 320          | 230    | 15                    | 5             |
| 79706108    | V-CHECK MINI 2P - 50 | 2 Poles, 1P+N  | 3                   | 50           | 6000                                 | 320          | 230    | 15                    | 5             |
| 79706109    | V-CHECK MINI 2P - 63 | 2 Poles, 1P+N  | 3                   | 63           | 6000                                 | 320          | 230    | 15                    | 5             |

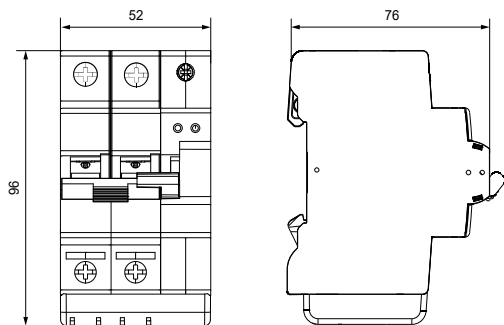
## Three-phase

| Item number | Item description     | N° poles+ conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Uc (L-N) [V] | Un [V]  | I <sub>max</sub> [kA] | In (L-N) [kA] |
|-------------|----------------------|----------------|---------------------|--------------|--------------------------------------|--------------|---------|-----------------------|---------------|
| 79706111    | V-CHECK MINI 4P - 10 | 4 Poles, 3P+N  | 7                   | 10           | 6000                                 | 255          | 230/400 | 15                    | 5             |
| 79706112    | V-CHECK MINI 4P - 16 | 4 Poles, 3P+N  | 7                   | 16           | 6000                                 | 255          | 230/400 | 15                    | 5             |
| 79706113    | V-CHECK MINI 4P - 20 | 4 Poles, 3P+N  | 7                   | 20           | 6000                                 | 255          | 230/400 | 15                    | 5             |
| 79706114    | V-CHECK MINI 4P - 25 | 4 Poles, 3P+N  | 7                   | 25           | 6000                                 | 255          | 230/400 | 15                    | 5             |
| 79706115    | V-CHECK MINI 4P - 32 | 4 Poles, 3P+N  | 7                   | 32           | 6000                                 | 255          | 230/400 | 15                    | 5             |
| 79706116    | V-CHECK MINI 4P - 40 | 4 Poles, 3P+N  | 7                   | 40           | 6000                                 | 255          | 230/400 | 15                    | 5             |
| 79706117    | V-CHECK MINI 4P - 50 | 4 Poles, 3P+N  | 7                   | 50           | 6000                                 | 255          | 230/400 | 15                    | 5             |
| 79706118    | V-CHECK MINI 4P - 63 | 4 Poles, 3P+N  | 7                   | 63           | 6000                                 | 255          | 230/400 | 15                    | 5             |

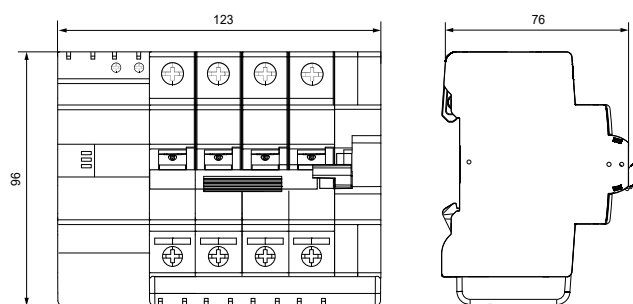
## V-CHECK MINI

### Dimensions

#### Single-phase

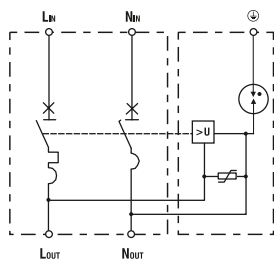


#### Three-phase

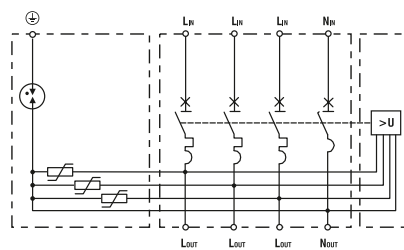


### Internal configuration

#### Single-phase



#### Three-phase



## V-CHECK MP T12



Combined protector against permanent (POP) and Type 1+2 transient overvoltages (SPD) with 12.5kA Iimp. The V-CHECK MP T12 range is a solution with MCB included, suitable as a first level of protection against overvoltages in low-voltage installations with lightning protection systems.

### Standards

- EN IEC 63052
- EN IEC 61643-11

More info



### Part numbers

#### Single-phase

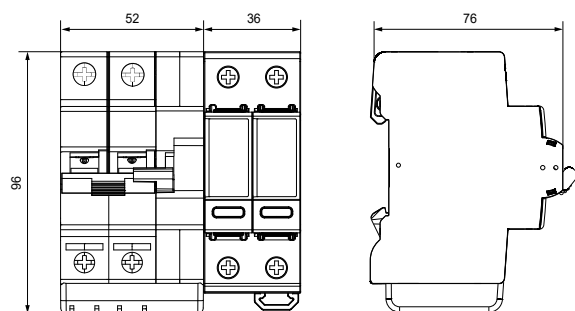
| Item number | Item description     | N° poles+ conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Uc (L-N) [V] | Un [V] | Iimp (L-N) [kA] | I <sub>max</sub> [kA] |
|-------------|----------------------|----------------|---------------------|--------------|--------------------------------------|--------------|--------|-----------------|-----------------------|
| 79706345    | V-CHECK MP T12 2P-25 | 2 Poles, 1P+N  | 5                   | 25           | 6000                                 | 275          | 230    | 12.5            | 50                    |
| 79706347    | V-CHECK MP T12 2P-40 | 2 Poles, 1P+N  | 5                   | 40           | 6000                                 | 275          | 230    | 12.5            | 50                    |

#### Three-phase

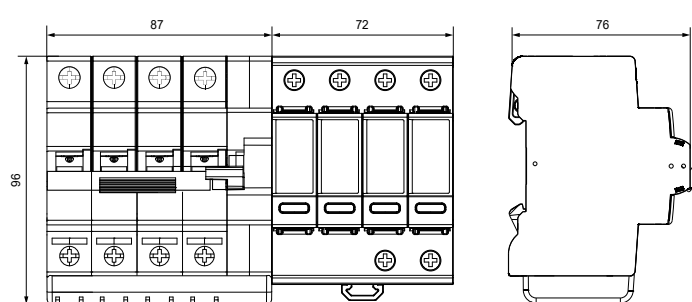
| Item number | Item description     | N° poles+ conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Uc (L-N) [V] | Un [V]  | Iimp (L-N) [kA] | I <sub>max</sub> [kA] |
|-------------|----------------------|----------------|---------------------|--------------|--------------------------------------|--------------|---------|-----------------|-----------------------|
| 79706354    | V-CHECK MP T12 4P-25 | 4 Poles, 3P+N  | 9                   | 25           | 6000                                 | 275          | 230/400 | 12.5            | 50                    |
| 79706356    | V-CHECK MP T12 4P-40 | 4 Poles, 3P+N  | 9                   | 40           | 6000                                 | 275          | 230/400 | 12.5            | 50                    |

### Dimensions

#### Single-phase



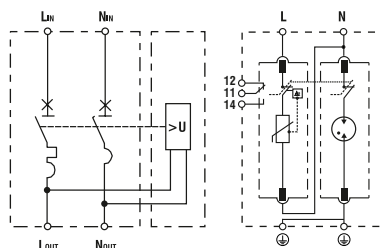
#### Three-phase



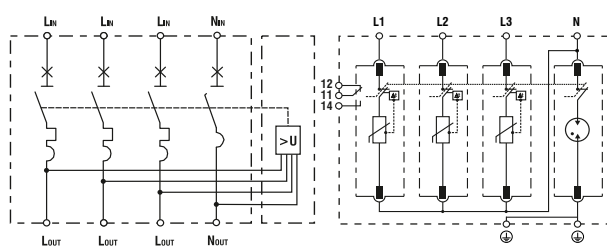
# V-CHECK MP T12

## Internal configuration

### Single-phase



### Three-phase



POWER FREQUENCY OVERVOLTAGE PROTECTION DEVICES

V-CHECK MINI L/L



Combined protector against permanent (POP) and Type 2 transient overvoltages (SPD). The V-CHECK MINI L/L range is a prewired and compact solution, with integrated main circuit breaker (MCB), for the protection of 230V two-phase (L/L) low-voltage installations, including a POP test button.

Standards

- EN IEC 63052
- EN IEC 61643-11



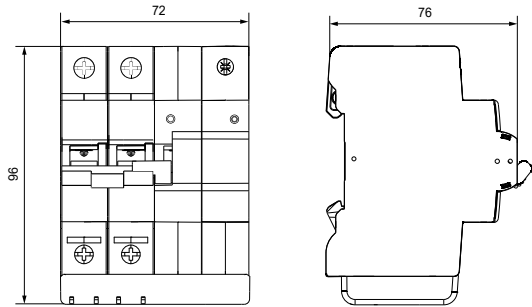
Part numbers

Single-phase

| Item number | Item description         | N° poles+ conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Uc (L-N) [V] | Un (L-L) [V] | I <sub>max</sub> [kA] | In (L-N) [kA] |
|-------------|--------------------------|----------------|---------------------|--------------|--------------------------------------|--------------|--------------|-----------------------|---------------|
| 79706132    | V-CHECK MINI L/L 2P - 25 | 2 Poles, 2P    | 4                   | 25           | 6000                                 | 350          | 230          | 15                    | 5             |
| 79706133    | V-CHECK MINI L/L 2P - 32 | 2 Poles, 2P    | 4                   | 32           | 6000                                 | 350          | 230          | 15                    | 5             |
| 79706134    | V-CHECK MINI L/L 2P - 40 | 2 Poles, 2P    | 4                   | 40           | 6000                                 | 350          | 230          | 15                    | 5             |

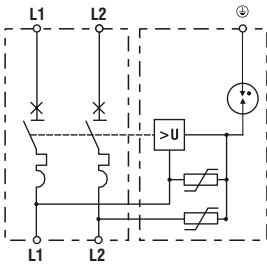
Dimensions

Single-phase



Internal configuration

Single-phase





## V-CHECK MP



Power Frequency Overvoltage Protection devices (POP). The V-CHECK MP range, with integrated main circuit-breaker (MCB) and prewired, is suitable for protecting low-voltage installations against overvoltages.

### Standards

- EN IEC 63052



More info



### Part numbers

#### Single-phase

| Item number | Item description | N° poles+conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Un [V] |
|-------------|------------------|---------------|---------------------|--------------|--------------------------------------|--------|
| 79706202    | V-CHECK MP 2P-10 | 2 Poles, 1P+N | 3                   | 10           | 6000                                 | 230    |
| 79706203    | V-CHECK MP 2P-16 | 2 Poles, 1P+N | 3                   | 16           | 6000                                 | 230    |
| 79706204    | V-CHECK MP 2P-20 | 2 Poles, 1P+N | 3                   | 20           | 6000                                 | 230    |
| 79706205    | V-CHECK MP 2P-25 | 2 Poles, 1P+N | 3                   | 25           | 6000                                 | 230    |
| 79706206    | V-CHECK MP 2P-32 | 2 Poles, 1P+N | 3                   | 32           | 6000                                 | 230    |
| 79706207    | V-CHECK MP 2P-40 | 2 Poles, 1P+N | 3                   | 40           | 6000                                 | 230    |
| 79706208    | V-CHECK MP 2P-50 | 2 Poles, 1P+N | 3                   | 50           | 6000                                 | 230    |
| 79706209    | V-CHECK MP 2P-63 | 2 Poles, 1P+N | 3                   | 63           | 6000                                 | 230    |

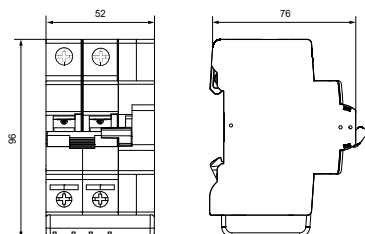
#### Three-phase

| Item number | Item description | N° poles+conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Un [V]  |
|-------------|------------------|---------------|---------------------|--------------|--------------------------------------|---------|
| 79706211    | V-CHECK MP 4P-10 | 4 Poles, 3P+N | 5                   | 10           | 6000                                 | 230/400 |
| 79706212    | V-CHECK MP 4P-16 | 4 Poles, 3P+N | 5                   | 16           | 6000                                 | 230/400 |
| 79706213    | V-CHECK MP 4P-20 | 4 Poles, 3P+N | 5                   | 20           | 6000                                 | 230/400 |
| 79706214    | V-CHECK MP 4P-25 | 4 Poles, 3P+N | 5                   | 25           | 6000                                 | 230/400 |
| 79706215    | V-CHECK MP 4P-32 | 4 Poles, 3P+N | 5                   | 32           | 6000                                 | 230/400 |
| 79706216    | V-CHECK MP 4P-40 | 4 Poles, 3P+N | 5                   | 40           | 6000                                 | 230/400 |
| 79706217    | V-CHECK MP 4P-50 | 4 Poles, 3P+N | 5                   | 50           | 6000                                 | 230/400 |
| 79706218    | V-CHECK MP 4P-63 | 4 Poles, 3P+N | 5                   | 63           | 6000                                 | 230/400 |

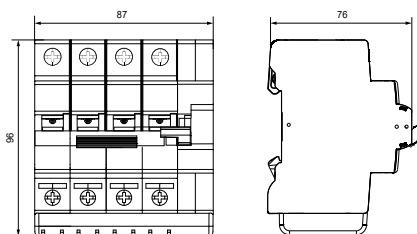
## V-CHECK MP

### Dimensions

#### Single-phase

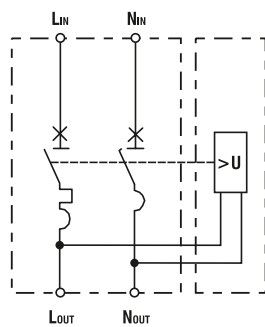


#### Three-phase

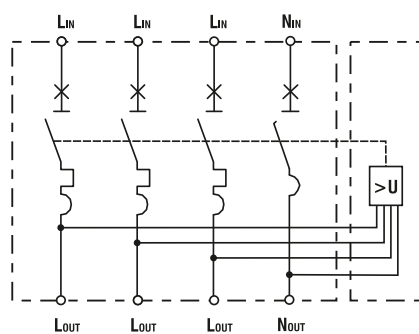


### Internal configuration

#### Single-phase

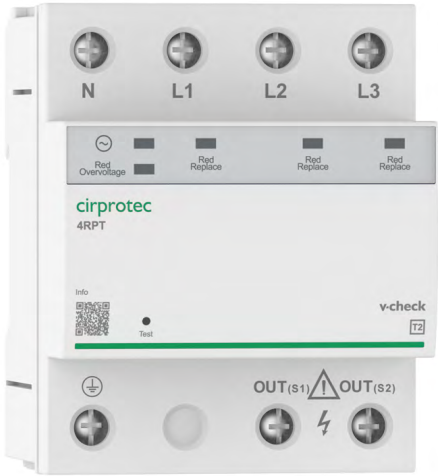


#### Three-phase



POWER FREQUENCY OVERVOLTAGE PROTECTION DEVICES

V-CHECK 4RPT



Combined protector against permanent (POP) and Type 2 transient overvoltages (SPD) with I<sub>max</sub> 40 kA. V-CHECK 4RPT range is a solution with operation on shunt or undervoltage coils, designed to protect low-voltage installations against permanent and transient overvoltages.

Standards

- EN IEC 61643-11

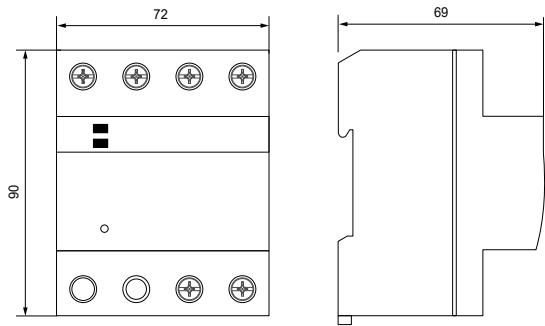


Part numbers

| Item number | Item description | N° poles+ conf | N° DIN rail modules | Actuation method | Uc (L-N) [V] | Un [V]  | I <sub>max</sub> [kA] | I <sub>n</sub> (L-N) [kA] | IR |
|-------------|------------------|----------------|---------------------|------------------|--------------|---------|-----------------------|---------------------------|----|
| 77706415    | V-CHECK 4RPT     | 4 Poles, 3P+N  | 4                   | Shunt release    | 275          | 230/400 | 40                    | 15                        |    |

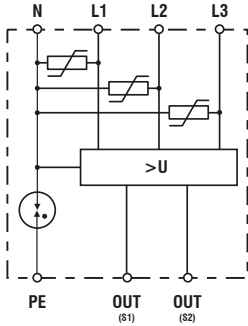
Dimensions

Three-phase



Internal configuration

Three-phase



# POWER FREQUENCY OVERVOLTAGE PROTECTION DEVICES

## V-CHECK 4RP T12



Combined protector against permanent (POP) and Type 1+2 transient overvoltages (SPD) with limp 12,5 kA. V-CHECK 4RP T12 range is a solution with operation on shunt or undervoltage coils, designed to protect low-voltage installations against permanent and transient overvoltages.

### Standards

- EN IEC 61643-11

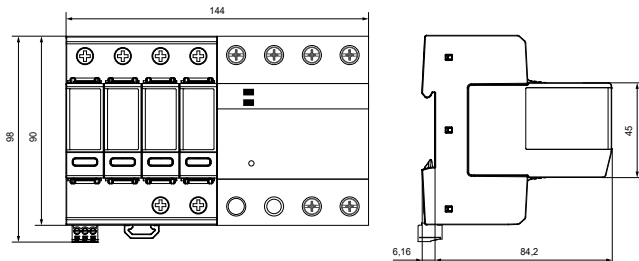


### Part numbers

| Item number | Item description   | N° poles+ conf | N° DIN rail modules | Actuation method | Uc (L-N) [V] | Un [V]  | I <sub>max</sub> [kA] | I <sub>n</sub> (L-N) [kA] | IR |
|-------------|--------------------|----------------|---------------------|------------------|--------------|---------|-----------------------|---------------------------|----|
| 77706591    | V-CHECK 4RP T12    | 4 Poles, 3P+N  | 8                   | Shunt release    | 275          | 230/400 | 50                    | 20                        |    |
| 77706593    | V-CHECK 4RP T12 IR | 4 Poles, 3P+N  | 8                   | Shunt release    | 275          | 230/400 | 50                    | 20                        | ✓  |

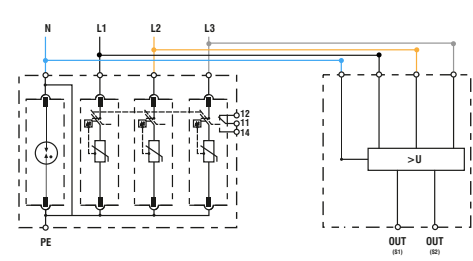
### Dimensions

#### Three-phase



### Internal configuration

#### Three-phase



# POWER FREQUENCY OVERVOLTAGE PROTECTION DEVICES

## V-CHECK 4RC



Combined protector against permanent (POP) and Type 2 transient overvoltages (SPD) with I<sub>max</sub> 40 kA. V-CHECK 4RC range is suitable for protecting tertiary/commercial low-voltage installations against overvoltages.

### Standards

- EN IEC 61643-11

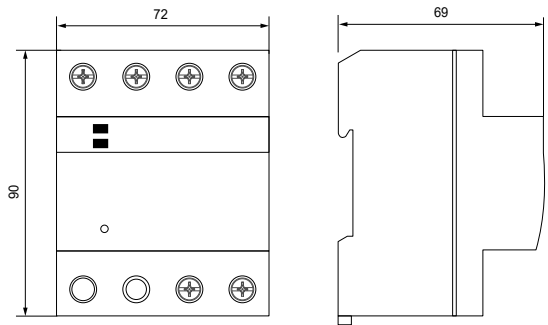


### Part numbers

| Item number | Item description | N° poles+ conf | N° DIN rail modules | Actuation method | Uc (L-N) [V] | Un [V]  | I <sub>max</sub> [kA] | In (L-N) [kA] | IR |
|-------------|------------------|----------------|---------------------|------------------|--------------|---------|-----------------------|---------------|----|
| 77706417    | V-CHECK 4RC      | 4 Poles, 3P+N  | 4                   | Contactor        | 275          | 230/400 | 40                    | 15            |    |
| 77706418    | V-CHECK 4RC IR   | 4 Poles, 3P+N  | 4                   | Contactor        | 275          | 230/400 | 40                    | 15            | ✓  |

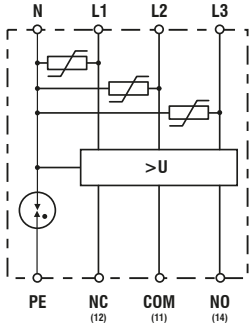
### Dimensions

#### Three-phase



### Internal configuration

#### Three-phase





## V-CHECK 4RCP T12



Combined protector against permanent (POP) and Type 1+2 transient overvoltages (SPD) with limp 12,5 kA. V-CHECK 4RCP T12 range is suitable for protecting tertiary/commercial low-voltage installations against overvoltages.

### Standards

- EN IEC 61643-11



More info

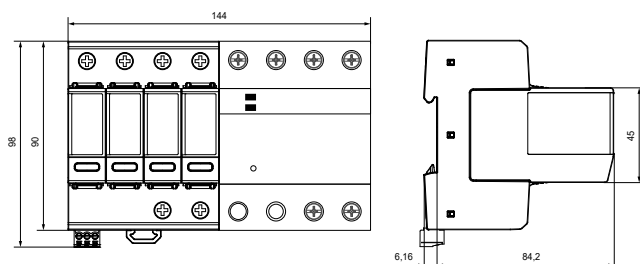


### Part numbers

| Item number | Item description    | N° poles+ conf | N° DIN rail modules | Actuation method | Uc (L-N) [V] | Un [V]  | I <sub>max</sub> [kA] | I <sub>n</sub> (L-N) [kA] | IR |
|-------------|---------------------|----------------|---------------------|------------------|--------------|---------|-----------------------|---------------------------|----|
| 77706590    | V-CHECK 4RCP T12    | 4 Poles, 3P+N  | 8                   | Contactor        | 275          | 230/400 | 50                    | 20                        |    |
| 77706592    | V-CHECK 4RCP T12 IR | 4 Poles, 3P+N  | 8                   | Contactor        | 275          | 230/400 | 50                    | 20                        | ✓  |

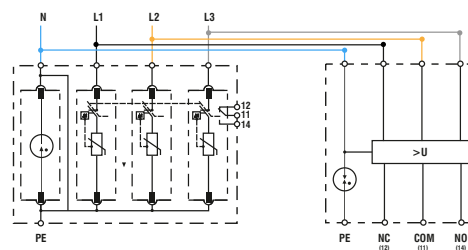
### Dimensions

#### Three-phase



### Internal configuration

#### Three-phase



# V-CHECK MR



Combined protector against permanent (POP) and Type 2 transient overvoltages (SPD), with integrated main circuit breaker (MCB) and automatic reclosing, suitable for installations requiring continuity of service.

## Standards

- EN IEC 63052
- EN IEC 61643-11

More info



## Part numbers

### Single-phase

| Item number | Item description | N° poles+ conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Uc (L-N) [V] | Un [V] | I <sub>max</sub> [kA] | In (L-N) [kA] |
|-------------|------------------|----------------|---------------------|--------------|--------------------------------------|--------------|--------|-----------------------|---------------|
| 77706257    | V-CHECK 2MR-10   | 2 Poles, 1P+N  | 5                   | 10           | 10000                                | 255          | 230    | 15                    | 5             |
| 77706295    | V-CHECK 2MR-16   | 2 Poles, 1P+N  | 5                   | 16           | 10000                                | 255          | 230    | 15                    | 5             |
| 77706296    | V-CHECK 2MR-20   | 2 Poles, 1P+N  | 5                   | 20           | 10000                                | 255          | 230    | 15                    | 5             |
| 77706250    | V-CHECK 2MR-25   | 2 Poles, 1P+N  | 5                   | 25           | 10000                                | 255          | 230    | 15                    | 5             |
| 77706297    | V-CHECK 2MR-32   | 2 Poles, 1P+N  | 5                   | 32           | 10000                                | 255          | 230    | 15                    | 5             |
| 77706255    | V-CHECK 2MR-40   | 2 Poles, 1P+N  | 5                   | 40           | 10000                                | 255          | 230    | 15                    | 5             |

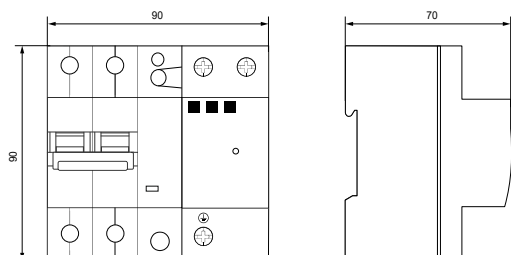
### Three-phase

| Item number | Item description | N° poles+ conf | N° DIN rail modules | In (IGA) [A] | Breaking capacity EN 60898 - Icn [A] | Uc (L-N) [V] | Un [V]  | I <sub>max</sub> [kA] | In (L-N) [kA] |
|-------------|------------------|----------------|---------------------|--------------|--------------------------------------|--------------|---------|-----------------------|---------------|
| 77706267    | V-CHECK 4MR-10   | 4 Poles, 4P    | 9                   | 10           | 6000                                 | 275          | 230/400 | 20                    | 5             |
| 77706268    | V-CHECK 4MR-16   | 4 Poles, 4P    | 9                   | 16           | 6000                                 | 275          | 230/400 | 20                    | 5             |
| 77706266    | V-CHECK 4MR-20   | 4 Poles, 4P    | 9                   | 20           | 6000                                 | 275          | 230/400 | 20                    | 5             |
| 77706261    | V-CHECK 4MR-25   | 4 Poles, 4P    | 9                   | 25           | 6000                                 | 275          | 230/400 | 20                    | 5             |
| 77706262    | V-CHECK 4MR-32   | 4 Poles, 4P    | 9                   | 32           | 6000                                 | 275          | 230/400 | 20                    | 5             |
| 77706263    | V-CHECK 4MR-40   | 4 Poles, 4P    | 9                   | 40           | 6000                                 | 275          | 230/400 | 20                    | 5             |
| 77706264    | V-CHECK 4MR-50   | 4 Poles, 4P    | 9                   | 50           | 6000                                 | 275          | 230/400 | 20                    | 5             |
| 77706265    | V-CHECK 4MR-63   | 4 Poles, 4P    | 9                   | 63           | 6000                                 | 275          | 230/400 | 20                    | 5             |

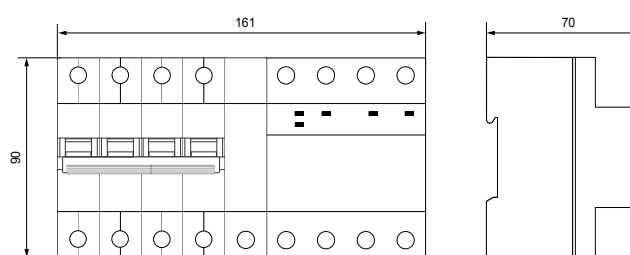
## V-CHECK MR

### Dimensions

#### Single-phase

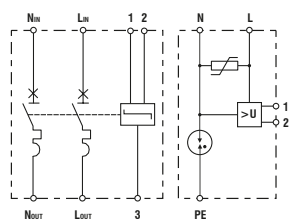


#### Three-phase

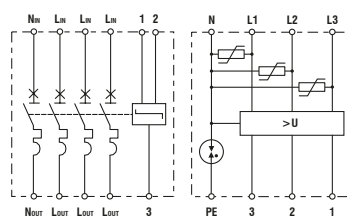


### Internal configuration

#### Single-phase



#### Three-phase



POWER FREQUENCY OVERVOLTAGE PROTECTION DEVICES

V-CHECK RP



Power Frequency Overvoltage Protection devices (POP). The V-CHECK RP range is a solution with operation on shunt trip coils in moulded case circuit breakers (MCCB), suitable for industrial and tertiary installations with risk of permanent overvoltages.



Part numbers

Single-phase

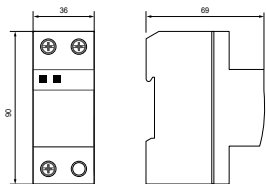
| Item number | Item description | Nº poles+conf | Nº DIN rail modules | Actuation method | Un [V] |
|-------------|------------------|---------------|---------------------|------------------|--------|
| 77706641    | V-CHECK 2RP      | 2 Poles, 1P+N | 2                   | Shunt release    | 230    |

Three-phase

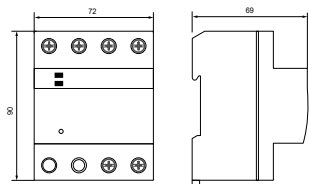
| Item number | Item description | Nº poles+conf | Nº DIN rail modules | Actuation method | Un [V]  |
|-------------|------------------|---------------|---------------------|------------------|---------|
| 77706640    | V-CHECK 4RP      | 4 Poles, 3P+N | 4                   | Shunt release    | 230/400 |

Dimensiones

Monofásico

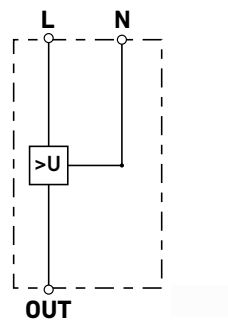


Trifásico

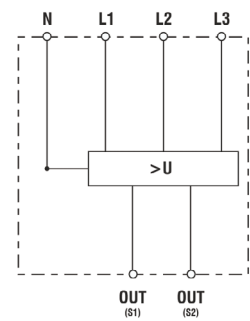


Configuración interna

Monofásico



Trifásico







SURGE PROTECTION DEVICES

# POWER LINE SPDs

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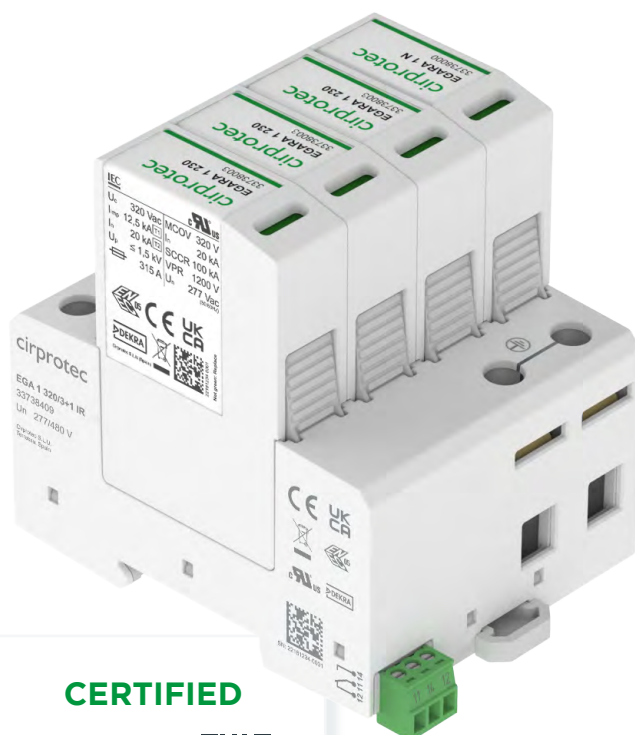


LEADING THE STANDARD IN SURGE PROTECTION

# egara

## The new generation of Surge Protection Devices

EGARA is the new generation of Surge Protection Devices from the Cirprotec brand, developed to address today's electrical protection and safety requirements in residential, commercial, and industrial buildings. Patented worldwide.

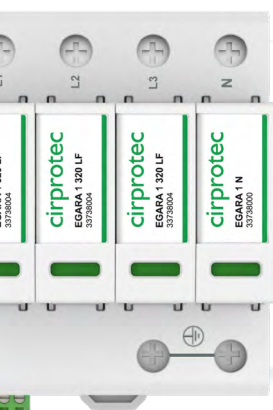


### Complete range



**CERTIFIED**

Check me

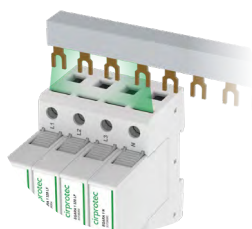


- Certified range IEC & UL
- Extended back-up protection (up to 315 A)
- LCF Leakage current free options
- Manufactured in Europe with sustainable criteria

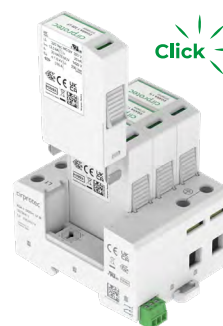
### Fast and easy installation



Double PE connection



Assembly compatibility with busbar



Ergonomic pluggable cartridge

## How to back-up SPDs?

EGARA has been specifically engineered to operate as a fully coordinated system with its **NEW dedicated back-up solution, the SSD (SPD Specific Disconnecter)**.

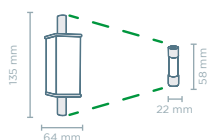
**NEW**

- ✓ High system robustness
- ✓ Easy and safe dimensioning of back-up protection
- ✓ Continuity of protection during surge event
- ✓ Continuity of service if back-up blows
- ✓ Compliant with current and upcoming standards  
IEC 61643-11 & prIEC TS 61643-06

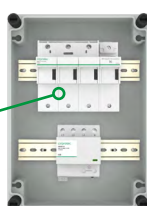
**Iscrr 100 kA**



### Designed to save space on the panel

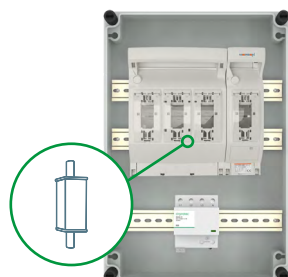


**SMALL  
BEST**



**Save up to  
50% space**

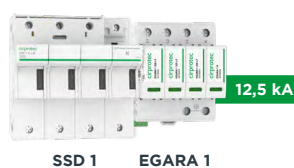
**New Solution**  
SPD Specific  
Disconnecter



**Standard Solution**  
Fuse technology

### Easy and safe back-up dimensioning

|         | DPS             | SSD           |
|---------|-----------------|---------------|
| 12,5 kA | EGARA 1 series  | SSD 1 series  |
| 25 kA   | EGARA 1H series | SSD 1H series |

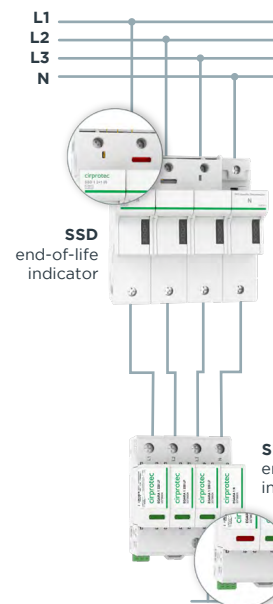


**SSD 1 EGA 1**



**SSD 1H EGA 1H**

### Complete diagnosis at the end-of-life



The most reliable solution from the **unique** manufacturer mastering both overvoltage and overcurrent protection

POWER LINE SPDs

# EGARA 1H LF



Type 1+2 surge protection device (SPD) for transient overvoltages monobloc design leakage current free with limp 25 kA. The multi-certified EGARA 1H LF range is suitable for installations with lightning rods or Aerial line entries.

### Standards

- EN IEC 61643-11



### Part numbers

#### 2 Poles

| Item number | Item description     | Internal conf. | Network configuration | Uc [V] | Un [V] | limp [kA] | In [kA] | Up at In [kV] | IR |
|-------------|----------------------|----------------|-----------------------|--------|--------|-----------|---------|---------------|----|
| 33738239    | EGA 1H 255/1+1 LF IR | 1+1            | TT, TNS               | 255    | 230    | 25        | 25      | ≤1.5          | ✓  |

#### 3 Poles

| Item number | Item description     | Internal conf. | Network configuration | Uc [V] | Un [V]  | limp [kA] | In [kA] | Up at In [kV] | IR |
|-------------|----------------------|----------------|-----------------------|--------|---------|-----------|---------|---------------|----|
| 33738343    | EGA 1H 255/3+0 LF IR | 3+0            | TNC                   | 255    | 230/400 | 25        | 25      | ≤1.5          | ✓  |

#### 4 Poles

| Item number | Item description     | Internal conf. | Network configuration | Uc [V] | Un [V]  | limp [kA] | In [kA] | Up at In [kV] | IR |
|-------------|----------------------|----------------|-----------------------|--------|---------|-----------|---------|---------------|----|
| 33738451    | EGA 1H 255/3+1 LF IR | 3+1            | TT, TNS               | 255    | 230/400 | 25        | 25      | ≤1.5          | ✓  |



### NEW Dedicated back-up solution

#### SPD Specific Disconnecter (SSD)

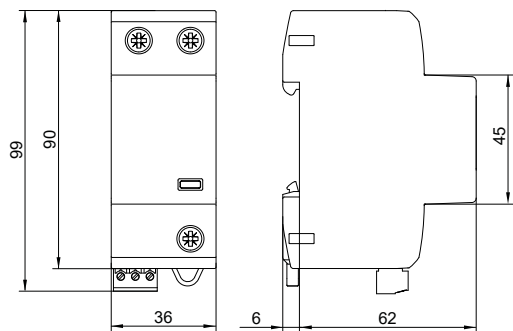
| SPD                |                 | SSD         |               |
|--------------------|-----------------|-------------|---------------|
| SPD range          | Number of poles | Item number | Description   |
| Egara 1H LF Series | 2 Poles         | 34001202    | SSD 1H 1+1 IR |
|                    | 3 Poles         | 34001302    | SSD 1H 3+0 IR |
|                    | 4 Poles         | 34001402    | SSD 1H 3+1 IR |

# POWER LINE SPDs

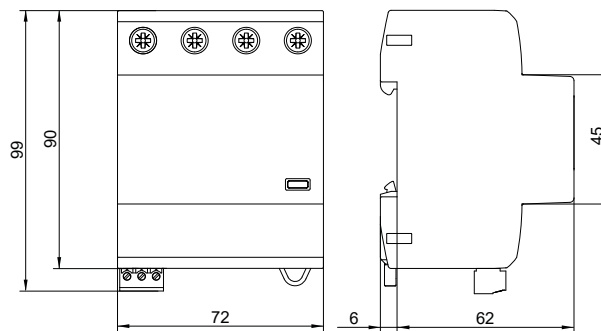
## EGARA 1H LF

### Dimensions

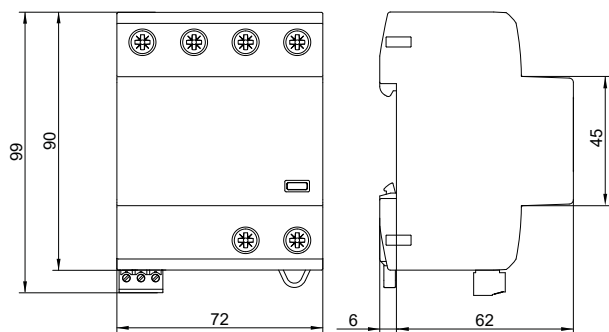
#### 2 Poles



#### 3 Poles

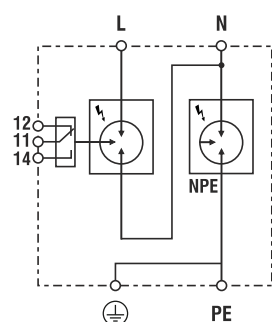


#### 4 Poles

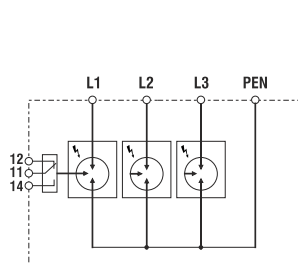


### Internal configuration

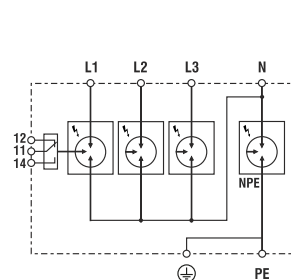
#### TT, TNS (1+1)



#### TNC (3+0)



#### TT, TNS (3+1)



# SSD 1H



SPD Specific disconnect (SSD) for EGARA 1H LF. SSD 1H has been designed and validated together with EGARA 1H LF, ensuring continuity of protection and service. Suitable for applications with high short-circuit currents.

## Standards

- prIEC TS 61643-06



More info



## Part numbers

### 2 Poles

| Item number | Item description | Internal conf. | Network configuration | Ue [V] | Itrip [A] | Iimp [kA] | In [kA] | IR |
|-------------|------------------|----------------|-----------------------|--------|-----------|-----------|---------|----|
| 34001202    | SSD 1H 1+1 IR    | 1+1            | TT, TN, IT            | 500    | 1100      | 25        | 25      | ✓  |

### 3 Poles

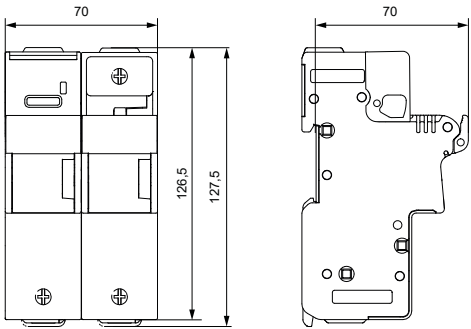
| Item number | Item description | Internal conf. | Network configuration | Ue [V] | Itrip [A] | Iimp [kA] | In [kA] | IR |
|-------------|------------------|----------------|-----------------------|--------|-----------|-----------|---------|----|
| 34001302    | SSD 1H 3+0 IR    | 3+0            | TT, TN, IT            | 500    | 1100      | 25        | 25      | ✓  |

### 4 Poles

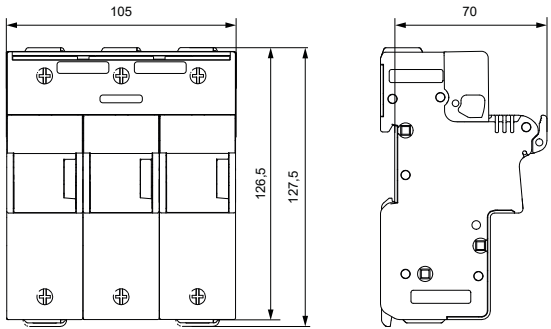
| Item number | Item description | Internal conf. | Network configuration | Ue [V] | Itrip [A] | Iimp [kA] | In [kA] | IR |
|-------------|------------------|----------------|-----------------------|--------|-----------|-----------|---------|----|
| 34001402    | SSD 1H 3+1 IR    | 3+1            | TT, TN, IT            | 500    | 1100      | 25        | 25      | ✓  |

**Dimensions**

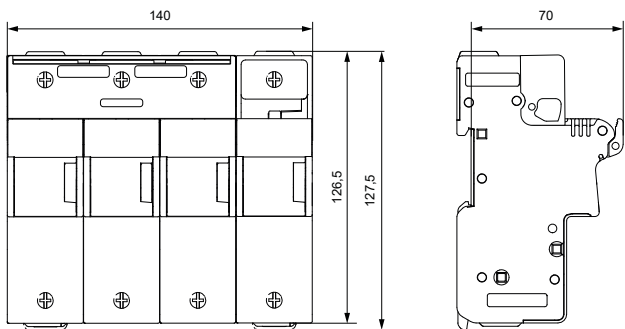
**2 Poles**



**3 Poles**

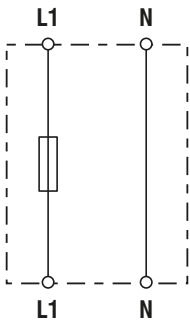


**4 Poles**

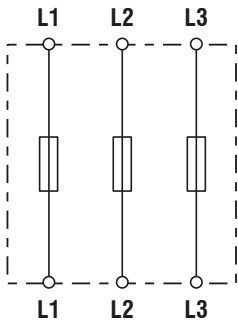


**Internal configuration**

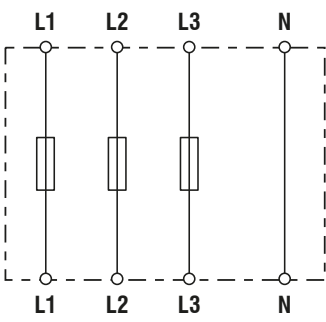
**2 Poles**



**3 Poles**



**4 Poles**





## EGARA 1



Type 1+2 surge protection device (SPD) for transient overvoltages pluggable with limp 12.5 kA. The multi-certified EGA 1 range is suitable as a first level of protection in the main distribution board.

## Standards

- EN IEC 61643-11
- UL 1449 5th Edition

More info



## Part numbers

## 1 Pole

| Item number | Item description | Internal conf. | Network configuration   | Uc [V] | Un [V]  | limp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|------------------|----------------|-------------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 33738114    | EGA 1 175/1+0    | 1+0            | TNS, TNC, TT (only L-N) | 175    | 120     | 12.5      | 50                    | 20      | ≤1            |    |
| 33738115    | EGA 1 175/1+0 IR | 1+0            | TNS, TNC, TT (only L-N) | 175    | 120     | 12.5      | 50                    | 20      | ≤1            | ✓  |
| 33738100    | EGA 1 N/0+1      | 0+1            | TT, TNS                 | 255    | Neutral | 50        | 100                   | 50      | ≤1.5          |    |
| 33738101    | EGA 1 N/0+1 IR   | 0+1            | TT, TNS                 | 255    | Neutral | 50        | 100                   | 50      | ≤1.5          | ✓  |
| 33738102    | EGA 1 275/1+0    | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738103    | EGA 1 275/1+0 IR | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738106    | EGA 1 320/1+0    | 1+0            | TNS, TNC, TT (only L-N) | 320    | 277     | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738107    | EGA 1 320/1+0 IR | 1+0            | TNS, TNC, TT (only L-N) | 320    | 277     | 12.5      | 50                    | 20      | ≤1.5          | ✓  |

## 2 Poles

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V] | limp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|--------|-----------|-----------------------|---------|---------------|----|
| 33738224    | EGA 1 175/1+1      | 1+1            | TT, TNS               | 175    | 120    | 12.5      | 50                    | 20      | ≤1            |    |
| 33738225    | EGA 1 175/1+1 IR   | 1+1            | TT, TNS               | 175    | 120    | 12.5      | 50                    | 20      | ≤1            | ✓  |
| 33738200    | EGA 1 275/1+1      | 1+1            | TT, TNS               | 275    | 230    | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738201    | EGA 1 275/1+1 IR   | 1+1            | TT, TNS               | 275    | 230    | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738208    | EGA 1 320/1+1      | 1+1            | TT, TNS               | 320    | 277    | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738209    | EGA 1 320/1+1 IR   | 1+1            | TT, TNS               | 320    | 277    | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738228    | EGA 1 175/2+0      | 2+0            | TNS                   | 175    | 120    | 12.5      | 50                    | 20      | ≤1            |    |
| 33738229    | EGA 1 175/2+0 IR   | 2+0            | TNS                   | 175    | 120    | 12.5      | 50                    | 20      | ≤1            | ✓  |
| 33738204    | EGA 1 275/2+0      | 2+0            | TNS                   | 275    | 230    | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738205    | EGA 1 275/2+0 IR   | 2+0            | TNS                   | 275    | 230    | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738212    | EGA 1 320/2+0      | 2+0            | TNS                   | 320    | 277    | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738213    | EGA 1 320/2+0 IR   | 2+0            | TNS                   | 320    | 277    | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738220    | EGA 1 440/2+0 *    | 2+0            | TNS                   | 440    | 400    | 12.5      | 50                    | 20      | ≤2            |    |
| 33738221    | EGA 1 440/2+0 IR * | 2+0            | TNS                   | 440    | 400    | 12.5      | 50                    | 20      | ≤2            | ✓  |

\*Also suitable for 230 V IT network configuration

**3 Poles**

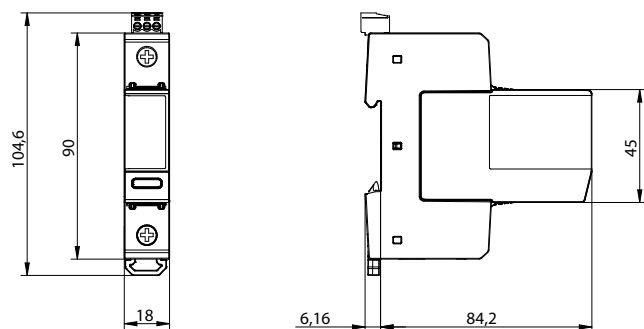
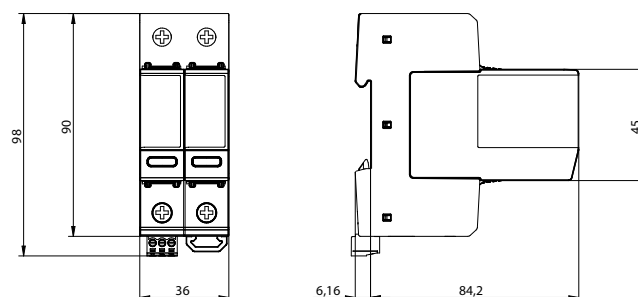
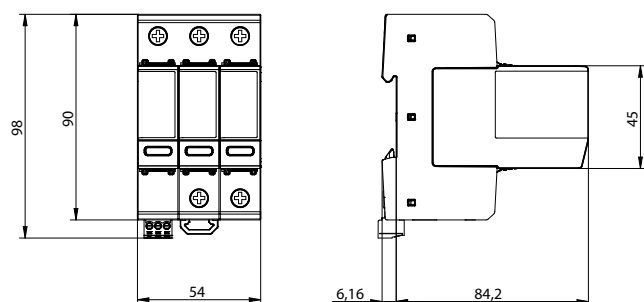
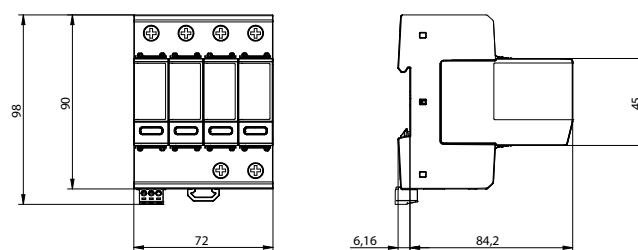
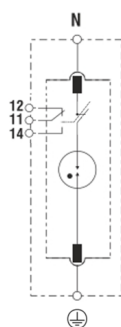
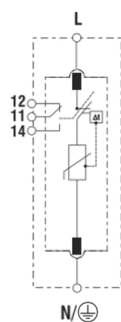
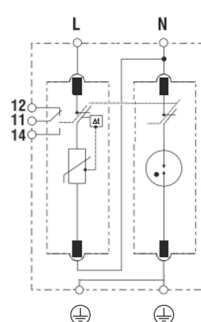
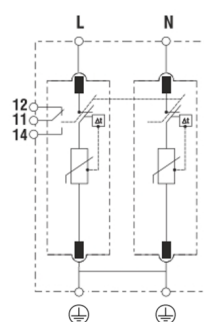
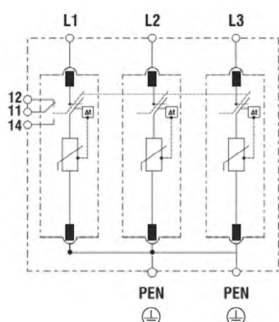
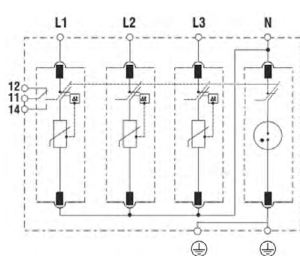
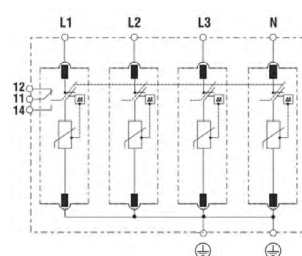
| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | Iimp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 33738320    | EGA 1 175/3+0      | 3+0            | TNC                   | 175    | 120/208 | 12.5      | 50                    | 20      | ≤1            |    |
| 33738321    | EGA 1 175/3+0 IR   | 3+0            | TNC                   | 175    | 120/208 | 12.5      | 50                    | 20      | ≤1            | ✓  |
| 33738300    | EGA 1 275/3+0      | 3+0            | TNC                   | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738301    | EGA 1 275/3+0 IR   | 3+0            | TNC                   | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738304    | EGA 1 320/3+0      | 3+0            | TNC                   | 320    | 277/480 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738305    | EGA 1 320/3+0 IR   | 3+0            | TNC                   | 320    | 277/480 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738308    | EGA 1 440/3+0 *    | 3+0            | TNC                   | 440    | 400/690 | 12.5      | 50                    | 20      | ≤2            |    |
| 33738309    | EGA 1 440/3+0 IR * | 3+0            | TNC                   | 440    | 400/690 | 12.5      | 50                    | 20      | ≤2            | ✓  |

\*Also suitable for -/400 V IT network configuration

**4 Poles**

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | Iimp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 33738424    | EGA 1 175/3+1      | 3+1            | TT, TNS               | 175    | 120/208 | 12.5      | 50                    | 20      | ≤1            |    |
| 33738425    | EGA 1 175/3+1 IR   | 3+1            | TT, TNS               | 175    | 120/208 | 12.5      | 50                    | 20      | ≤1            | ✓  |
| 33738400    | EGA 1 275/3+1      | 3+1            | TT, TNS               | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738401    | EGA 1 275/3+1 IR   | 3+1            | TT, TNS               | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738408    | EGA 1 320/3+1      | 3+1            | TT, TNS               | 320    | 277/480 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738409    | EGA 1 320/3+1 IR   | 3+1            | TT, TNS               | 320    | 277/480 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738428    | EGA 1 175/4+0      | 4+0            | TNS                   | 175    | 120/208 | 12.5      | 50                    | 20      | ≤1            |    |
| 33738429    | EGA 1 175/4+0 IR   | 4+0            | TNS                   | 175    | 120/208 | 12.5      | 50                    | 20      | ≤1            | ✓  |
| 33738404    | EGA 1 275/4+0      | 4+0            | TNS                   | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738405    | EGA 1 275/4+0 IR   | 4+0            | TNS                   | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738412    | EGA 1 320/4+0      | 4+0            | TNS                   | 320    | 277/480 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738413    | EGA 1 320/4+0 IR   | 4+0            | TNS                   | 320    | 277/480 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738420    | EGA 1 440/4+0 *    | 4+0            | TNS                   | 440    | 400/690 | 12.5      | 50                    | 20      | ≤2            |    |
| 33738421    | EGA 1 440/4+0 IR * | 4+0            | TNS                   | 440    | 400/690 | 12.5      | 50                    | 20      | ≤2            | ✓  |

\*Also suitable for 230/400 V IT network configuration

**EGARA 1****Dimensions****1 Pole****2 Poles****3 Poles****4 Poles****Internal configuration****TT, TNS (0+1)****TNS, TNC, TT (only L-N) (1+0)****TT, TNS (1+1)****TNS (2+0)****TNC (3+0)****TT, TNS (3+1)****TNS (4+0)**

## EGARA 1 L



Type 1+2 surge protection device (SPD) for transient overvoltages, pluggable, with limp 12.5 kA. The compact EGA 1 L Series range is suitable as a first level of protection in the main distribution board in low-voltage installations with space limitations.

## Standards

- EN IEC 61643-11
- UL 1449 5th Edition

More info



## Part numbers

## 1 Pole

| Item number | Item description   | Internal conf. | Network configuration   | Uc [V] | Un [V]  | limp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-------------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 33738122    | EGA 1 N/0+1 L      | 0+1            | TT, TNS                 | 255    | Neutral | 50        | 100                   | 50      | ≤1.5          |    |
| 33738123    | EGA 1 N/0+1 L IR   | 0+1            | TT, TNS                 | 255    | Neutral | 50        | 100                   | 50      | ≤1.5          | ✓  |
| 33738124    | EGA 1 275/1+0 L    | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738125    | EGA 1 275/1+0 L IR | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 12.5      | 50                    | 20      | ≤1.5          | ✓  |

## 2 Poles

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V] | limp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|--------|-----------|-----------------------|---------|---------------|----|
| 33738234    | EGA 1 275/1+1 L    | 1+1            | TT, TNS               | 275    | 230    | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738235    | EGA 1 275/1+1 L IR | 1+1            | TT, TNS               | 275    | 230    | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738236    | EGA 1 275/2+0 L    | 2+0            | TNS                   | 275    | 230    | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738237    | EGA 1 275/2+0 L IR | 2+0            | TNS                   | 275    | 230    | 12.5      | 50                    | 20      | ≤1.5          | ✓  |

## 3 Poles

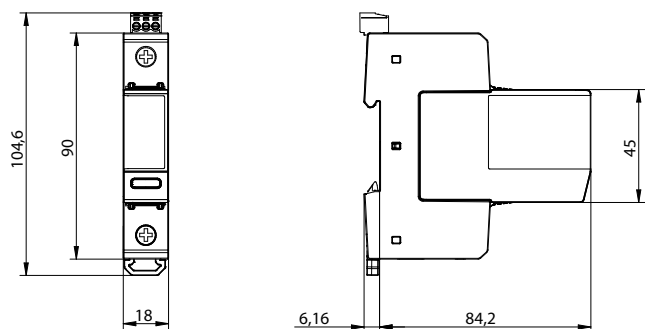
| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | limp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 33738340    | EGA 1 275/3+0 L    | 3+0            | TNC                   | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738341    | EGA 1 275/3+0 L IR | 3+0            | TNC                   | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |

## 4 Poles

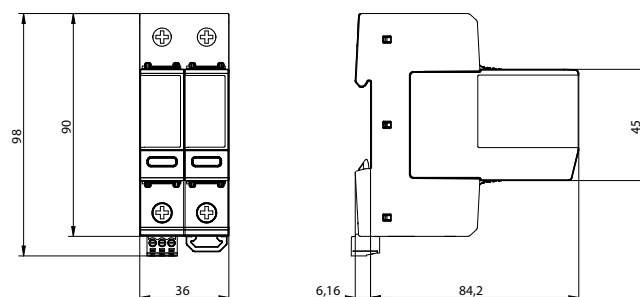
| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | limp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 33738446    | EGA 1 275/3+1 L    | 3+1            | TT, TNS               | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738447    | EGA 1 275/3+1 L IR | 3+1            | TT, TNS               | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |
| 33738448    | EGA 1 275/4+0 L    | 4+0            | TNS                   | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          |    |
| 33738449    | EGA 1 275/4+0 L IR | 4+0            | TNS                   | 275    | 230/400 | 12.5      | 50                    | 20      | ≤1.5          | ✓  |

## Dimensions

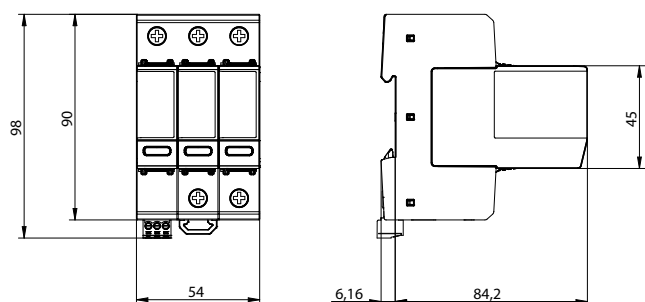
### 1 Pole



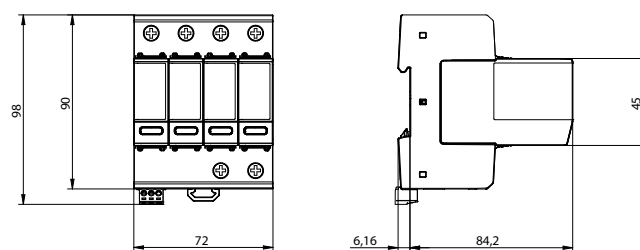
### 2 Poles



### 3 Poles

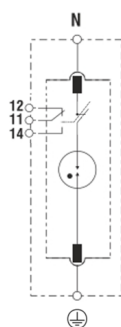


### 4 Poles

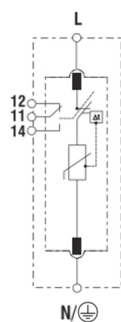


## Internal configuration

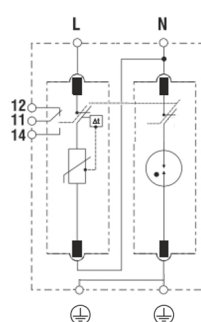
### TT, TNS (0+1)



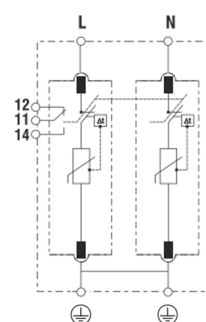
### TNS, TNC, TT (only L-N) (1+0)



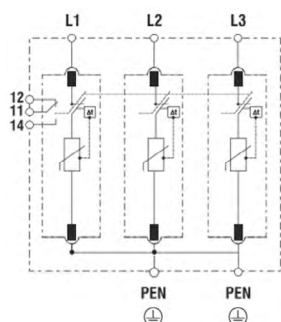
### TT, TNS (1+1)



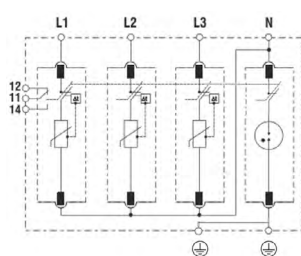
### TNS (2+0)



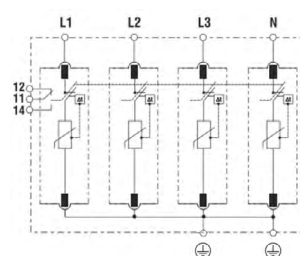
### TNC (3+0)



### TT, TNS (3+1)



### TNS (4+0)



# POWER LINE SPDs

## EGARA 1 LF



Type 1+2 surge protection device (SPD) for transient overvoltages pluggable leakage current free with limp 12.5 kA. The multi-certified EGARA 1 LF range is suitable as a first level of protection in the main distribution board.

### Standards

- EN IEC 61643-11
- UL 1449 5th Edition

More info



## Part numbers

### 1 Pole

| Item number | Item description    | Internal conf. | Network configuration   | Uc [V] | Un [V] | limp [kA] | Imax [kA] | In [kA] | Up at In [kV] | IR |
|-------------|---------------------|----------------|-------------------------|--------|--------|-----------|-----------|---------|---------------|----|
| 33738108    | EGA 1 320/1+0 LF    | 1+0            | TNS, TNC, TT (only L-N) | 320    | 230    | 12.5      | 50        | 20      | ≤1.5          |    |
| 33738109    | EGA 1 320/1+0 LF IR | 1+0            | TNS, TNC, TT (only L-N) | 320    | 230    | 12.5      | 50        | 20      | ≤1.5          | ✓  |

### 2 Poles

| Item number | Item description    | Internal conf. | Network configuration | Uc [V] | Un [V] | limp [kA] | Imax [kA] | In [kA] | Up at In [kV] | IR |
|-------------|---------------------|----------------|-----------------------|--------|--------|-----------|-----------|---------|---------------|----|
| 33738210    | EGA 1 320/1+1 LF    | 1+1            | TT, TNS               | 320    | 230    | 12.5      | 50        | 20      | ≤1.5          |    |
| 33738211    | EGA 1 320/1+1 LF IR | 1+1            | TT, TNS               | 320    | 230    | 12.5      | 50        | 20      | ≤1.5          | ✓  |
| 33738214    | EGA 1 320/2+0 LF    | 2+0            | TNS                   | 320    | 230    | 12.5      | 50        | 20      | ≤1.5          |    |
| 33738215    | EGA 1 320/2+0 LF IR | 2+0            | TNS                   | 320    | 230    | 12.5      | 50        | 20      | ≤1.5          | ✓  |

### 3 Poles

| Item number | Item description    | Internal conf. | Network configuration | Uc [V] | Un [V]  | limp [kA] | Imax [kA] | In [kA] | Up at In [kV] | IR |
|-------------|---------------------|----------------|-----------------------|--------|---------|-----------|-----------|---------|---------------|----|
| 33738306    | EGA 1 320/3+0 LF    | 3+0            | TNC                   | 320    | 277/480 | 12.5      | 50        | 20      | ≤1.5          |    |
| 33738307    | EGA 1 320/3+0 LF IR | 3+0            | TNC                   | 320    | 277/480 | 12.5      | 50        | 20      | ≤1.5          | ✓  |

### 4 Poles

| Item number | Item description    | Internal conf. | Network configuration | Uc [V] | Un [V]  | limp [kA] | Imax [kA] | In [kA] | Up at In [kV] | IR |
|-------------|---------------------|----------------|-----------------------|--------|---------|-----------|-----------|---------|---------------|----|
| 33738410    | EGA 1 320/3+1 LF    | 3+1            | TT, TNS               | 320    | 230/400 | 12.5      | 50        | 20      | ≤1.5          |    |
| 33738411    | EGA 1 320/3+1 LF IR | 3+1            | TT, TNS               | 320    | 230/400 | 12.5      | 50        | 20      | ≤1.5          | ✓  |
| 33738414    | EGA 1 320/4+0 LF    | 4+0            | TNS                   | 320    | 230/400 | 12.5      | 50        | 20      | ≤1.5          |    |
| 33738415    | EGA 1 320/4+0 LF IR | 4+0            | TNS                   | 320    | 230/400 | 12.5      | 50        | 20      | ≤1.5          | ✓  |

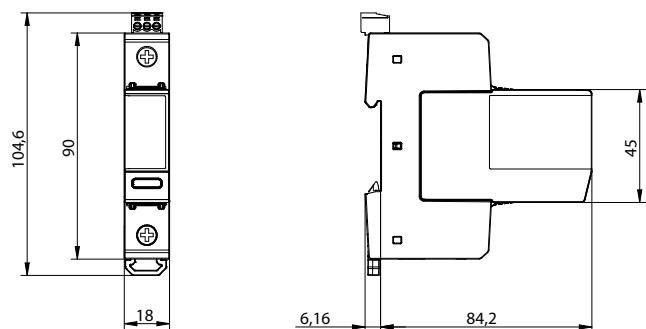


# POWER LINE SPDs

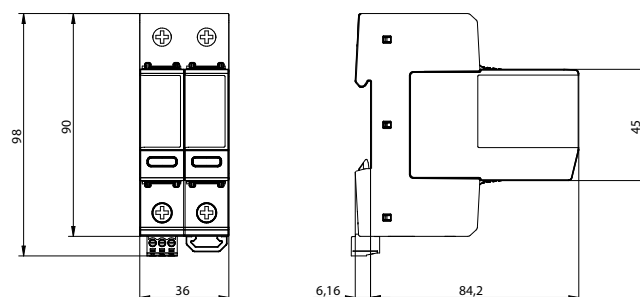
## EGARA 1 LF

### Dimensions

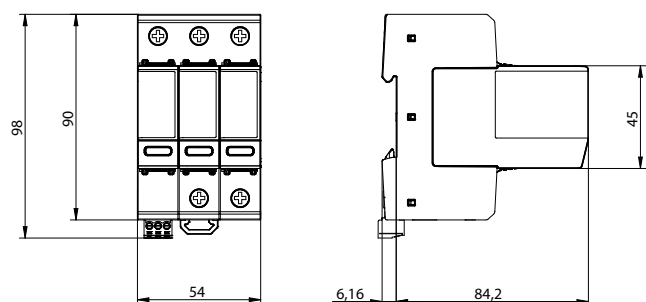
#### 1 Pole



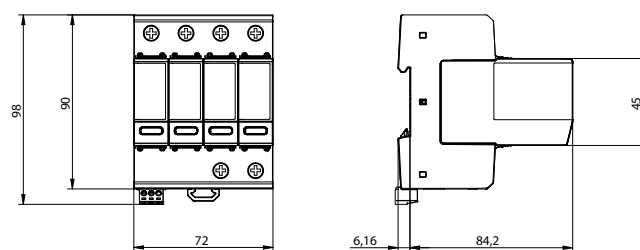
#### 2 Poles



#### 3 Poles

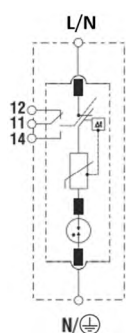


#### 4 Poles

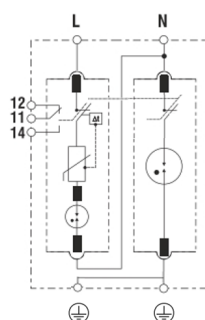


### Internal configuration

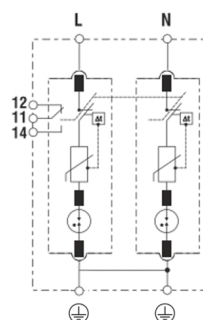
#### TNS, TNC, TT (only L-N) (1+0)



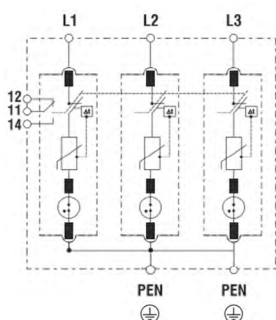
#### TT, TNS (1+1)



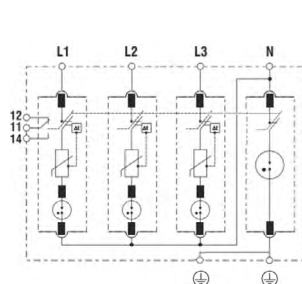
#### TNS (2+0)



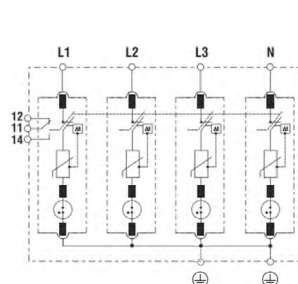
#### TNC (3+0)



#### TT, TNS (3+1)



#### TNS (4+0)



POWER LINE SPDs

**SSD 1**



SPD Specific disconnect (SSD) for EGARA 1. SSD 1 has been designed and validated together with EGARA 1, ensuring continuity of protection and service. Suitable for applications with high short-circuit currents.

**Standards**

- prIEC TS 61643-06



**Part numbers**

**2 Poles**

| Item number | Item description | Internal conf. | Network configuration | Ue [V] | Itrip [A] | Iimp [kA] | In [kA] | IR |
|-------------|------------------|----------------|-----------------------|--------|-----------|-----------|---------|----|
| 34001201    | SSD 1 1+1 IR     | 1+1            | TT, TN, IT            | 500    | 500       | 12.5      | 20      | ✓  |

**3 Poles**

| Item number | Item description | Internal conf. | Network configuration | Ue [V] | Itrip [A] | Iimp [kA] | In [kA] | IR |
|-------------|------------------|----------------|-----------------------|--------|-----------|-----------|---------|----|
| 34001301    | SSD 1 3+0 IR     | 3+0            | TT, TN, IT            | 500    | 500       | 12.5      | 20      | ✓  |

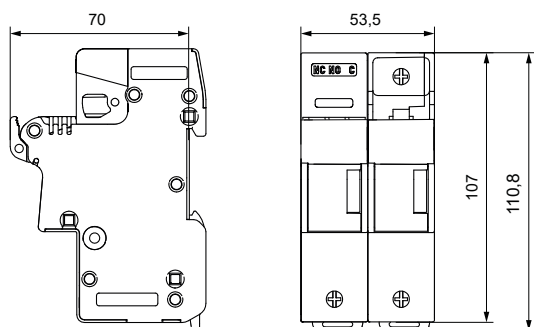
**4 Poles**

| Item number | Item description | Internal conf. | Network configuration | Ue [V] | Itrip [A] | Iimp [kA] | In [kA] | IR |
|-------------|------------------|----------------|-----------------------|--------|-----------|-----------|---------|----|
| 34001401    | SSD 1 3+1 IR     | 3+1            | TT, TN, IT            | 500    | 500       | 12.5      | 20      | ✓  |

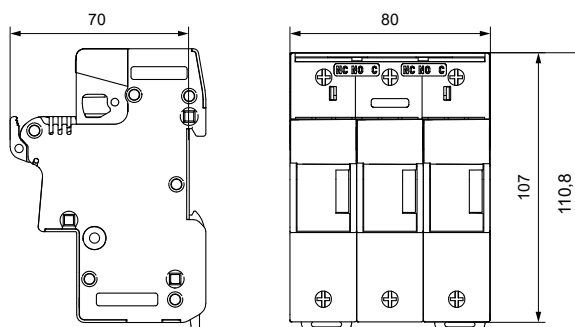
# SSD 1

## Dimensions

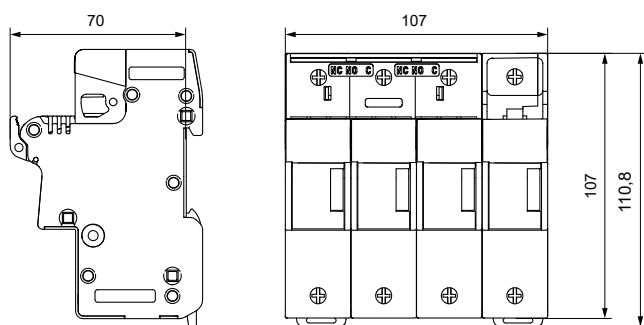
### 2 Poles



### 3 Poles

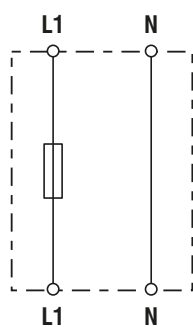


### 4 Poles

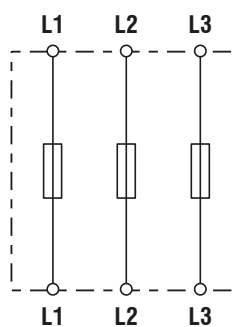


## Internal configuration

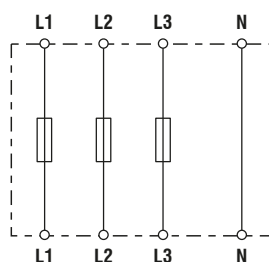
### 2 Poles



### 3 Poles



### 4 Poles





Type 2 surge protection device (SPD) for transient overvoltages pluggable with  $I_{max}$  50 kA. The multi-certified EGA 2 range is suitable for protecting low-voltage installations against overvoltages.

## Standards

- EN IEC 61643-11
- UL 1449 5th Edition

More info



## Part numbers

### 1 Pole

| Item number | Item description | Internal conf. | Network configuration   | $U_c$ [V] | $U_n$ [V] | $I_{max}$ [kA] | $I_n$ [kA] | Up at $I_n$ [kV] | IR |
|-------------|------------------|----------------|-------------------------|-----------|-----------|----------------|------------|------------------|----|
| 33707116    | EGA 2 175/1+0    | 1+0            | TNS, TNC, TT (only L-N) | 175       | 120       | 50             | 20         | $\leq 1$         |    |
| 33707117    | EGA 2 175/1+0 IR | 1+0            | TNS, TNC, TT (only L-N) | 175       | 120       | 50             | 20         | $\leq 1$         | ✓  |
| 33707100    | EGA 2 N/0+1      | 0+1            | TT, TNS                 | 255       | Neutral   | 50             | 50         | $\leq 1.5$       |    |
| 33707101    | EGA 2 N/0+1 IR   | 0+1            | TT, TNS                 | 255       | Neutral   | 50             | 50         | $\leq 1.5$       | ✓  |
| 33707102    | EGA 2 275/1+0    | 1+0            | TNS, TNC, TT (only L-N) | 275       | 230       | 50             | 20         | $\leq 1.5$       |    |
| 33707103    | EGA 2 275/1+0 IR | 1+0            | TNS, TNC, TT (only L-N) | 275       | 230       | 50             | 20         | $\leq 1.5$       | ✓  |
| 33707106    | EGA 2 320/1+0    | 1+0            | TNS, TNC, TT (only L-N) | 320       | 277       | 50             | 20         | $\leq 1.5$       |    |
| 33707107    | EGA 2 320/1+0 IR | 1+0            | TNS, TNC, TT (only L-N) | 320       | 277       | 50             | 20         | $\leq 1.5$       | ✓  |
| 33707110    | EGA 2 440/1+0    | 1+0            | TNS, TNC, TT (only L-N) | 440       | 400       | 50             | 20         | $\leq 2$         |    |
| 33707111    | EGA 2 440/1+0 IR | 1+0            | TNS, TNC, TT (only L-N) | 440       | 400       | 50             | 20         | $\leq 2$         | ✓  |

### 2 Poles

| Item number | Item description   | Internal conf. | Network configuration | $U_c$ [V] | $U_n$ [V] | $I_{max}$ [kA] | $I_n$ [kA] | Up at $I_n$ [kV] | IR |
|-------------|--------------------|----------------|-----------------------|-----------|-----------|----------------|------------|------------------|----|
| 33707228    | EGA 2 175/1+1      | 1+1            | TT, TNS               | 175       | 120       | 50             | 20         | $\leq 1$         |    |
| 33707229    | EGA 2 175/1+1 IR   | 1+1            | TT, TNS               | 175       | 120       | 50             | 20         | $\leq 1$         | ✓  |
| 33707200    | EGA 2 275/1+1      | 1+1            | TT, TNS               | 275       | 230       | 50             | 20         | $\leq 1.5$       |    |
| 33707201    | EGA 2 275/1+1 IR   | 1+1            | TT, TNS               | 275       | 230       | 50             | 20         | $\leq 1.5$       | ✓  |
| 33707208    | EGA 2 320/1+1      | 1+1            | TT, TNS               | 320       | 277       | 50             | 20         | $\leq 1.5$       |    |
| 33707209    | EGA 2 320/1+1 IR   | 1+1            | TT, TNS               | 320       | 277       | 50             | 20         | $\leq 1.5$       | ✓  |
| 33707216    | EGA 2 440/1+1      | 1+1            | TT, TNS               | 440       | 400       | 50             | 20         | $\leq 2$         |    |
| 33707217    | EGA 2 440/1+1 IR   | 1+1            | TT, TNS               | 440       | 400       | 50             | 20         | $\leq 2$         | ✓  |
| 33707230    | EGA 2 175/2+0      | 2+0            | TNS                   | 175       | 120       | 50             | 20         | $\leq 1$         |    |
| 33707231    | EGA 2 175/2+0 IR   | 2+0            | TNS                   | 175       | 120       | 50             | 20         | $\leq 1$         | ✓  |
| 33707202    | EGA 2 275/2+0      | 2+0            | TNS                   | 275       | 230       | 50             | 20         | $\leq 1.5$       |    |
| 33707203    | EGA 2 275/2+0 IR   | 2+0            | TNS                   | 275       | 230       | 50             | 20         | $\leq 1.5$       | ✓  |
| 33707210    | EGA 2 320/2+0      | 2+0            | TNS                   | 320       | 277       | 50             | 20         | $\leq 1.5$       |    |
| 33707211    | EGA 2 320/2+0 IR   | 2+0            | TNS                   | 320       | 277       | 50             | 20         | $\leq 1.5$       | ✓  |
| 33707218    | EGA 2 440/2+0 *    | 2+0            | TNS                   | 440       | 400       | 50             | 20         | $\leq 2$         |    |
| 33707219    | EGA 2 440/2+0 IR * | 2+0            | TNS                   | 440       | 400       | 50             | 20         | $\leq 2$         | ✓  |

\*Also suitable for 230 V IT network configuration.

## 3 Poles

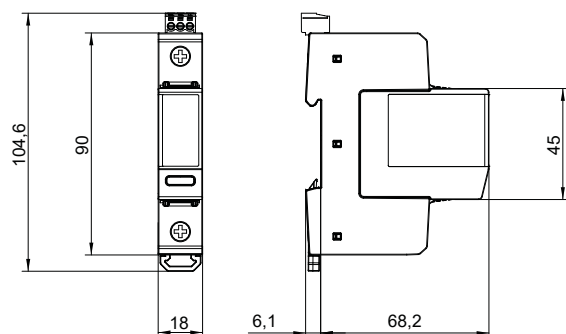
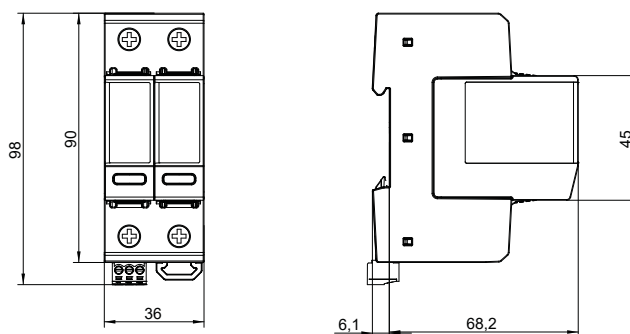
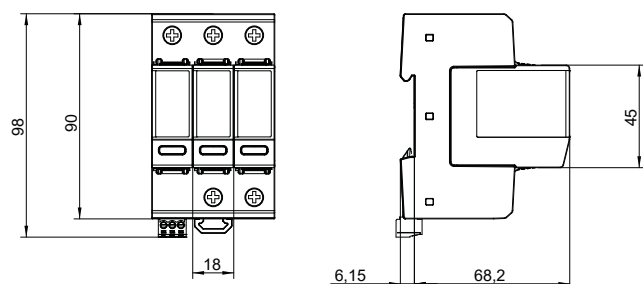
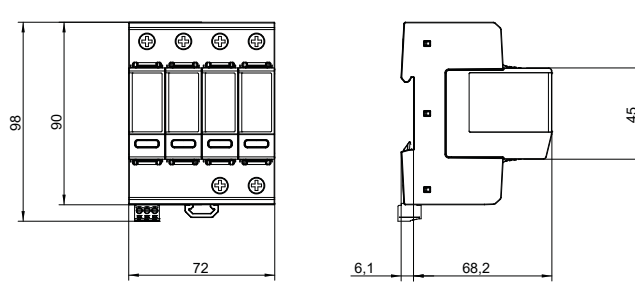
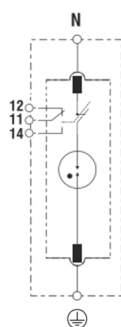
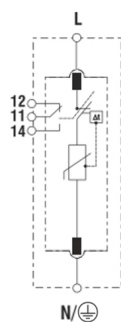
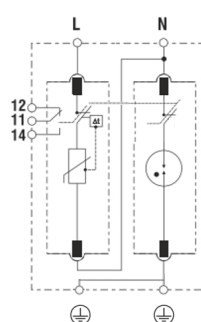
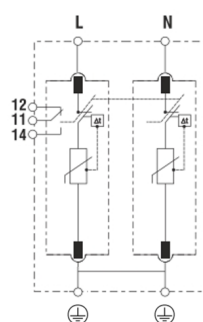
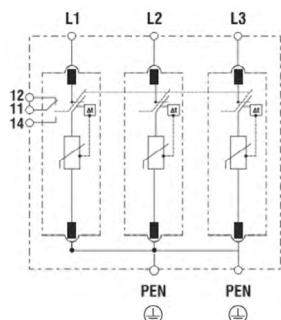
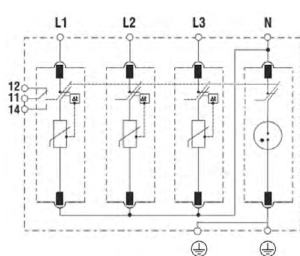
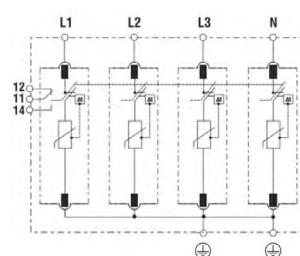
| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------------------|---------|---------------|----|
| 33707324    | EGA 2 175/3+0      | 3+0            | TNC                   | 175    | 120/208 | 50                    | 20      | ≤1            |    |
| 33707325    | EGA 2 175/3+0 IR   | 3+0            | TNC                   | 175    | 120/208 | 50                    | 20      | ≤1            | ✓  |
| 33707300    | EGA 2 275/3+0      | 3+0            | TNC                   | 275    | 230/400 | 50                    | 20      | ≤1.5          |    |
| 33707301    | EGA 2 275/3+0 IR   | 3+0            | TNC                   | 275    | 230/400 | 50                    | 20      | ≤1.5          | ✓  |
| 33707304    | EGA 2 320/3+0      | 3+0            | TNC                   | 320    | 277/480 | 50                    | 20      | ≤1.5          |    |
| 33707305    | EGA 2 320/3+0 IR   | 3+0            | TNC                   | 320    | 277/480 | 50                    | 20      | ≤1.5          | ✓  |
| 33707308    | EGA 2 440/3+0 *    | 3+0            | TNC                   | 440    | 400/690 | 50                    | 20      | ≤2            |    |
| 33707309    | EGA 2 440/3+0 IR * | 3+0            | TNC                   | 440    | 400/690 | 50                    | 20      | ≤2            | ✓  |

\*Also suitable for 230 V IT network configuration

## 4 Poles

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------------------|---------|---------------|----|
| 33707426    | EGA 2 175/3+1      | 3+1            | TT, TNS               | 175    | 120/208 | 50                    | 20      | ≤1            |    |
| 33707427    | EGA 2 175/3+1 IR   | 3+1            | TT, TNS               | 175    | 120/208 | 50                    | 20      | ≤1            | ✓  |
| 33707400    | EGA 2 275/3+1      | 3+1            | TT, TNS               | 275    | 230/400 | 50                    | 20      | ≤1.5          |    |
| 33707401    | EGA 2 275/3+1 IR   | 3+1            | TT, TNS               | 275    | 230/400 | 50                    | 20      | ≤1.5          | ✓  |
| 33707408    | EGA 2 320/3+1      | 3+1            | TT, TNS               | 320    | 277/480 | 50                    | 20      | ≤1.5          |    |
| 33707409    | EGA 2 320/3+1 IR   | 3+1            | TT, TNS               | 320    | 277/480 | 50                    | 20      | ≤1.5          | ✓  |
| 33707416    | EGA 2 440/3+1      | 3+1            | TT, TNS               | 440    | 400/690 | 50                    | 20      | ≤2            |    |
| 33707417    | EGA 2 440/3+1 IR   | 3+1            | TT, TNS               | 440    | 400/690 | 50                    | 20      | ≤2            | ✓  |
| 33707428    | EGA 2 175/4+0      | 4+0            | TNS                   | 175    | 120/208 | 50                    | 20      | ≤1            |    |
| 33707429    | EGA 2 175/4+0 IR   | 4+0            | TNS                   | 175    | 120/208 | 50                    | 20      | ≤1            | ✓  |
| 33707404    | EGA 2 275/4+0      | 4+0            | TNS                   | 275    | 230/400 | 50                    | 20      | ≤1.5          |    |
| 33707405    | EGA 2 275/4+0 IR   | 4+0            | TNS                   | 275    | 230/400 | 50                    | 20      | ≤1.5          | ✓  |
| 33707412    | EGA 2 320/4+0      | 4+0            | TNS                   | 320    | 277/480 | 50                    | 20      | ≤1.5          |    |
| 33707413    | EGA 2 320/4+0 IR   | 4+0            | TNS                   | 320    | 277/480 | 50                    | 20      | ≤1.5          | ✓  |
| 33707420    | EGA 2 440/4+0 *    | 4+0            | TNS                   | 440    | 400/690 | 50                    | 20      | ≤2            |    |
| 33707421    | EGA 2 440/4+0 IR * | 4+0            | TNS                   | 440    | 400/690 | 50                    | 20      | ≤2            | ✓  |

\*Also suitable for 230/400 V IT network configuration

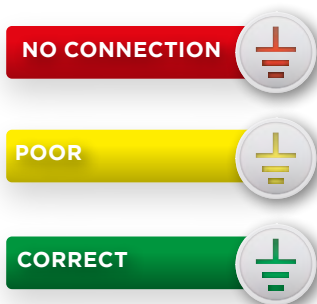
**EGARA 2****Dimensions****1 Pole****2 Poles****3 Poles****4 Poles****Internal configuration****TT, TNS (0+1)****TNS, TNC, TT (only L-N) (1+0)****TT, TNS (1+1)****TNS (2+0)****TNC (3+0)****TT, TNS (3+1)****TNS (4+0)**



# SAFEGROUND®

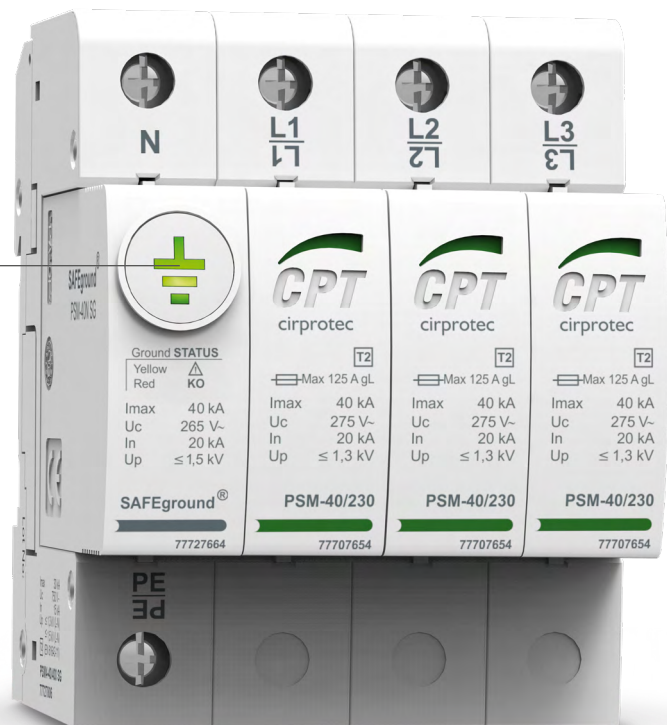
## Monitoring the grounding system in the surge protection device itself

SAFEGROUND® is the first protection device on the market that, in addition to indicating that it is properly wired, guarantees that there is an adequate path to ground, which is essential if the protection device is to shunt the energy peaks to ground effectively.



### GROUND STATUS INDICATOR

Continuous LED display of ground status.



### SAFEGROUND TECHNOLOGY

SAFEGROUND® is based on the impedance loop technology already patented, sold and implemented by Cirprotec in thousands of protection solutions.

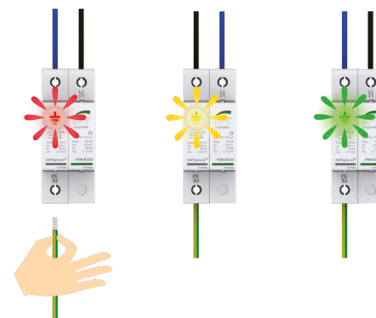
**NO EARTH, NO PROTECTION**



## Confirmation of proper installation

Almost 30 years of experience in the sector confirm that it is relatively common for wiring errors to occur during the installation of surge protection devices. These errors result in the loss of protection or risks to the installation itself.

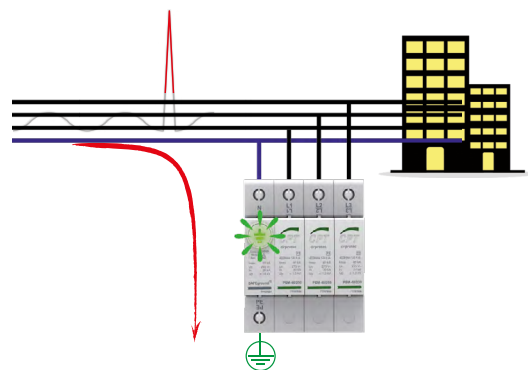
**When the SAFEGROUND® LED is green, it means that the protection device is properly wired and powered up.**



## Effective surge protection

Even when equipped with surge protection devices, the electrical installation may still be subject to the effects of overvoltage if the ground connection is inadequate or in poor condition.

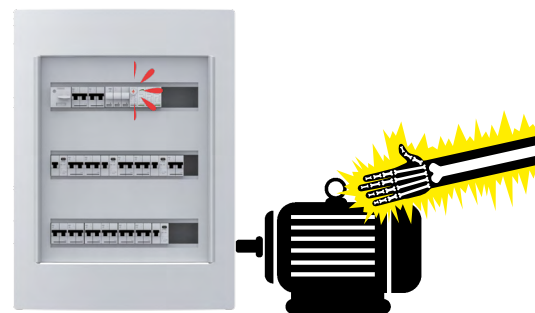
**When the SAFEGROUND® LED is green, it indicates that the ground path is good enough to shunt the energy peaks to ground effectively..**



## Safety information in the event of indirect contact

Just as happens with surge protection devices, the safety of the electrical installation in the event of indirect contact is based on there being a grounding connection.

**When SAFEGROUND® cannot detect any ground connection, it is advisable to check the installation status.**



## WIRING SAFETY

The only protection device on the market that tells you when it is properly installed, avoiding risks due to electrical wiring errors.

POWER LINE SPDs WITH GROUNDING MONITOR

**SAFEGROUND®**



Indicative product image

Type 2 surge protection device (SPD) for transient overvoltages with continuous monitoring of the earthing system pluggable with I<sub>max</sub> 40 kA. The SAFEGROUND® range is suitable for protecting low-voltage installations against overvoltages.

**Standards**

- EN IEC 61643-11
- EN 61557-3
- EN 61010-1

More info



**Part numbers**

**2 Poles**

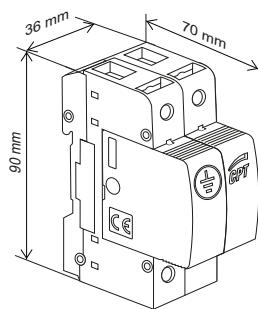
| Item number | Item description | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] |
|-------------|------------------|----------------|-----------------------|--------|---------|-----------------------|---------|---------------|
| 77727758    | PSM2-40/120 SG   | 1+1            | TT, TNS               | 150    | 120/208 | 40                    | 20      | ≤1            |
| 77727756    | PSM2-40/230 SG   | 1+1            | TT, TNS               | 275    | 230/400 | 40                    | 20      | ≤1.3          |

**4 Poles**

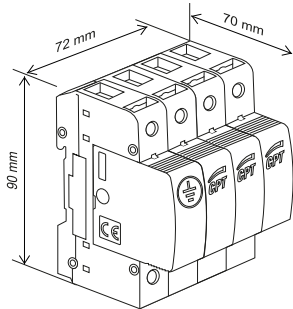
| Item number | Item description | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] |
|-------------|------------------|----------------|-----------------------|--------|---------|-----------------------|---------|---------------|
| 77727808    | PSM4-40/230 SG   | 3+1            | TT, TNS               | 175    | 120/208 | 40                    | 20      | ≤1            |
| 77727806    | PSM4-40/400 SG   | 3+1            | TT, TNS               | 275    | 230/400 | 40                    | 20      | ≤1.3          |

**Dimensions**

**2 Poles**

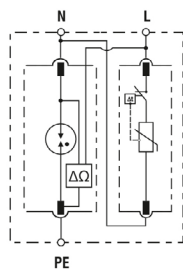


**4 Poles**

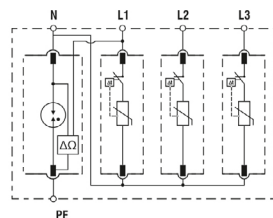


## Internal configuration

### TT, TNS (1+1)



### TT, TNS (3+1)



POWER LINE SPDs

CS21



Type 2 surge protection device (SPD) for transient overvoltages monobloc design compact design with I<sub>max</sub> 15 kA. The CS21 range is suitable for protecting low-voltage installations against overvoltages.

Standards

- EN IEC 61643-11



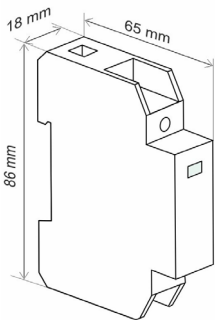
Part numbers

2 Poles

| Item number | Item description | Internal conf. | Network configuration | Uc [V] | Un [V] | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | Up at I <sub>n</sub> [kV] | IR |
|-------------|------------------|----------------|-----------------------|--------|--------|-----------------------|---------------------|---------------------------|----|
| 77705213    | CS21-15/230      | 1+1            | TT, TNS               | 275    | 230    | 15                    | 5                   | ≤1.2                      |    |

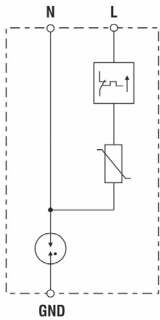
Dimensions

2 Poles



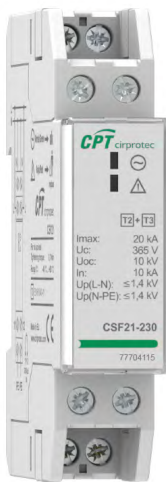
Internal configuration

TT, TNS (1+1)



POWER LINE SPDs

CSF



Indicative product image

Type 2+3 surge protection device (SPD) for transient overvoltages monobloc design slim monobloc design. The CSF range is suitable for fine protection of sensitive equipment.

Standards

- EN IEC 61643-11



More info



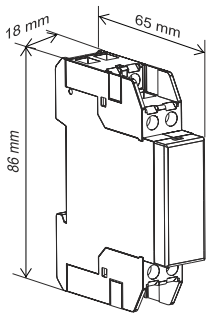
Part numbers

2 Poles

| Item number | Item description | Internal conf. | Network configuration | Uc [V] | Un [V] | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | Up at I <sub>n</sub> [kV] | Uoc [kV] | IR |
|-------------|------------------|----------------|-----------------------|--------|--------|-----------------------|---------------------|---------------------------|----------|----|
| 77704101    | CSF21-12         | 2+0            | TT, TNS               | 20     | 12     | 6                     | 3                   | ≤0.22                     | 6        |    |
| 77704102    | CSF21-12 IR      | 2+0            | TT, TNS               | 20     | 12     | 6                     | 3                   | ≤0.22                     | 6        | ✓  |
| 77704109    | CSF21-120        | 2+0            | TT, TNS               | 150    | 120    | 6                     | 3                   | ≤0.7                      | 6        |    |
| 77704110    | CSF21-120 IR     | 2+0            | TT, TNS               | 150    | 120    | 6                     | 3                   | ≤0.7                      | 6        | ✓  |
| 77704115    | CSF21-230        | 2+0            | TT, TNS               | 275    | 230    | 20                    | 10                  | ≤1.4                      | 10       |    |
| 77704116    | CSF21-230 IR     | 2+0            | TT, TNS               | 275    | 230    | 20                    | 10                  | ≤1.4                      | 10       | ✓  |
| 77704103    | CSF21-24         | 2+0            | TT, TNS               | 30     | 24     | 6                     | 3                   | ≤0.25                     | 6        |    |
| 77704104    | CSF21-24 IR      | 2+0            | TT, TNS               | 30     | 24     | 6                     | 3                   | ≤0.25                     | 6        | ✓  |
| 77704105    | CSF21-48         | 2+0            | TT, TNS               | 60     | 48     | 6                     | 3                   | ≤0.33                     | 6        |    |
| 77704106    | CSF21-48 IR      | 2+0            | TT, TNS               | 60     | 48     | 6                     | 3                   | ≤0.33                     | 6        | ✓  |
| 77704107    | CSF21-60         | 2+0            | TT, TNS               | 75     | 60     | 6                     | 3                   | ≤0.5                      | 6        |    |
| 77704108    | CSF21-60 IR      | 2+0            | TT, TNS               | 75     | 60     | 6                     | 3                   | ≤0.5                      | 6        | ✓  |

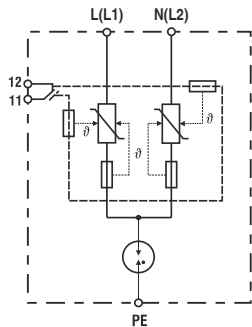
Dimensions

2 Poles



Internal configuration

TT, TNS (2+0)





## PSM 20



Indicative product image

Type 2+3 surge protection device (SPD) for transient overvoltages pluggable with  $I_{max}$  20 kA. The PSM 20 range is suitable for protecting low-voltage installations against overvoltages.

## Standards

- EN IEC 61643-11

More info



## Part numbers

## 1 Pole

| Item number | Item description | Internal conf. | Network configuration   | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | Uoc [kV] | IR |
|-------------|------------------|----------------|-------------------------|--------|---------|-----------------------|---------|---------------|----------|----|
| 77707700    | PSM1-20/120      | 1+0            | TNS, TNC, TT (only L-N) | 150    | 120     | 20                    | 10      | ≤0.8          | 10       |    |
| 77707701    | PSM1-20/120 IR   | 1+0            | TNS, TNC, TT (only L-N) | 150    | 120     | 20                    | 10      | ≤0.8          | 10       | ✓  |
| 77707745    | PSM1-20N         | 0+1            | TT, TNS                 | 255    | Neutral | 20                    | 10      | ≤1.5          | 10       |    |
| 77707702    | PSM1-20/230      | 1+0            | TNS, TNC, TT (only L-N) | 320    | 230     | 20                    | 10      | ≤1.4          | 10       |    |
| 77707703    | PSM1-20/230 IR   | 1+0            | TNS, TNC, TT (only L-N) | 320    | 230     | 20                    | 10      | ≤1.4          | 10       | ✓  |
| 77707704    | PSM1-20/400      | 1+0            | TNS, TNC, TT (only L-N) | 440    | 400     | 20                    | 10      | ≤2            | 10       |    |

## 2 Poles

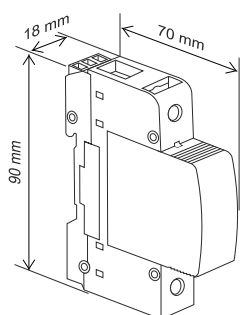
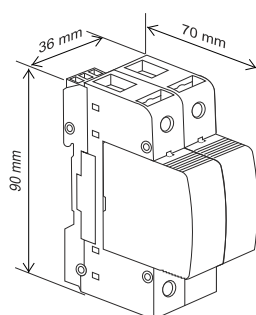
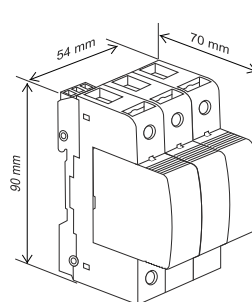
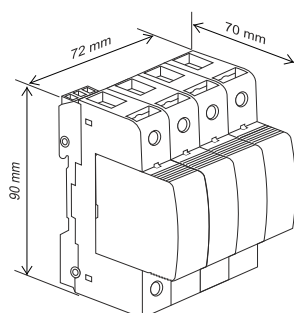
| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | Uoc [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|--------|-----------------------|---------|---------------|----------|----|
| 77707751    | PSM2-20/120 TT IR  | 1+1            | TT, TNS               | 150    | 120    | 20                    | 10      | ≤0.8          | 10       | ✓  |
| 77707752    | PSM2-20/230 TT     | 1+1            | TT, TNS               | 320    | 230    | 20                    | 10      | ≤1.4          | 10       |    |
| 77707753    | PSM2-20/230 TT IR  | 1+1            | TT, TNS               | 320    | 230    | 20                    | 10      | ≤1.4          | 10       | ✓  |
| 77707758    | PSM2-20/277 TT     | 1+1            | TT, TNS               | 320    | 277    | 20                    | 10      | ≤1.4          | 10       |    |
| 77707900    | PSM2-20/120 TNS    | 2+0            | TNS                   | 150    | 120    | 20                    | 10      | ≤0.8          | 10       |    |
| 77707901    | PSM2-20/120 TNS IR | 2+0            | TNS                   | 150    | 120    | 20                    | 10      | ≤0.8          | 10       | ✓  |
| 77707902    | PSM2-20/230 TNS    | 2+0            | TNS                   | 320    | 230    | 20                    | 10      | ≤1.4          | 10       |    |
| 77707903    | PSM2-20/230 TNS IR | 2+0            | TNS                   | 320    | 230    | 20                    | 10      | ≤1.4          | 10       | ✓  |
| 77707912    | PSM2-20/277 TNS    | 2+0            | TNS                   | 320    | 277    | 20                    | 10      | ≤1.4          | 10       |    |
| 77707913    | PSM2-20/277 TNS IR | 2+0            | TNS                   | 320    | 277    | 20                    | 10      | ≤1.4          | 10       | ✓  |

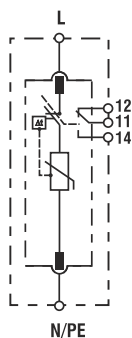
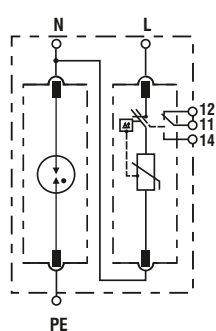
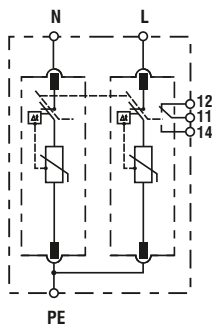
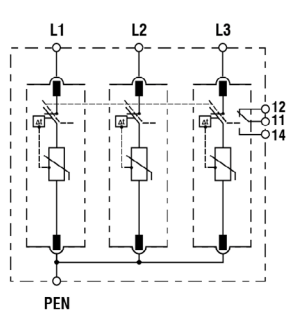
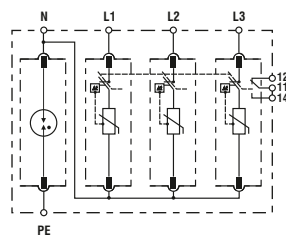
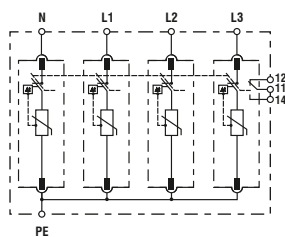
## 3 Poles

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | Uoc [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------------------|---------|---------------|----------|----|
| 77707860    | PSM3-20/230 TNC    | 3+0            | TNC                   | 150    | 120/208 | 20                    | 10      | ≤0.8          | 10       |    |
| 77707861    | PSM3-20/230 TNC IR | 3+0            | TNC                   | 150    | 120/208 | 20                    | 10      | ≤0.8          | 10       | ✓  |
| 77707862    | PSM3-20/400 TNC    | 3+0            | TNC                   | 320    | 277/480 | 20                    | 10      | ≤1.4          | 10       |    |
| 77707863    | PSM3-20/400 TNC IR | 3+0            | TNC                   | 320    | 277/480 | 20                    | 10      | ≤1.4          | 10       | ✓  |
| 77707880    | PSM3-20/480 TNC    | 3+0            | TNC                   | 320    | 277/480 | 20                    | 10      | ≤1.4          | 10       |    |
| 77707881    | PSM3-20/480 TNC IR | 3+0            | TNC                   | 320    | 277/480 | 20                    | 10      | ≤1.4          | 10       | ✓  |

**4 Poles**

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | Up at I <sub>n</sub> [kV] | Uoc [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------------------|---------------------|---------------------------|----------|----|
| 77707801    | PSM4-20/230 TT IR  | 3+1            | TT, TNS               | 150    | 120/208 | 20                    | 10                  | ≤0,8                      | 10       | ✓  |
| 77707802    | PSM4-20/400 TT     | 3+1            | TT, TNS               | 320    | 230/400 | 20                    | 10                  | ≤1,4                      | 10       |    |
| 77707803    | PSM4-20/400 TT IR  | 3+1            | TT, TNS               | 320    | 230/400 | 20                    | 10                  | ≤1,4                      | 10       | ✓  |
| 77707808    | PSM4-20/480 TT     | 3+1            | TT, TNS               | 320    | 277/480 | 20                    | 10                  | ≤1,4                      | 10       |    |
| 77707809    | PSM4-20/480 TT IR  | 3+1            | TT, TNS               | 320    | 277/480 | 20                    | 10                  | ≤1,4                      | 10       | ✓  |
| 77707950    | PSM4-20/230 TNS    | 4+0            | TNS                   | 150    | 120/208 | 20                    | 10                  | ≤0,8                      | 10       |    |
| 77707951    | PSM4-20/230 TNS IR | 4+0            | TNS                   | 150    | 120/208 | 20                    | 10                  | ≤0,8                      | 10       | ✓  |
| 77707952    | PSM4-20/400 TNS    | 4+0            | TNS                   | 320    | 230/400 | 20                    | 10                  | ≤1,4                      | 10       |    |
| 77707953    | PSM4-20/400 TNS IR | 4+0            | TNS                   | 320    | 230/400 | 20                    | 10                  | ≤1,4                      | 10       | ✓  |
| 77707987    | PSM4-20/480 TNS    | 4+0            | TNS                   | 320    | 277/480 | 20                    | 10                  | ≤1,4                      | 10       |    |
| 77707988    | PSM4-20/480 TNS IR | 4+0            | TNS                   | 320    | 277/480 | 20                    | 10                  | ≤1,4                      | 10       | ✓  |

**Dimensions****1 Pole****2 Poles****3 Poles****4 Poles**

**Internal configuration****TT, TNS (0+1)****TNS, TNC, TT (only L-N) (1+0)****TT, TNS (1+1)****TNS (2+0)****TNC (3+0)****TT, TNS (3+1)****TNS (4+0)**

POWER LINE SPDs

PSM 20 PLC



Indicative product image

Type 2+3 surge protection device (SPD) for transient overvoltages pluggable with I<sub>max</sub> 20 kA compatible with PLC networks. The PSM 20 PLC range is suitable for protecting low-voltage installations against overvoltages.

Standards

- EN IEC 61643-11

More info



Part numbers

2 Poles

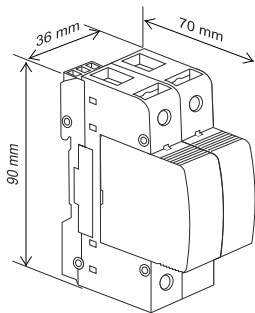
| Item number | Item description      | Internal conf. | Network configuration | Uc [V] | Un [V] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | Uoc [kV] | IR |
|-------------|-----------------------|----------------|-----------------------|--------|--------|-----------------------|---------|---------------|----------|----|
| 77707980    | PSM2-20/230 PLC TT    | 1+1            | TT, TNS               | 275    | 230    | 20                    | 10      | ≤1.5          | 10       |    |
| 77707981    | PSM2-20/230 PLC TT IR | 1+1            | TT, TNS               | 275    | 230    | 20                    | 10      | ≤1.5          | 10       | ✓  |

4 Poles

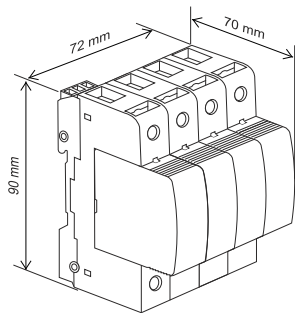
| Item number | Item description       | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | Uoc [kV] | IR |
|-------------|------------------------|----------------|-----------------------|--------|---------|-----------------------|---------|---------------|----------|----|
| 77707985    | PSM4-20/400 PLC TT     | 3+1            | TT, TNS               | 275    | 230/400 | 20                    | 10      | ≤1.5          | 10       |    |
| 77707986    | PSM4-20/400 PLC TT IR  | 3+1            | TT, TNS               | 275    | 230/400 | 20                    | 10      | ≤1.5          | 10       | ✓  |
| 77707994    | PSM4-20/400 PLC TNS IR | 4+0            | TNS                   | 275    | 230/400 | 20                    | 10      | ≤1.5          | 10       | ✓  |

Dimensions

2 Poles

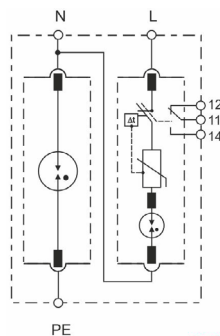


4 Poles

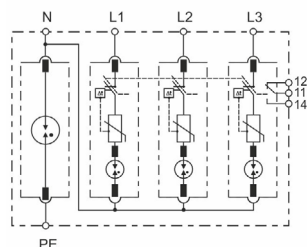


## Internal configuration

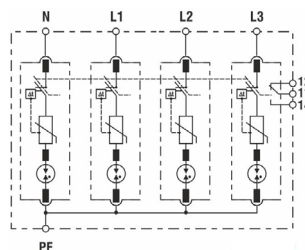
### TT, TNS (1+1)



### TT, TNS (3+1)



### TNS (4+0)



POWER LINE SPDs

DM2



Type 2+3 surge protection device (SPD) for transient overvoltages monobloc design with EMI filter. The DM2 range is suitable for very fine protection of sensitive equipment.

Standards

- EN IEC 61643-11



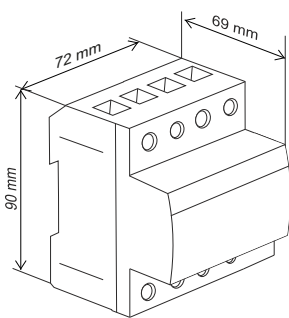
Part numbers

2 Poles

| Item number | Item description | Internal conf. | Network configuration | Uc [V] | Un [V] | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | Up at I <sub>n</sub> [kV] | Uoc [kV] | IR |
|-------------|------------------|----------------|-----------------------|--------|--------|-----------------------|---------------------|---------------------------|----------|----|
| 77702840    | DM2-20A/120 IR   | 1+1            | TT, TNS               | 150    | 120    | 10                    | 20                  | 0.8                       | 6        | ✓  |
| 77702830    | DM2-20A/230 IR   | 1+1            | TT, TNS               | 275    | 230    | 10                    | 20                  | 1.2                       | 6        | ✓  |

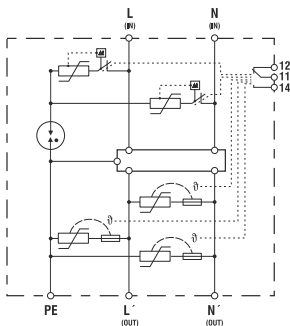
Dimensions

2 Poles



Internal configuration

TT, TNS (1+1)









## SURGE PROTECTION DEVICES

# PHOTOVOLTAIC SPDs

---

## EGARA PV

### High-performance protection for the DC side of PV installations

EGARA PV is the new range that delivers market-leading surge protection solutions for PV, ensuring robust protection across critical points in photovoltaic systems, including inverter DC inputs and combiner boxes. Engineered for demanding environments, it offers high discharge capacity without the need for backup fuses, simplifying installation while enhancing overall system robustness.

#### SPD Type T1+2 & T2

Complete range  
up to 1500 Vdc

#### I<sub>max</sub> 50 kA

High discharge  
capability

#### I<sub>scpv</sub> 20 kA

DC short-circuit  
current

#### Multi-certified

UL & DEKRA

Maximum safety and  
quality



- Multi-certified range IEC & UL
- No external back-up fuse required
- Designed for the most demanding PV environments
- European manufacturing with high-quality standards



#### All-in-one multi-MPPT protection

One device protects 2 or more MPPT inputs, replacing multiple SPDs

#### Faster and safer installation

Fewer wiring points speed up  
assembly and reduce wiring errors

#### Space and wiring saving

Less DIN-rail space, fewer connections and  
PE connections. Ideal for compact PV boxes

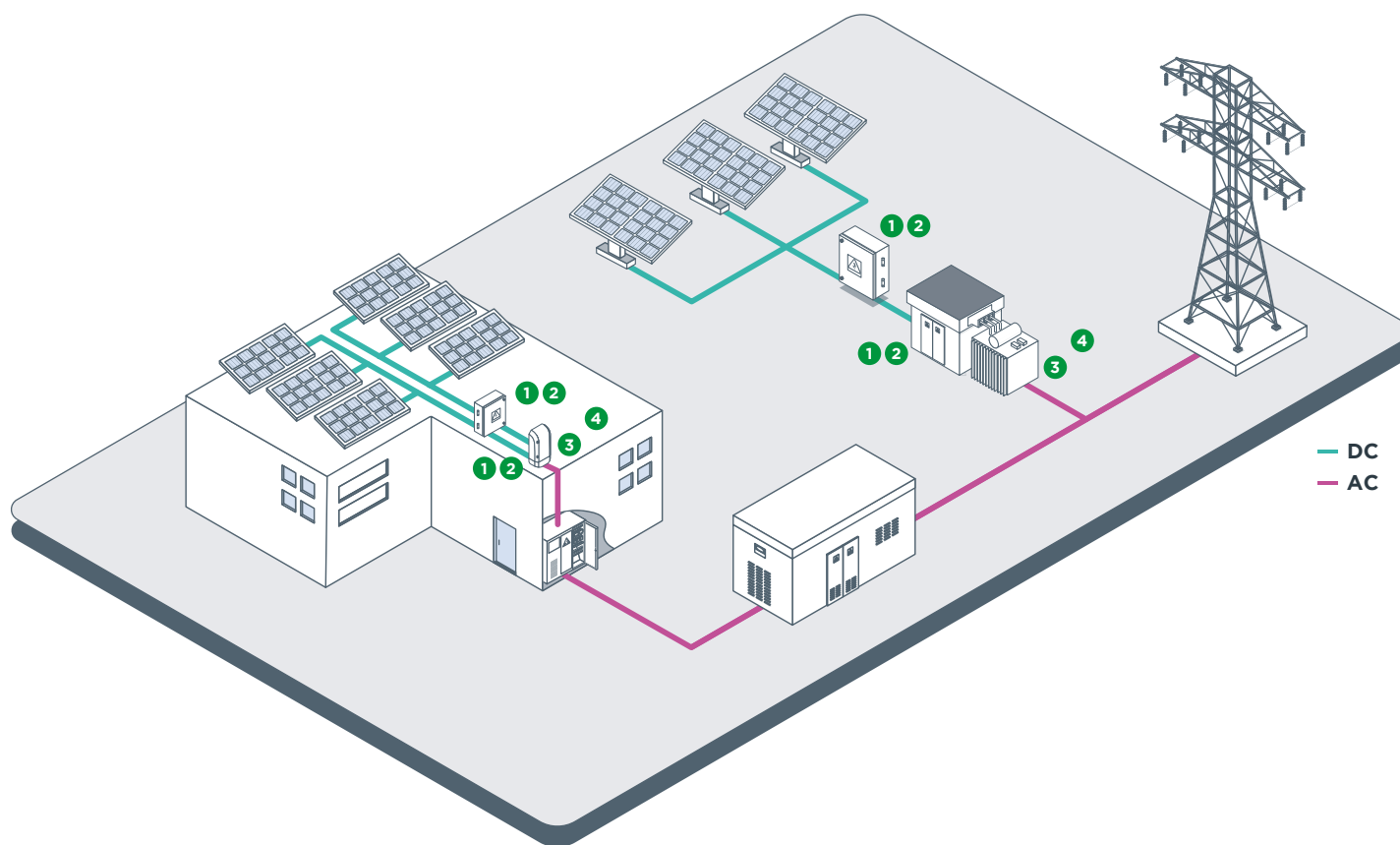
## Across every photovoltaic installation

Photovoltaic systems are exposed to surges caused by direct and indirect lightning strikes, as well as switching surges generated within DC and AC circuits. A complete surge protection strategy must cover every critical point of the installation to ensure system reliability and safeguard sensitive equipment.

The EGARA PV range is specifically designed for this purpose, addressing the protection requirements of both rooftop and utility-scale installations.

Effective protection of photovoltaic systems requires coordinated surge protection on **both the DC and AC sides** of the installation.

SPDs installed should comply with the corresponding standards: **IEC 61643-11** for AC and **IEC 61643-31** for DC.



## PV PROTECTION

1

**EGARA 1 PV**  
SPD Type 1+2 PV  
Pages 74-75



2

**EGARA 2 PV**  
SPD Type 2 PV  
Pages 76-77



## AC PROTECTION

3

**EGARA**  
SPD Type 1+2 & Type 2  
Pages 46-57



4

**PSC/PSM AC Reinforced**  
Type 1+2 & Type 2 AC SPD for high voltage outputs  
Pages 78-79

PHOTOVOLTAIC & ENERGY STORAGE SPDs

**EGARA 1 PV**



Type 1+2 surge protection device (SPD) for transient overvoltages pluggable with  $I_{imp}$  5-6.25 kA depending on the model. The EGARA 1 PV range is suitable for PV installations and certified according to IEC and UL standards.

**Standards**

- EN IEC 61643-31
- UL 1449 5th Edition



More info

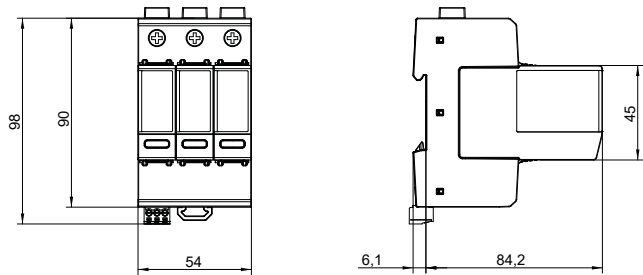


**Part numbers**

| Item number | Item description | Ucpv [V] | Internal conf. | $I_{imp}$ [kA] | $I_{total}$ [kA] | $I_{max}$ [kA] | $I_n$ [kA] | Up at $I_n$ [kV] | $I_{scpv}$ [kA] | IR |
|-------------|------------------|----------|----------------|----------------|------------------|----------------|------------|------------------|-----------------|----|
| 33738312    | EGA 1 1000/PV    | 1170     | +, -, PE       | 6.25           | 12.5             | 50             | 20         | $\leq 4$         | 20              |    |
| 33738313    | EGA 1 1000/PV IR | 1170     | +, -, PE       | 6.25           | 12.5             | 50             | 20         | $\leq 4$         | 20              | ✓  |
| 33738316    | EGA 1 1500/PV    | 1500     | +, -, PE       | 5              | 10               | 50             | 20         | $\leq 5$         | 20              |    |
| 33738317    | EGA 1 1500/PV IR | 1500     | +, -, PE       | 5              | 10               | 50             | 20         | $\leq 5$         | 20              | ✓  |

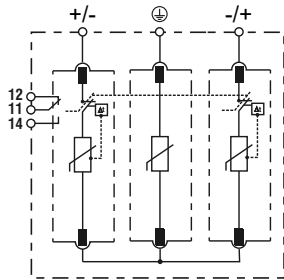
**Dimensions**

**PV**



**Internal configuration**

**+, -, PE (PV)**



PHOTOVOLTAIC & ENERGY STORAGE SPDs

**EGARA 1 5PV**



Type 1+2 surge protection device (SPD) for transient overvoltages with limp 5-6.25 kA depending on the model. The EGARA 1 5PV is suitable for PV installations and to protect multiple MPPT inputs, helping save space and wiring in compact PV combiner boxes. Certified according to IEC and UL Standards.

**Standards**

- EN IEC 61643-31
- UL 1449 5th Edition

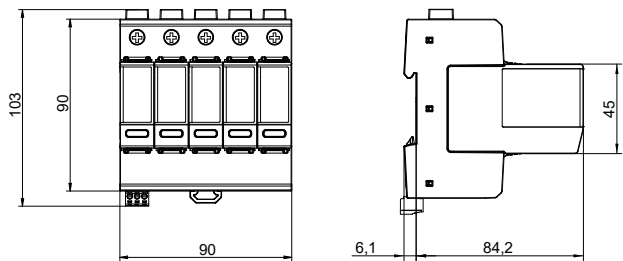


**Part numbers**

| Item number | Item description  | Ucpv [V] | Internal conf. | limp [kA] | Itotal [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | Iscpv [kA] | IR |
|-------------|-------------------|----------|----------------|-----------|-------------|-----------------------|---------|---------------|------------|----|
| 33738500    | EGA 11000/5PVA    | 1170     | 2+, 2-, PE     | 6.25      | 12.5        | 50                    | 20      | ≤4            | 20         |    |
| 33738501    | EGA 11000/5PVA IR | 1170     | 2+, 2-, PE     | 6.25      | 12.5        | 50                    | 20      | ≤4            | 20         | ✓  |
| 33738502    | EGA 11000/5PVB    | 1170     | 3+, 1-, PE     | 6.25      | 12.5        | 50                    | 20      | ≤4            | 20         |    |
| 33738503    | EGA 11000/5PVB IR | 1170     | 3+, 1-, PE     | 6.25      | 12.5        | 50                    | 20      | ≤4            | 20         | ✓  |
| 33738504    | EGA 11500/5PVA    | 1500     | 2+, 2-, PE     | 5         | 10          | 50                    | 20      | ≤5            | 20         |    |
| 33738505    | EGA 11500/5PVA IR | 1500     | 2+, 2-, PE     | 5         | 10          | 50                    | 20      | ≤5            | 20         | ✓  |
| 33738506    | EGA 11500/5PVB    | 1500     | 3+, 1-, PE     | 5         | 10          | 50                    | 20      | ≤5            | 20         |    |
| 33738507    | EGA 11500/5PVB IR | 1500     | 3+, 1-, PE     | 5         | 10          | 50                    | 20      | ≤5            | 20         | ✓  |

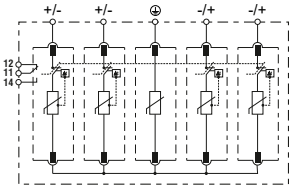
**Dimensions**

**5PV**

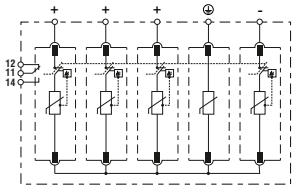


**Internal configuration**

**2+, 2-, PE (5PVA)**



**3+, 1-, PE (5PVB)**



PHOTOVOLTAIC & ENERGY STORAGE SPDs

**EGARA 2 PV**



Type 2 surge protection device (SPD) for transient overvoltages pluggable with I<sub>max</sub> 50 kA. The EGARA 2 PV range is suitable for PV installations and certified according to IEC and UL standards.

**Standards**

- EN IEC 61643-31
- UL 1449 5th Edition

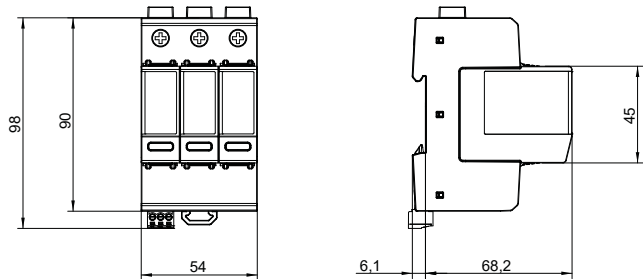


**Part numbers**

| Item number | Item description | Ucpv [V] | Internal conf. | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | Up at I <sub>n</sub> [kV] | Iscpv [kA] | IR |
|-------------|------------------|----------|----------------|-----------------------|---------------------|---------------------------|------------|----|
| 33707340    | EGA 2 600/PV     | 660      | +, -, PE       | 50                    | 20                  | ≤3                        | 20         |    |
| 33707341    | EGA 2 600/PV IR  | 660      | +, -, PE       | 50                    | 20                  | ≤3                        | 20         | ✓  |
| 33707312    | EGA 2 1000/PV    | 1170     | +, -, PE       | 50                    | 20                  | ≤3.75                     | 20         |    |
| 33707313    | EGA 2 1000/PV IR | 1170     | +, -, PE       | 50                    | 20                  | ≤3.75                     | 20         | ✓  |
| 33707316    | EGA 2 1500/PV    | 1500     | +, -, PE       | 50                    | 20                  | ≤4.75                     | 20         |    |
| 33707317    | EGA 2 1500/PV IR | 1500     | +, -, PE       | 50                    | 20                  | ≤4.75                     | 20         | ✓  |

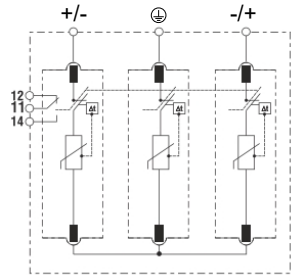
**Dimensions**

**PV**



**Internal configuration**

**+, -, PE (PV)**





PHOTOVOLTAIC & ENERGY STORAGE SPDs

**EGARA 2 5PV**



Type 2 surge protection device (SPD) for transient overvoltages pluggable with I<sub>max</sub> 50 kA. The EGA 2 5PV range is suitable for PV installations and to protect multiple MPPT inputs, helping save space and wiring in compact PV combiner boxes. Certified according to IEC and UL standards.

**Standards**

- EN IEC 61643-31
- UL 1449 5th Edition

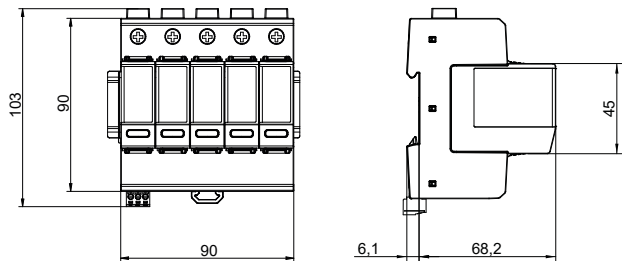


**Part numbers**

| Item number | Item description   | Ucpv [V] | Internal conf. | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | Up at I <sub>n</sub> [kV] | I <sub>scpv</sub> [kA] | IR |
|-------------|--------------------|----------|----------------|-----------------------|---------------------|---------------------------|------------------------|----|
| 33707500    | EGA 2 1000/5PVA    | 1170     | 2+, 2-, PE     | 50                    | 20                  | ≤3.75                     | 20                     |    |
| 33707501    | EGA 2 1000/5PVA IR | 1170     | 2+, 2-, PE     | 50                    | 20                  | ≤3.75                     | 20                     | ✓  |
| 33707502    | EGA 2 1000/5PVB    | 1170     | 3+, 1-, PE     | 50                    | 20                  | ≤3.75                     | 20                     |    |
| 33707503    | EGA 2 1000/5PVB IR | 1170     | 3+, 1-, PE     | 50                    | 20                  | ≤3.75                     | 20                     | ✓  |
| 33707504    | EGA 2 1500/5PVA    | 1500     | 2+, 2-, PE     | 50                    | 20                  | ≤4.75                     | 20                     |    |
| 33707505    | EGA 2 1500/5PVA IR | 1500     | 2+, 2-, PE     | 50                    | 20                  | ≤4.75                     | 20                     | ✓  |
| 33707506    | EGA 2 1500/5PVB    | 1500     | 3+, 1-, PE     | 50                    | 20                  | ≤4.75                     | 20                     |    |
| 33707507    | EGA 2 1500/5PVB IR | 1500     | 3+, 1-, PE     | 50                    | 20                  | ≤4.75                     | 20                     | ✓  |

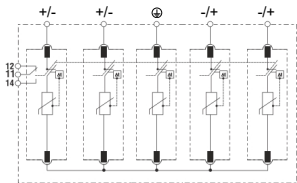
**Dimensions**

**5PV**

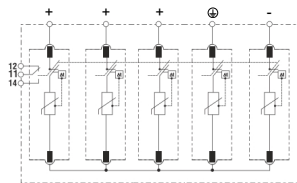


**Internal configuration**

**2+, 2-, PE (5PVA)**



**3+, 1-, PE (5PVB)**



PSC AC Reinforced



Indicative product image

Type 1+2 surge protection device (SPD) for transient overvoltages pluggable with Iimp 5 kA and reinforced design. The PSC AC Reinforced range is suitable for PV installations on the AC side, protecting inverters up to 800 Vac and special applications requiring high withstand voltage peaks.

Standards

- EN IEC 61643-11



More info

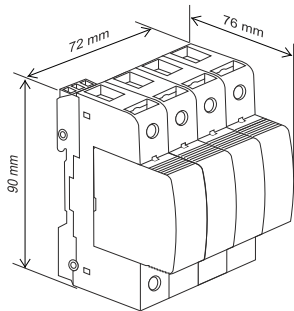


Part numbers

| Item number | Item description | Internal conf. | Network configuration | Uc [V] | Un [V]                      | Iimp [kA] | Imax [kA] | In [kA] | Up at In [kV] | U peak [V] | IR |
|-------------|------------------|----------------|-----------------------|--------|-----------------------------|-----------|-----------|---------|---------------|------------|----|
| 77738674    | PSC3-5/680R      | 3+0 R          | TNC, IT               | 1360   | -/800 (IT);<br>-/1000 (TNC) | 5         | 40        | 20      | ≤5            | 1700       |    |
| 77738675    | PSC3-5/680R IR   | 3+0 R          | TNC, IT               | 1360   | -/800 (IT);<br>-/1000 (TNC) | 5         | 40        | 20      | ≤5            | 1700       | ✓  |

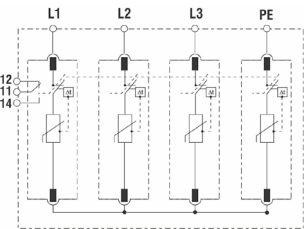
Dimensions

4 Poles



Internal configuration

TNC, IT (3+0 R)



PHOTOVOLTAIC & ENERGY STORAGE SPDs

PSM AC Reinforced



Indicative product image

Type 2 surge protection device (SPD) for transient overvoltages pluggable with  $I_{max}$  30 kA and reinforced design. The PSM AC Reinforced range is suitable for PV installations on the AC side, protecting inverters up to 800 Vac and special applications requiring high withstand voltage peaks.

Standards

- EN IEC 61643-11
- UL 1449 5th Edition

More info

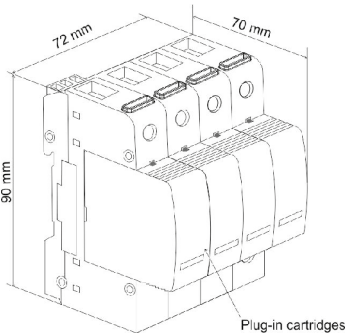


Part numbers

| Item number | Item description | Internal conf. | Network configuration | Uc [V] | Un [V]                      | Imax [kA] | In [kA] | Up at In [kV] | U peak [V] | IR |
|-------------|------------------|----------------|-----------------------|--------|-----------------------------|-----------|---------|---------------|------------|----|
| 77707786    | PSM3-30/850R     | 3+0 R          | TNC, IT               | 1700   | -/800 (IT);<br>-/1000 (TNC) | 30        | 15      | ≤6            | 2200       |    |
| 77707787    | PSM3-30/850R IR  | 3+0 R          | TNC, IT               | 1700   | -/800 (IT);<br>-/1000 (TNC) | 30        | 15      | ≤6            | 2200       | ✓  |

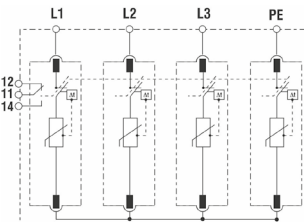
Dimensions

4 Poles



Internal configuration

TNC, IT (3+0 R)





## SURGE PROTECTION DEVICES

# LED LIGHTING SPDs

---

# OUTDOOR LED LIGHTING INSTALLATIONS

## Need for protection

### Comprehensive protection

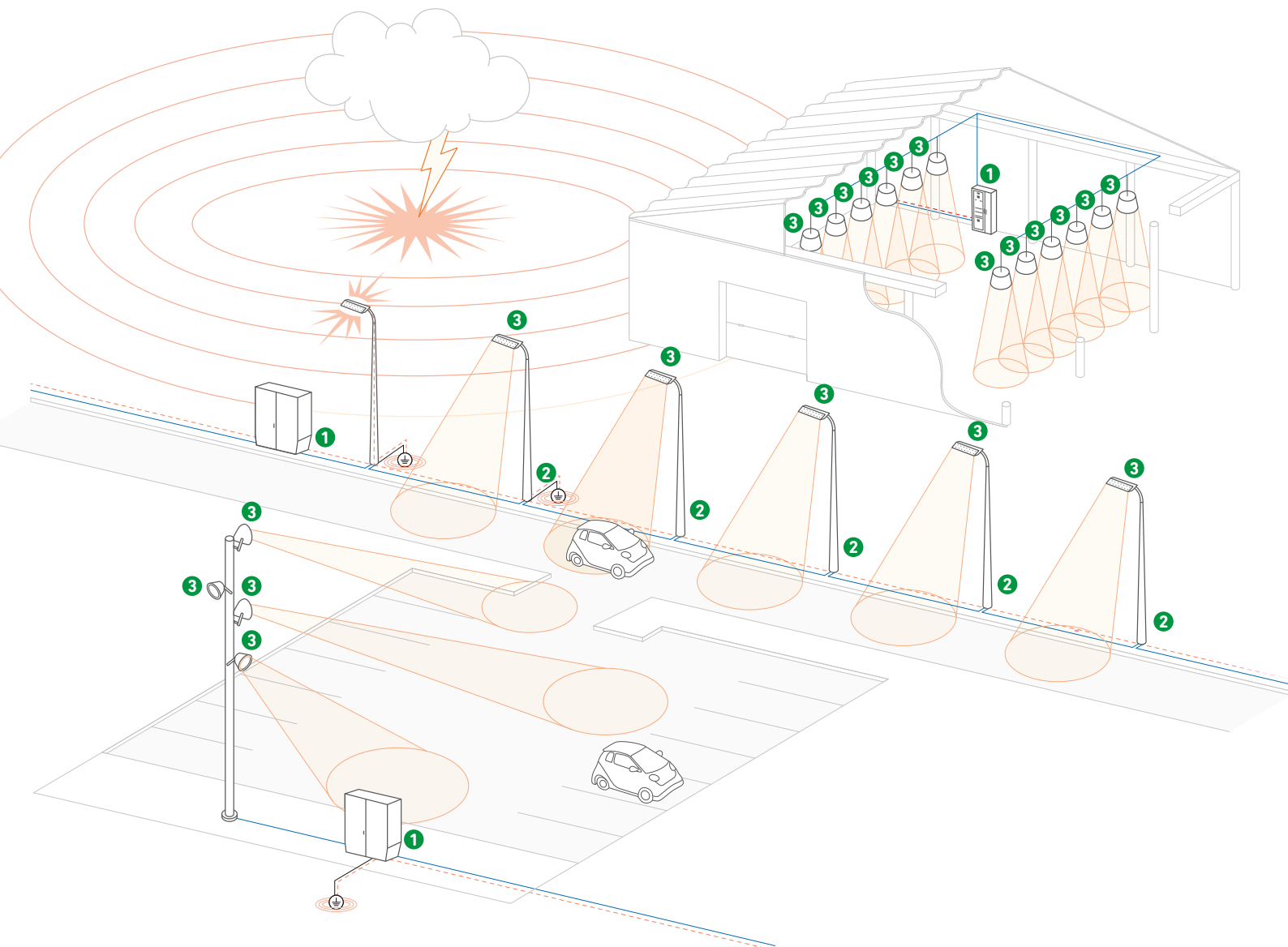
Surge protection devices (SPD) protect equipment by discharging the overvoltage to earth, thus limiting the voltage reaching the equipment (residual voltage).

**An effective overvoltage protection design comprises of staggered protection,** with stages for each of the sensitive components in the installation. With this method, part of the overvoltage is discharged in each protection stage until only a small residual voltage is left close to the luminaire.

**Protection in the lighting panel ①** although necessary, is by itself insufficient because overvoltages can also be induced in long cable runs, which means that the final **protection should always be as close as possible to the equipment being protected ② ③.**

#### Protection stages

- ① In the lighting panel
- ② In the mast (fuse box)
- ③ In the luminaire





## In the luminaire:

### NS range

#### Certified

- DEKRA certification to IEC 61643-11
- First SPD for lighting fixtures to have ENEC certification



#### Proven quality

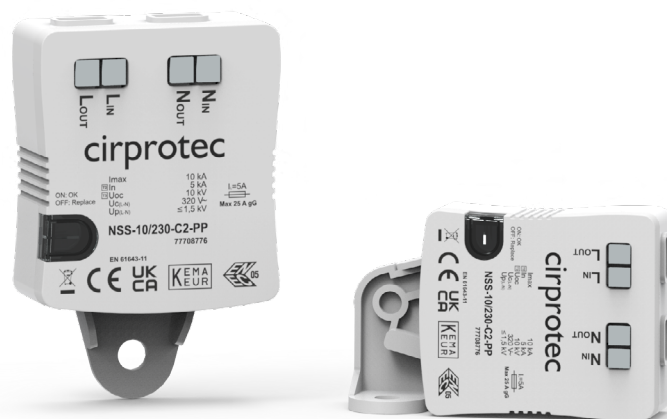
- STL series protects LED outdoor luminaires since 2011
- More than 8.000.000 effectively protected luminaires

#### Double end-of-life indication

- Disconnection, if installed in series, the SPD will turn the luminaire off when it reaches end-of-life.
- Visual LED indication.

#### No leakage current

- STL with common mode protection has no leakage current to earth.



#### Versatile assembly

The SPD can be installed upright or flat depending on the space constraints of the luminaire

## In the mast (fuse box):

### CSF range

- Design adapted for the **fuse box**
- Perfect for **retrofitting**
- Compact and robust (**10 kV / 10 kA**)
- **Ground** cable/Ground terminal options



## In the lightning panel:

### V-CHECK 4RC range

- Combined power frequency overvoltage protection and surge protection device
- First step of protection
- Remote and visual **indication of life status** of the protection device



LED LIGHTING SPDs

# NSS PP



Type 2+3 surge protection device with I<sub>max</sub> 10 kA, with push-in quick connection and hardwired. The NSS PP range is suitable for protecting LED lighting installations with extremely sensitive electronics.

## Standards

- EN IEC 61643-11

Optional accessory providing maximum installation flexibility, allowing the SPD to be mounted in either a vertical or horizontal position depending on the available space inside the luminaire. Please contact our sales team for more information.

More info

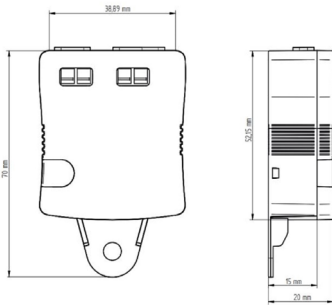


## Part numbers

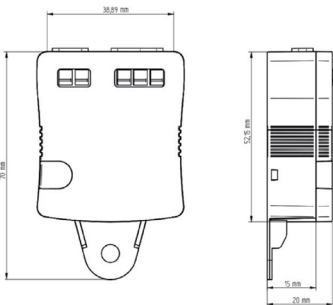
| Item number | Item description | Internal conf. | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | IL [A] | Up at I <sub>n</sub> [kV] | Uoc [kV] |
|-------------|------------------|----------------|--------|---------|-----------------------|---------------------|--------|---------------------------|----------|
| 77705975    | NSS-10/230-C4-PP | C4             | 320    | 230/400 | 10                    | 5                   | 5      | ≤1.5                      | 10       |
| 77708776    | NSS-10/230-C2-PP | C2             | 320    | 230/400 | 10                    | 5                   | 5      | ≤1.5                      | 10       |

## Dimensions

C2

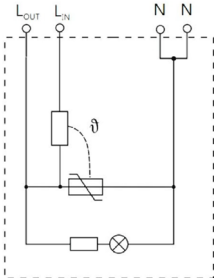


C4

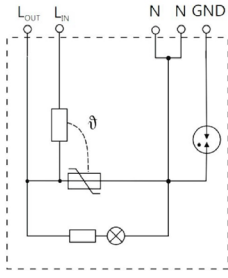


## Internal configuration

TT, TN, IT (C2)



TT, TN (C4)



LED LIGHTING SPDs

NSB DD



Type 2+3 surge protection device (SPD) for transient overvoltages with I<sub>max</sub> 20 kA, hardwired, with different connection options. NSB DD range is suitable for protecting LED lighting installations with extremely sensitive electronics.

Standards

- EN IEC 61643-11

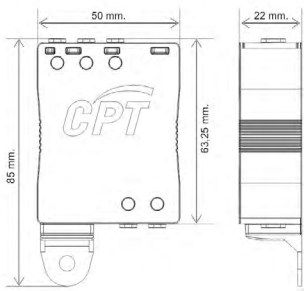


Part numbers

| Item number | Item description | Internal conf. | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | IL [A] | Up at I <sub>n</sub> [kV] | Uoc [kV] |
|-------------|------------------|----------------|--------|---------|-----------------------|---------------------|--------|---------------------------|----------|
| 77705891    | NSB-20/230-C4-DD | C4             | 275    | 230/400 | 20                    | 10                  | 2.5    | ≤1.5                      | 20       |

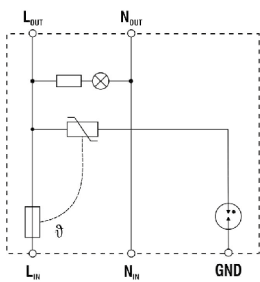
Dimensions

NSB C4



Internal configuration

TT, TN (C4)





## Standards

- EN IEC 61643-11



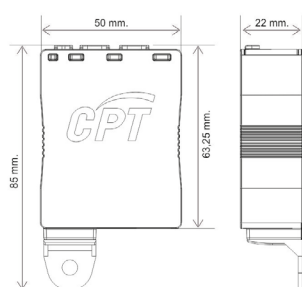
More info



## Part numbers

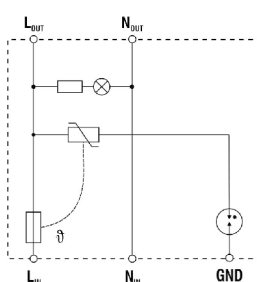
| Item number | Item description    | Internal conf. | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | IL [A] | Up at In [kV] | Uoc [kV] |
|-------------|---------------------|----------------|--------|---------|-----------------------|---------|--------|---------------|----------|
| 77705644    | NSB-10/230-C4-WW-IP | C4             | 320    | 230/400 | 10                    | 5       | 2.5    | ≤1.5          | 10       |

## Dimensions

**NSB C4**

## Internal configuration

**TT, TN (C4)**



LED LIGHTING SPDs

CSF FB



Type 2+3 surge protection device (SPD) for transient overvoltages compact design for installation in fuse-holder enclosures with I<sub>max</sub> 10 kA. The CSF FB range is suitable for LED lighting installations.

Standards

- EN IEC 61643-11

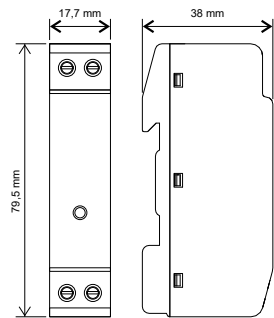


Part numbers

| Item number | Item description | Internal conf. | Network configuration | Uc [V] | Un [V] | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | IL [A] | Up at I <sub>n</sub> [kV] | Uoc [kV] |
|-------------|------------------|----------------|-----------------------|--------|--------|-----------------------|---------------------|--------|---------------------------|----------|
| 77704120    | CSF21-10/230 FB  | 1+1            | TT, TNS               | 320    | 230    | 10                    | 5                   | 2.5    | ≤1.5                      | 10       |

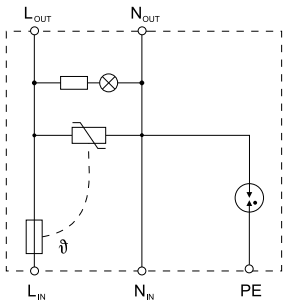
Dimensions

TT, TNS (1+1)



Internal configuration

TT, TNS (1+1)







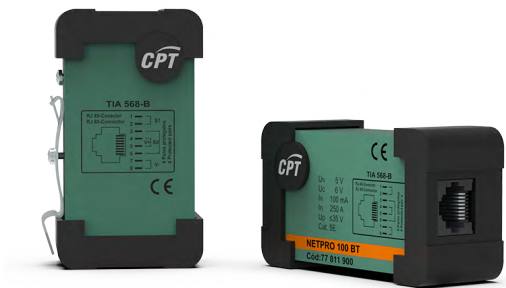
## SURGE PROTECTION DEVICES

# **SIGNAL LINE SPDs**

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SIGNAL LINE SPDs

# NETPRO - In line



Surge protection device (SPD) for transient overvoltages Aerial mounting design. The NETPRO-Aerial range is suitable for Power over Ethernet (NETPRO PoE) networks, Category 6 Ethernet networks (NETPRO 1P) and Category 5 Ethernet networks (NETPRO 100BT).

### Standards

- EN IEC 61643-21



### Part numbers

| Item number | Item description           | Uc (L-PE) [V] | Un [V]                 | In (L-PE) [kA] | IL [A] | Up at In [V] | Bandwidth [MHz] | Protected Wires | Input connector | Output connector |
|-------------|----------------------------|---------------|------------------------|----------------|--------|--------------|-----------------|-----------------|-----------------|------------------|
| 77811900    | NETPRO 100 BT              | 6             | 5                      | 0.25           | 1      | ≤35          | 100             | 8               | RJ45 (Female)   | RJ45 (Female)    |
| 77811931    | NETPRO 1P POE (CAT. 6)     | 6             | 5 (signal); 48 (power) | 0.25           | 1      | *            | 250             | 8               | RJ45 (Female)   | RJ45 (Female)    |
| 77811934    | NETPRO 1P POE (CAT. 6) DIN | 6             | 5 (signal); 48 (power) | 0.25           | 1      | *            | 250             | 8               | RJ45 (Female)   | RJ45 (Female)    |
| 77811930    | NETPRO CG-1P               | 6             | 5                      | 0.25           | 1      | ≤35          | 250             | 8               | RJ45 (Male) UTP | RJ45 (Male) UTP  |
| 77811945    | NETPRO CG-1P M             | 6             | 5                      | 0.25           | 1      | ≤35          | 250             | 8               | RJ45 (Male) UTP | RJ45 (Male) UTP  |

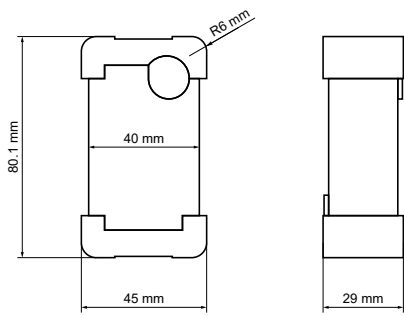
\*≤ 130 (L-L/sig.); ≤ 35 (L-L/PE)

SIGNAL LINE SPDs

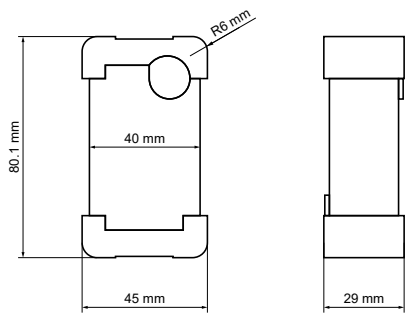
**NETPRO - In line**

**Dimensions**

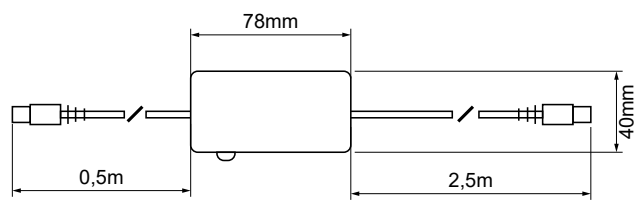
**100BT**



**1P POE**

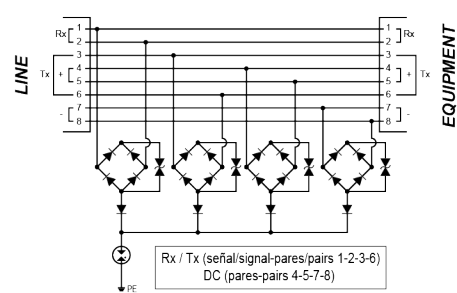


**CG**



**Internal configuration**

**NETPRO - In line**



SIGNAL LINE SPDs

# NETPRO - Rack

Surge protection device (SPD) for transient overvoltages rack-mount design. The NETPRO-Rack range is suitable for Category 6 Ethernet networks and Power over Ethernet (NETPRO PoE) networks within the NETPRO series.



### Standards

- EN IEC 61643-21

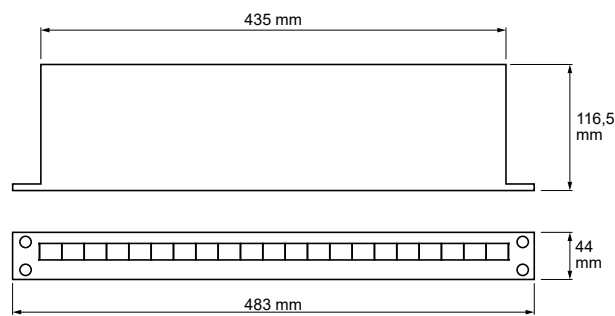


### Part numbers

| Item number | Item description           | Uc (L-PE) [V] | Un [V] | In (L-PE) [kA] | IL [A] | Up at In [V] | Bandwidth [MHz] | Protected Wires | Input connector | Output connector |
|-------------|----------------------------|---------------|--------|----------------|--------|--------------|-----------------|-----------------|-----------------|------------------|
| 77811937    | NETPRO CG-12P (CAT. 6)     | 6             | 5      | 0.25           | 1      | ≤35          | 250             | 4 Pairs         | Crimp terminal  | RJ45 (Female)    |
| 77811935    | NETPRO CG-24P (CAT. 6)     | 6             | 5      | 0.25           | 1      | ≤35          | 250             | 4 Pairs         | Crimp terminal  | RJ45 (Female)    |
| 77811936    | NETPRO CG-24P POE (CAT. 6) | 6             | 5      | 0.25           | 1      | ≤35          | 250             | 4 Pairs         | Crimp terminal  | RJ45 (Female)    |

### Dimensions

#### RACK



## DIN V Analog signal



Surge protection device (SPD) for transient overvoltages for DIN rail mounting. The DIN V Analog signal range is suitable for communication equipment connected to RS 232 networks.

### Standards

- EN IEC 61643-21



More info



### Part numbers

#### DIN 12V-3/DIN 24V-3

| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | Imax (L-PE) [kA] | In (L-PE) [kA] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|------------------|----------------|--------------|-----------------|-----------------|
| 77840710    | DIN 12V-3        | DIN    | 16            | 12     | 10               | 5              | ≤45          | 3               | 2 Wires + GND   |
| 77840760    | DIN 24V-3        | DIN    | 30            | 24     | 10               | 5              | ≤90          | 3               | 2 Wires + GND   |

#### DIN 12V-5N/DIN 24V-5N

| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | Imax (L-PE) [kA] | In (L-PE) [kA] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|------------------|----------------|--------------|-----------------|-----------------|
| 77840721    | DIN 12V-5N       | DIN    | 16            | 12     | 10               | 5              | ≤45          | 0.5             | 4 Wires + GND   |
| 77840771    | DIN 24V-5N       | DIN    | 30            | 24     | 10               | 5              | ≤30          | 0.5             | 4 Wires + GND   |

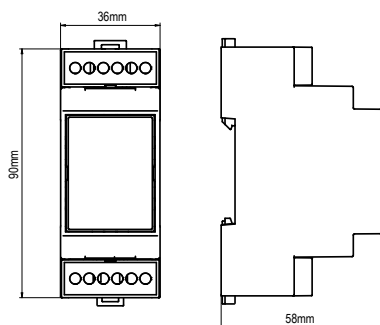
#### DIN 24V-2W

| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | Imax (L-PE) [kA] | In (L-PE) [kA] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|------------------|----------------|--------------|-----------------|-----------------|
| 77840954    | DIN 24V-2W       | DIN    | 27            | 24     | 10               | 5              | ≤40          | 4               | 2 Wires         |

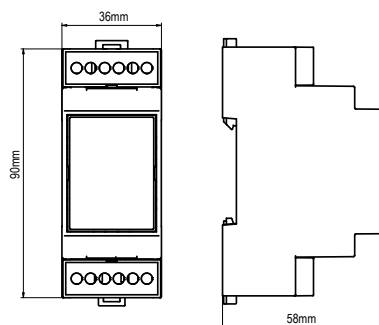
# DIN V Analog signal

## Dimensions

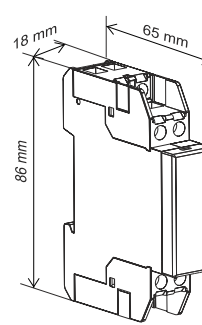
### DIN 12V-3/DIN 24V-3



### DIN 12V-5N/DIN 24V-5N

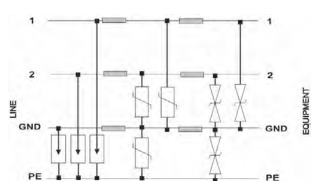


### DIN 24V-2W

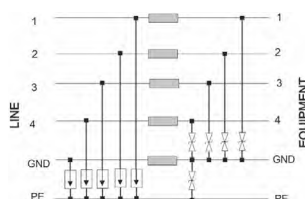


## Internal configuration

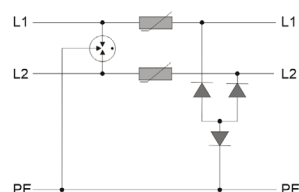
### DIN 12V-3/DIN 24V-3



### DIN 12V-5N/DIN 24V-5N



### DIN 24V-2W





SIGNAL LINE SPDs

# DIN V 2C Digital for RS485



Surge protection device (SPD) for transient overvoltages for DIN rail mounting. The DIN V 2C Digital for RS485 range is suitable for measurement and control equipment installed on RS 485/422 networks.

### Standards

- EN IEC 61643-21



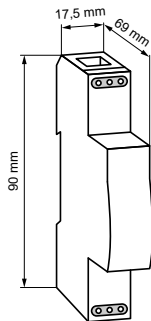
### Part numbers

#### DIN V-2C

| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | I <sub>max</sub> (L-PE) [kA] | I <sub>n</sub> (L-PE) [kA] | Up at I <sub>n</sub> [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|------------------------------|----------------------------|--------------------------|-----------------|-----------------|
| 77840905    | DIN 6V-2C        | DIN    | 7             | 6      | 10                           | 5                          | ≤10                      | 1               | 2 Wires         |
| 77840910    | DIN 12V-2C       | DIN    | 16            | 12     | 10                           | 5                          | ≤20                      | 1.2             | 2 Wires         |
| 77840915    | DIN 24V-2C       | DIN    | 27            | 24     | 10                           | 5                          | ≤40                      | 4               | 2 Wires         |
| 77840920    | DIN 48V-2C       | DIN    | 56            | 48     | 10                           | 5                          | ≤70                      | 5               | 2 Wires         |
| 77840925    | DIN 150V-2C      | DIN    | 180           | 150    | 10                           | 5                          | ≤200                     | 5               | 2 Wires         |

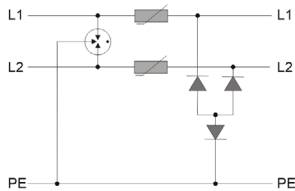
### Dimensions

#### DIN V-2C



### Internal configuration

#### DIN V-2C



SIGNAL LINE SPDs

DIN V G Digital for PLC



Surge protection device (SPD) for transient overvoltages for DIN rail mounting. The DIN V G Digital for PLC range is suitable for measurement and control equipment installed on digital networks.

Standards

- EN IEC 61643-21

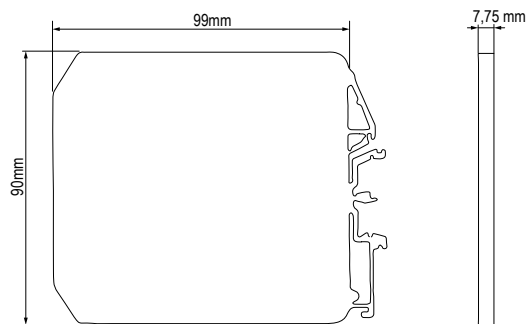


Part numbers

| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | Imax (L-PE) [kA] | In (L-PE) [kA] | IL [A] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|------------------|----------------|--------|--------------|-----------------|-----------------|
| 77840565    | DIN 24V-2G2      | DIN    | 30            | 24     | 10               | 5              | 500    | ≤600         | 2               | 4 Wires         |
| 77840545    | DIN 24V-4G1      | DIN    | 30            | 24     | 10               | 5              | 500    | ≤60          | 2               | 4 Wires         |
| 77840566    | DIN 48V-2G2      | DIN    | 55            | 48     | 10               | 5              | 500    | ≤900         | 2               | 4 Wires         |

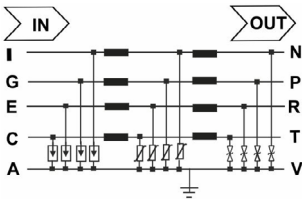
Dimensions

DIN V-2G2 / DIN V-4G1

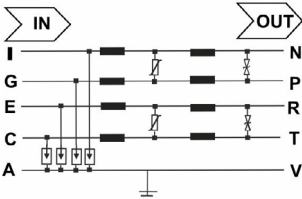


Internal configuration

DIN V-4G1

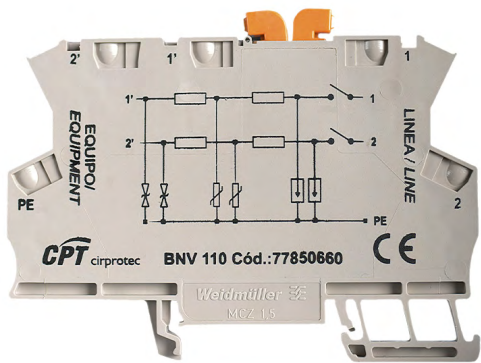


DIN V-2G2



SIGNAL LINE SPDs

# BNV Digital for PLC



Surge protection device (SPD) for transient overvoltages for DIN rail mounting PLC compatible. The BNV Digital for PLC range is suitable for measurement and control equipment installed on PLC digital networks.

### Standards

- EN IEC 61643-21

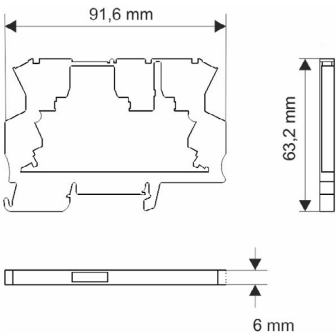


### Part numbers

| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | I <sub>max</sub> (L-PE) [kA] | I <sub>n</sub> (L-PE) [kA] | IL [A] | Up at I <sub>n</sub> [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|------------------------------|----------------------------|--------|--------------------------|-----------------|-----------------|
| 77850660    | BNV 110          | DIN    | 130           | 110    | 5                            | 5                          | 300    | ≤260                     | 3               | 2 Wires         |
| 77850655    | BNV 30           | DIN    | 30            | 24     | 5                            | 5                          | 300    | ≤45                      | 3               | 2 Wires         |

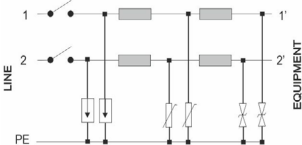
### Dimensions

#### BNV



### Internal configuration

#### BNV



SIGNAL LINE SPDs

# DIN 485 Digital for RS485



Surge protection device (SPD) for transient overvoltages for DIN rail mounting. The DIN 485 Digital for RS485 range is suitable for measurement and control equipment installed on RS 485/422 networks.

### Standards

- EN IEC 61643-21



More info



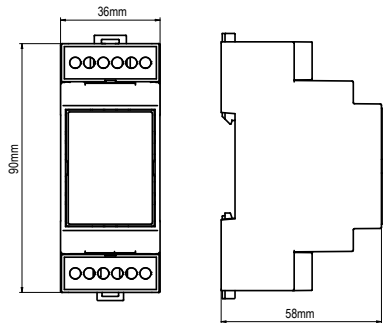
### Part numbers

#### 485

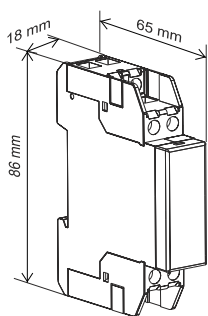
| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | In (L-PE) [kA] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|----------------|--------------|-----------------|-----------------|
| 77840805    | DIN 485-2C       | DIN    | 15            | 12     | 5              | ≤20          | 1.2             | 1 Pair          |
| 77840810    | DIN 485-3        | DIN    | 15            | 12     | 5              | ≤45          | 3               | 2 Wires + GND   |
| 77840816    | DIN 485-5N       | DIN    | 15            | 12     | 5              | ≤45          | 0.5             | 4 Wires + GND   |
| 77840817    | DIN 485-5V-5N    | DIN    | 15            | 12     | 10             | ≤15          | 60              | 4 Wires + GND   |
| 77840813    | DIN 485-3NI      | DIN    | 15            | 12     | 5              | ≤45          | 10              | 2 Wires + GND   |

### Dimensions

#### 485



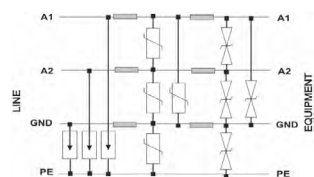
#### 485-3NI



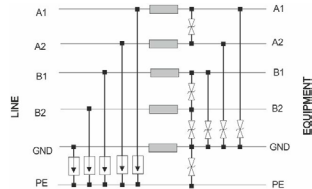
# DIN 485 Digital for RS485

## Internal configuration

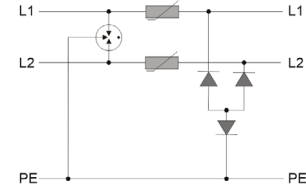
### 485-3



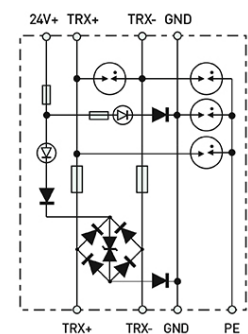
### 485-5N



### 485-2C



### 485-3NI



DB Digital for RS232 SUB-D connector



Surge protection device (SPD) for transient overvoltages Sub-D format. The DB Digital for RS232 SUB-D connector range is suitable for measurement and control equipment installed on RS 232 networks.

Standards

- EN IEC 61643-21



Part numbers

25HS

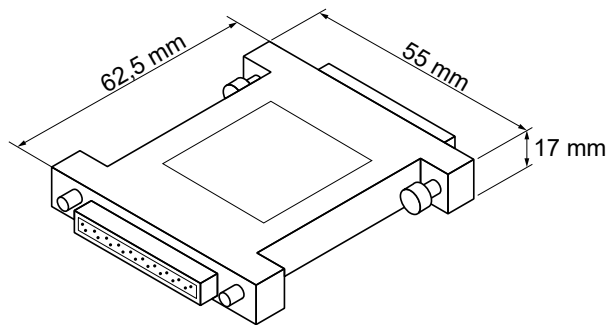
| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | In (L-PE) [kA] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|----------------|--------------|-----------------|-----------------|
| 77820140    | DB25-12V/25HS    | Sub-D  | 16            | 12     | 0.5            | ≤25          | 2               | 23 Wires + GND  |

9HS

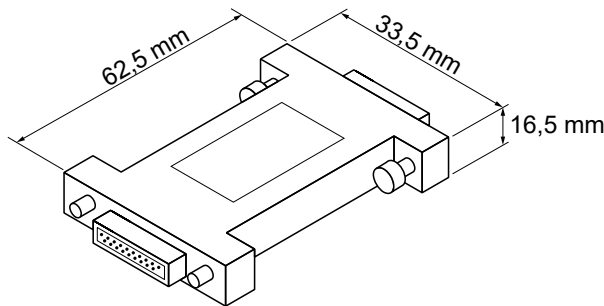
| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | In (L-PE) [kA] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|----------------|--------------|-----------------|-----------------|
| 77820145    | DB9-12V/9HS      | Sub-D  | 16            | 12     | 0.5            | ≤25          | 2               | 7 Wires + GND   |
| 77820153    | DB9-PFB/2HS      | Sub-D  | 6             | 5      | 2              | ≤20          | 12              | 2 Wires + GND   |

Dimensions

25HS



9HS

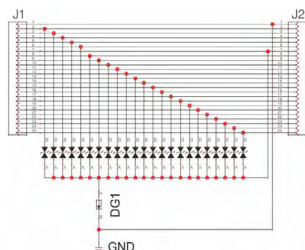




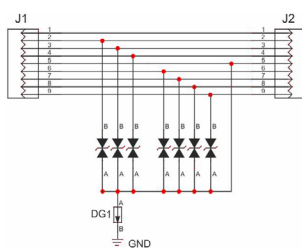
## DB Digital for RS232 SUB-D connector

### Internal configuration

#### 25HS



#### 9HS



DIN T Telephone Lines



Surge protection device (SPD) for transient overvoltages for DIN rail mounting. The DIN T Telephone Lines range is suitable for communication equipment connected to ADSL lines.

Standards

- EN IEC 61643-21

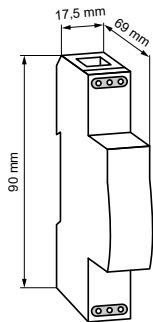


Part numbers

| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | Imax (L-PE) [kA] | In (L-PE) [kA] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|------------------|----------------|--------------|-----------------|-----------------|
| 77840115    | DIN-ADSL         | DIN    | 180           | 50     | 10               | 5              | ≤200         | 3               | 2               |

Dimensions

DIN-ADSL



MCH In-LINE Telephone Lines



Surge protection device (SPD) for transient overvoltages  
Aerial mounting design. The MCH In-LINE Telephone Lines  
range is suitable for analogue telephone lines (PP).

Standards

- EN IEC 61643-21

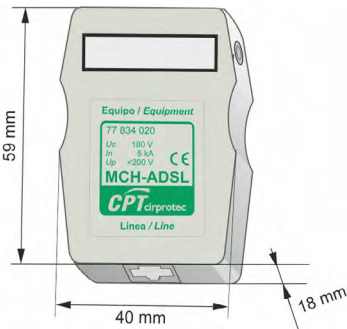


Part numbers

| Item number | Item description | Format        | Un [V] | I <sub>max</sub> (L-PE) [kA] | In (L-PE) [kA] | Up at In [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|---------------|--------|------------------------------|----------------|--------------|-----------------|-----------------|
| 77834020    | MCH-ADSL         | Aerial format | 180    | 10                           | 5              | ≤200         | 3               | 4 Wires         |
| 77834025    | MCH-PP           | Aerial format | 7      | 10                           | 5              | ≤10          | 1               | 4 Wires         |
| 77834010    | MCH-RDSI         | Aerial format | 18     | 10                           | 5              | ≤27          | 2               | 2 Wires         |

Dimensions

MCH



KPL Krone Strips - Telephone Lines



Surge protection device (SPD) for transient overvoltages for mounting on KRONE / LSA-Plus disconnection and connection blocks. The KPL Krone Strips - Telephone Lines range is suitable for ADSL telephone lines.

Standards

- EN IEC 61643-21



More info

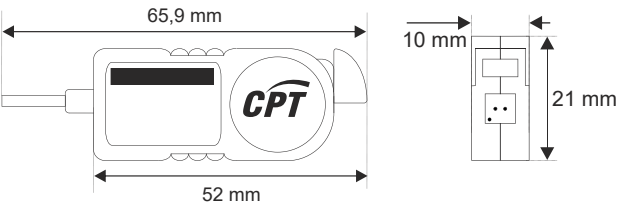


Part numbers

| Item number | Item description | Format | Uc (L-PE) [V] | Un [V] | I <sub>max</sub> (L-PE) [kA] | I <sub>n</sub> (L-PE) [kA] | Up at I <sub>n</sub> [V] | Bandwidth [MHz] | Protected Wires |
|-------------|------------------|--------|---------------|--------|------------------------------|----------------------------|--------------------------|-----------------|-----------------|
| 77830070    | KPL1 CG          | Krone  | 180           | 110    | 15                           | 5                          | ≤350                     | 3               | 2 Wires         |
| 77830080    | KPL1 SG          | Krone  | 180           | 110    | 2.4                          | 1                          | ≤575                     | 3               | 2 Wires         |

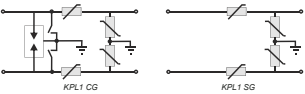
Dimensions

KPL1



Internal configuration

KPL1



CT Radiofrequency COAX



Surge protection device (SPD) for transient overvoltages coaxial format. The CT Radiofrequency COAX range is suitable for RF transmission and reception equipment.

Standards

- EN IEC 61643-21



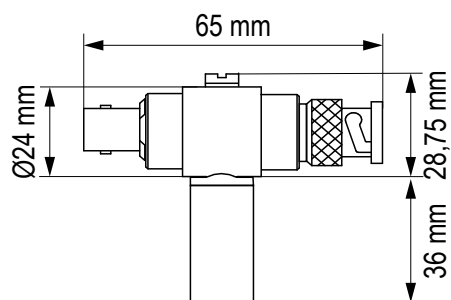
Part numbers

| Item number | Item description | Uc (L-PE) [V] | I <sub>max</sub> (L-PE) [kA] | I <sub>n</sub> (L-PE) [kA] | Up at I <sub>n</sub> [V] | Bandwidth [MHz] | Impedance [Ohm] | Peak power [W] | Input connector | Output connector |
|-------------|------------------|---------------|------------------------------|----------------------------|--------------------------|-----------------|-----------------|----------------|-----------------|------------------|
| 77801671    | CT 05 CCTV       | 24            | 2                            | 1.5                        | ≤45                      | 10              | 75              | 100            | BNC (Female)    | BNC (Female)     |
| 77801655    | CT 10 BNC        | 230           | 20                           | 10                         | ≤600                     | 3000            | 50              | 100            | BNC (Female)    | BNC (Female)     |
| 77801660    | CT 10 F          | 230           | 20                           | 10                         | ≤600                     | 2500            | 75              | 100            | F (Female)      | F (Female)       |
| 77801650    | CT 10 N          | 230           | 20                           | 10                         | ≤600                     | 3000            | 50              | 100            | N (Female)      | N (Female)       |
| 77801680    | CT 10 TNC        | 120           | 20                           | 10                         | ≤600                     | 3000            | 50              | 100            | TNC (Male)      | TNC (Female)     |
| 77801665    | CT 10 TV         | 230           | 20                           | 10                         | ≤600                     | 1000            | 75              | 100            | CEI (Female)    | CEI (Female)     |
| 77801690    | CT 10 UHF        | 230           | 20                           | 10                         | ≤600                     | 3000            | 50              | 150            | UHF (Male)      | UHF (Female)     |

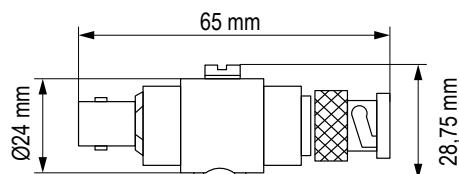
## CT Radiofrequency COAX

### Dimensions

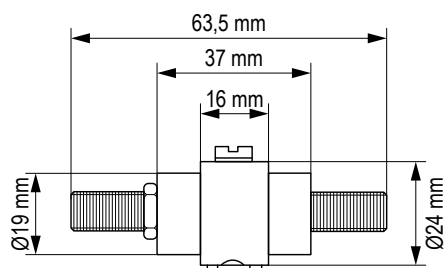
CT 05 CCTV



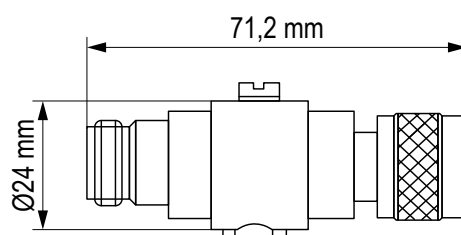
CT 10 BNC



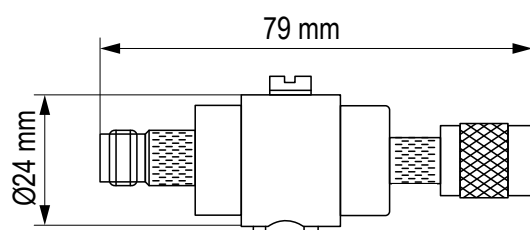
CT 10 F



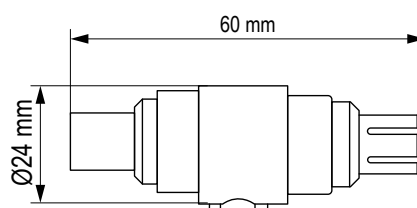
CT 10 N



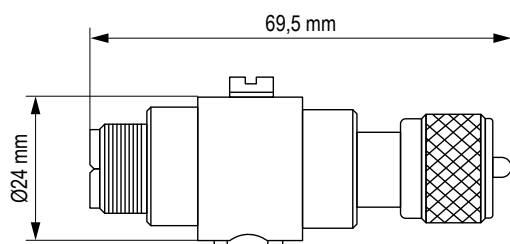
CT 10 TNC



CT 10 TV



CT 10 UHF









## SURGE PROTECTION DEVICES

# OTHER RANGES

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Type 1+2 surge protection device (SPD) for transient overvoltages pluggable with limp 25 kA. The PSC 25 range is suitable for protection in low-voltage installations.

## Standards

- EN IEC 61643-11



More info



## Part numbers

### 1 Pole

| Item number | Item description | Internal conf. | Network configuration   | Uc [V] | Un [V]  | Iimp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|------------------|----------------|-------------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 77738120    | PSC1-25/120      | 1+0            | TNS, TNC, TT (only L-N) | 150    | 120     | 25        | 100                   | 25      | ≤0.9          |    |
| 77738121    | PSC1-25/120 IR   | 1+0            | TNS, TNC, TT (only L-N) | 150    | 120     | 25        | 100                   | 25      | ≤0.9          | ✓  |
| 77738183    | PSC1-100N        | 0+1            | TT, TNS                 | 255    | Neutral | 100       | 100                   | 50      | ≤1.5          |    |
| 77738125    | PSC1-25/230      | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 25        | 100                   | 25      | ≤1.5          |    |
| 77738126    | PSC1-25/230 IR   | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 25        | 100                   | 25      | ≤1.5          | ✓  |
| 77738130    | PSC1-25/400      | 1+0            | TNS, TNC, TT (only L-N) | 440    | 400     | 25        | 100                   | 25      | ≤2            |    |
| 77738131    | PSC1-25/400 IR   | 1+0            | TNS, TNC, TT (only L-N) | 440    | 400     | 25        | 100                   | 25      | ≤2            | ✓  |

### 2 Poles

| Item number | Item description  | Internal conf. | Network configuration | Uc [V] | Un [V] | Iimp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|-------------------|----------------|-----------------------|--------|--------|-----------|-----------------------|---------|---------------|----|
| 77738225    | PSC2-25/230 TT    | 1+1            | TT, TNS               | 275    | 230    | 25        | 100                   | 25      | ≤1.5          |    |
| 77738226    | PSC2-25/230 TT IR | 1+1            | TT, TNS               | 275    | 230    | 25        | 100                   | 25      | ≤1.5          | ✓  |

### 3 Poles

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | Iimp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 77738345    | PSC3-25/400 TNC    | 3+0            | TNC                   | 275    | 230/400 | 25        | 100                   | 25      | ≤1.5          |    |
| 77738346    | PSC3-25/400 TNC IR | 3+0            | TNC                   | 275    | 230/400 | 25        | 100                   | 25      | ≤1.5          | ✓  |

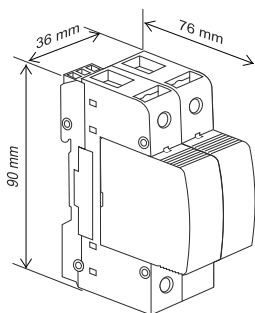
### 4 Poles

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | Iimp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 77738425    | PSC4-25/400 TT     | 3+1            | TT, TNS               | 275    | 230/400 | 25        | 100                   | 25      | ≤1.5          |    |
| 77738426    | PSC4-25/400 TT IR  | 3+1            | TT, TNS               | 275    | 230/400 | 25        | 100                   | 25      | ≤1.5          | ✓  |
| 77738471    | PSC4-25/230 TNS IR | 4+0            | TNS                   | 150    | 120/208 | 25        | 100                   | 25      | ≤0.9          | ✓  |

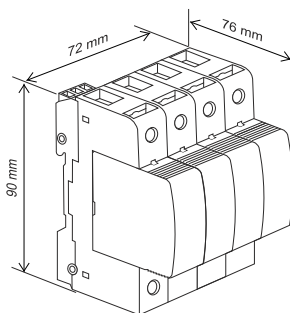
# PSC 25

## Dimensions

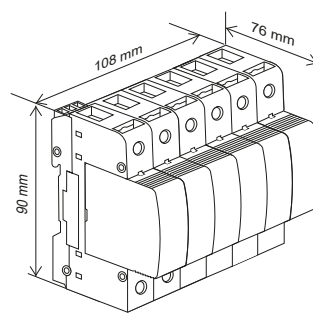
### 1 Pole



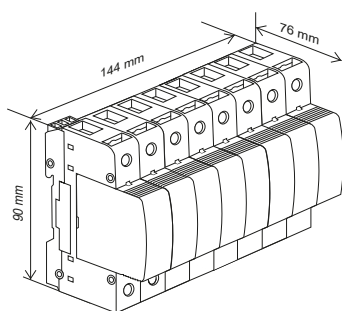
### 2 Poles



### 3 Poles

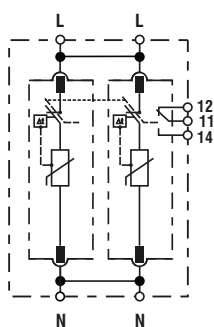


### 4 Poles

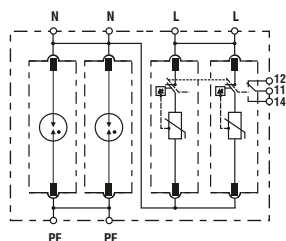


## Internal configuration

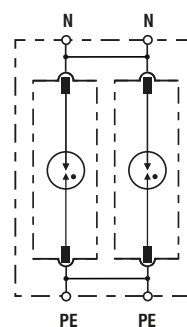
### TNS, TNC, TT (only L-N) (1+0)



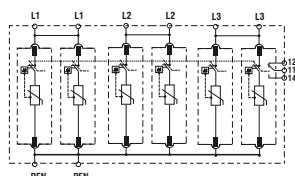
### TT, TNS (1+1)



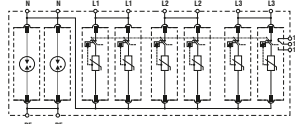
### TT, TNS (0+1)



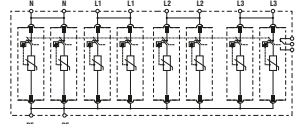
### TNC (3+0)



### TT, TNS (3+1)



### TNS (4+0)







Type 1+2 surge protection device (SPD) for transient overvoltages pluggable with limp 12.5 kA. The PSC 12.5 range is suitable for protection in low-voltage installations.

## Standards

- EN IEC 61643-11

More info



## Part numbers

### 1 Pole

| Item number | Item description | Internal conf. | Network configuration   | Uc [V] | Un [V]  | limp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|------------------|----------------|-------------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 77738100    | PSC1-12,5/120    | 1+0            | TNS, TNC, TT (only L-N) | 150    | 120     | 12.5      | 65                    | 20      | ≤1            |    |
| 77738101    | PSC1-12,5/120 IR | 1+0            | TNS, TNC, TT (only L-N) | 150    | 120     | 12.5      | 65                    | 20      | ≤1            | ✓  |
| 77738180    | PSC1-25N         | 0+1            | TT, TNS                 | 255    | Neutral | 25        | 65                    | 25      | ≤1.5          |    |
| 77738182    | PSC1-50N         | 0+1            | TT, TNS                 | 255    | Neutral | 50        | 65                    | 50      | ≤1.5          |    |
| 77738105    | PSC1-12,5/230    | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 12.5      | 65                    | 20      | ≤1.3          |    |
| 77738106    | PSC1-12,5/230 IR | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 12.5      | 65                    | 20      | ≤1.3          | ✓  |
| 77738112    | PSC1-12,5/277    | 1+0            | TNS, TNC, TT (only L-N) | 320    | 277     | 12.5      | 65                    | 20      | ≤1.4          |    |
| 77738113    | PSC1-12,5/277 IR | 1+0            | TNS, TNC, TT (only L-N) | 320    | 277     | 12.5      | 65                    | 20      | ≤1.4          | ✓  |
| 77738110    | PSC1-12,5/400    | 1+0            | TNS, TNC, TT (only L-N) | 440    | 400     | 12.5      | 65                    | 20      | ≤1.8          |    |
| 77738111    | PSC1-12,5/400 IR | 1+0            | TNS, TNC, TT (only L-N) | 440    | 400     | 12.5      | 65                    | 20      | ≤1.8          | ✓  |

### 2 Poles

| Item number | Item description     | Internal conf. | Network configuration | Uc [V] | Un [V] | limp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|----------------------|----------------|-----------------------|--------|--------|-----------|-----------------------|---------|---------------|----|
| 77738200    | PSC2-12,5/120 TT     | 1+1            | TT, TNS               | 150    | 120    | 12.5      | 65                    | 20      | ≤1            |    |
| 77738201    | PSC2-12,5/120 TT IR  | 1+1            | TT, TNS               | 150    | 120    | 12.5      | 65                    | 20      | ≤1            | ✓  |
| 77738205    | PSC2-12,5/230 TT     | 1+1            | TT, TNS               | 275    | 230    | 12.5      | 65                    | 20      | ≤1.3          |    |
| 77738206    | PSC2-12,5/230 TT IR  | 1+1            | TT, TNS               | 275    | 230    | 12.5      | 65                    | 20      | ≤1.3          | ✓  |
| 77738250    | PSC2-12,5/120 TNS    | 2+0            | TNS                   | 150    | 120    | 12.5      | 65                    | 20      | ≤1            |    |
| 77738251    | PSC2-12,5/120 TNS IR | 2+0            | TNS                   | 150    | 120    | 12.5      | 65                    | 20      | ≤1            | ✓  |
| 77738255    | PSC2-12,5/230 TNS    | 2+0            | TNS                   | 275    | 230    | 12.5      | 65                    | 20      | ≤1.3          |    |
| 77738256    | PSC2-12,5/230 TNS IR | 2+0            | TNS                   | 275    | 230    | 12.5      | 65                    | 20      | ≤1.3          | ✓  |
| 77738257    | PSC2-12,5/277 TNS    | 2+0            | TNS                   | 320    | 277    | 12.5      | 65                    | 20      | ≤1.4          |    |
| 77738258    | PSC2-12,5/277 TNS IR | 2+0            | TNS                   | 320    | 277    | 12.5      | 65                    | 20      | ≤1.4          | ✓  |
| 77738094    | PSC2-12,5/60 ELV     | 2+0            | TNS                   | 75     | 60     | 12.5      | 60                    | 20      | ≤0.65         |    |
| 77738095    | PSC2-12,5/60 ELV IR  | 2+0            | TNS                   | 75     | 60     | 12.5      | 60                    | 20      | ≤0.65         | ✓  |

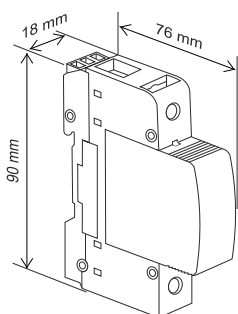
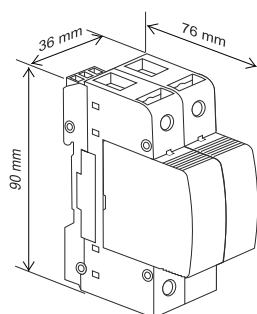
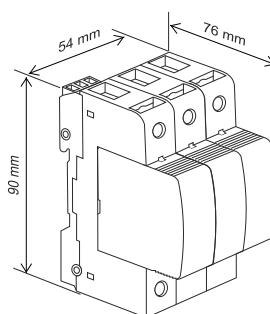
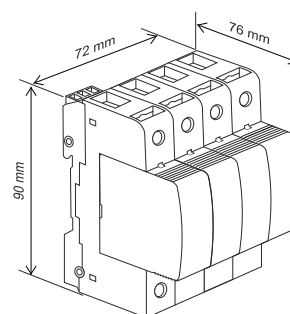
\*ELV: Extra low voltage

**3 Poles**

| Item number | Item description     | Internal conf. | Network configuration | Uc [V] | Un [V]  | Iimp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|----------------------|----------------|-----------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 77738328    | PSC3-12,5/400 IT IR  | 3+0            | IT                    | 440    | -/400   | 12.5      | 65                    | 20      | ≤1.8          | ✓  |
| 77738320    | PSC3-12,5/230 TNC    | 3+0            | TNC                   | 150    | 120/208 | 12.5      | 65                    | 20      | ≤1            |    |
| 77738321    | PSC3-12,5/230 TNC IR | 3+0            | TNC                   | 150    | 120/208 | 12.5      | 65                    | 20      | ≤1            | ✓  |
| 77738325    | PSC3-12,5/400 TNC    | 3+0            | TNC                   | 275    | 230/400 | 12.5      | 65                    | 20      | ≤1.3          |    |
| 77738326    | PSC3-12,5/400 TNC IR | 3+0            | TNC                   | 275    | 230/400 | 12.5      | 65                    | 20      | ≤1.3          | ✓  |
| 77738329    | PSC3-12,5/480 TNC    | 3+0            | TNC                   | 320    | 277/480 | 12.5      | 65                    | 20      | ≤1.4          |    |
| 77738330    | PSC3-12,5/480 TNC IR | 3+0            | TNC                   | 320    | 277/480 | 12.5      | 65                    | 20      | ≤1.4          | ✓  |
| 77738327    | PSC3-12,5/400 IT     | 3+0            | IT                    | 440    | -/400   | 12.5      | 65                    | 20      | ≤1.8          |    |

**4 Poles**

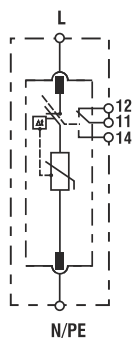
| Item number | Item description     | Internal conf. | Network configuration | Uc [V] | Un [V]  | Iimp [kA] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|----------------------|----------------|-----------------------|--------|---------|-----------|-----------------------|---------|---------------|----|
| 77738400    | PSC4-12,5/230 TT     | 3+1            | TT, TNS               | 150    | 120/208 | 12.5      | 65                    | 20      | ≤1            |    |
| 77738401    | PSC4-12,5/230 TT IR  | 3+1            | TT, TNS               | 150    | 120/208 | 12.5      | 65                    | 20      | ≤1            | ✓  |
| 77738405    | PSC4-12,5/400 TT     | 3+1            | TT, TNS               | 275    | 230/400 | 12.5      | 65                    | 20      | ≤1.3          |    |
| 77738406    | PSC4-12,5/400 TT IR  | 3+1            | TT, TNS               | 275    | 230/400 | 12.5      | 65                    | 20      | ≤1.3          | ✓  |
| 77738407    | PSC4-12,5/480 TT     | 3+1            | TT, TNS               | 320    | 277/480 | 12.5      | 65                    | 20      | ≤1.4          |    |
| 77738408    | PSC4-12,5/480 TT IR  | 3+1            | TT, TNS               | 320    | 277/480 | 12.5      | 65                    | 20      | ≤1.4          | ✓  |
| 77738450    | PSC4-12,5/230 TNS    | 4+0            | TNS                   | 150    | 120/208 | 12.5      | 65                    | 20      | ≤1            |    |
| 77738451    | PSC4-12,5/230 TNS IR | 4+0            | TNS                   | 150    | 120/208 | 12.5      | 65                    | 20      | ≤1            | ✓  |
| 77738455    | PSC4-12,5/400 TNS    | 4+0            | TNS                   | 275    | 230/400 | 12.5      | 65                    | 20      | ≤1.3          |    |
| 77738456    | PSC4-12,5/400 TNS IR | 4+0            | TNS                   | 275    | 230/400 | 12.5      | 65                    | 20      | ≤1.3          | ✓  |
| 77738457    | PSC4-12,5/480 TNS    | 4+0            | TNS                   | 320    | 277/480 | 12.5      | 65                    | 20      | ≤1.4          |    |
| 77738458    | PSC4-12,5/480 TNS IR | 4+0            | TNS                   | 320    | 277/480 | 12.5      | 65                    | 20      | ≤1.4          | ✓  |
| 77738432    | PSC4-12,5/400 IT     | 4+0            | IT                    | 440    | 230/400 | 12.5      | 65                    | 20      | ≤1.8          |    |

**Dimensions****1 Pole****2 Poles****3 Poles****4 Poles**

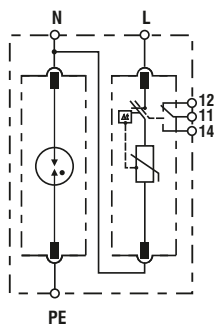


## Internal configuration

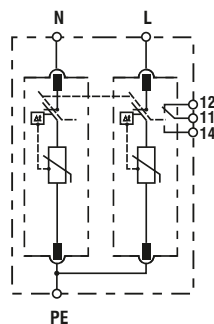
### TNS, TNC, TT (only L-N) (1+0)



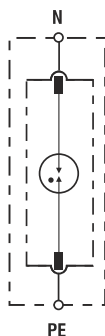
### TT, TNS (1+1)



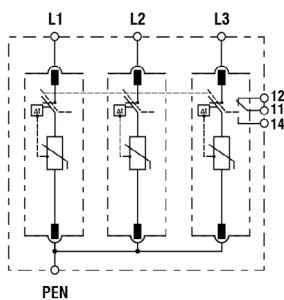
### TNS (2+0)



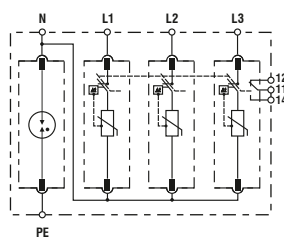
### TT, TNS (0+1)



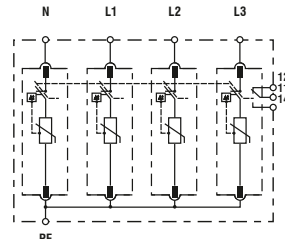
### TNC (3+0)



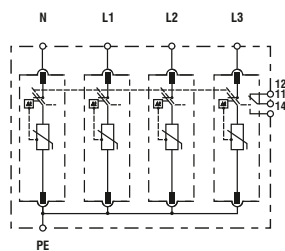
### TT, TNS (3+1)



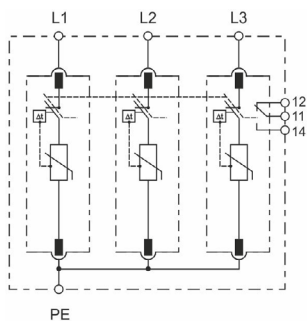
### TNS (4+0)



### IT (4+0)



### IT (3+0)



## PSM 40



Type 2 surge protection device (SPD) for transient overvoltages pluggable with  $I_{max}$  40 kA. The PSM 40 range is suitable for protection in low-voltage installations.

## Standards

- EN IEC 61643-11
- UL 1449 5th Edition

More info



## Part numbers

## 1 Pole

| Item number | Item description  | Internal conf. | Network configuration   | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|-------------------|----------------|-------------------------|--------|---------|-----------------------|---------|---------------|----|
| 77707706    | PSM1-40/120       | 1+0            | TNS, TNC, TT (only L-N) | 175    | 120     | 40                    | 20      | ≤1            |    |
| 77707707    | PSM1-40/120 IR    | 1+0            | TNS, TNC, TT (only L-N) | 175    | 120     | 40                    | 20      | ≤1            | ✓  |
| 77707746    | PSM1-40N          | 0+1            | TT, TNS                 | 265    | Neutral | 40                    | 20      | ≤1.5          |    |
| 77707708    | PSM1-40/230       | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 40                    | 20      | ≤1.3          |    |
| 77707709    | PSM1-40/230 IR    | 1+0            | TNS, TNC, TT (only L-N) | 275    | 230     | 40                    | 20      | ≤1.3          | ✓  |
| 77707734    | PSM1-40/277       | 1+0            | TNS, TNC, TT (only L-N) | 320    | 277     | 40                    | 20      | ≤1.5          |    |
| 77707735    | PSM1-40/277 IR    | 1+0            | TNS, TNC, TT (only L-N) | 320    | 277     | 40                    | 20      | ≤1.5          | ✓  |
| 77707710    | PSM1-40/400       | 1+0            | TNS, TNC, TT (only L-N) | 440    | 400     | 40                    | 20      | ≤2            |    |
| 77707711    | PSM1-40/400 IR    | 1+0            | TNS, TNC, TT (only L-N) | 440    | 400     | 40                    | 20      | ≤2            | ✓  |
| 77707740    | PSM1-40/60 ELV    | 1+0            | TNS                     | 75     | 60      | 40                    | 20      | ≤0.8          |    |
| 77707741    | PSM1-40/60 ELV IR | 1+0            | TNS                     | 75     | 60      | 40                    | 20      | ≤0.8          | ✓  |
| 77707714    | PSM1-30/750       | 1+0            | TNS, TNC, TT (only L-N) | 750    | 480     | 30                    | 15      | ≤3            |    |
| 77707715    | PSM1-30/750 IR    | 1+0            | TNS, TNC, TT (only L-N) | 750    | 480     | 30                    | 15      | ≤3            | ✓  |

\*ELV: Extra low voltage

## 2 Poles

| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|--------|-----------------------|---------|---------------|----|
| 77707754    | PSM2-40/120 TT     | 1+1            | TT, TNS               | 175    | 120    | 40                    | 20      | ≤1            |    |
| 77707755    | PSM2-40/120 TT IR  | 1+1            | TT, TNS               | 175    | 120    | 40                    | 20      | ≤1            | ✓  |
| 77707756    | PSM2-40/230 TT     | 1+1            | TT, TNS               | 275    | 230    | 40                    | 20      | ≤1.3          |    |
| 77707757    | PSM2-40/230 TT IR  | 1+1            | TT, TNS               | 275    | 230    | 40                    | 20      | ≤1.3          | ✓  |
| 77707760    | PSM2-40/277 TT     | 1+1            | TT, TNS               | 320    | 277    | 40                    | 20      | ≤1.5          |    |
| 77707761    | PSM2-40/277 TT IR  | 1+1            | TT, TNS               | 320    | 277    | 40                    | 20      | ≤1.5          | ✓  |
| 77707904    | PSM2-40/120 TNS    | 2+0            | TNS                   | 175    | 120    | 40                    | 20      | ≤1            |    |
| 77707905    | PSM2-40/120 TNS IR | 2+0            | TNS                   | 175    | 120    | 40                    | 20      | ≤1            | ✓  |
| 77707906    | PSM2-40/230 TNS    | 2+0            | TNS                   | 275    | 230    | 40                    | 20      | ≤1.3          |    |
| 77707907    | PSM2-40/230 TNS IR | 2+0            | TNS                   | 275    | 230    | 40                    | 20      | ≤1.3          | ✓  |
| 77707914    | PSM2-40/277 TNS    | 2+0            | TNS                   | 320    | 277    | 40                    | 20      | ≤1.5          |    |
| 77707915    | PSM2-40/277 TNS IR | 2+0            | TNS                   | 320    | 277    | 40                    | 20      | ≤1.5          | ✓  |
| 77707926    | PSM2-40/48 ELV     | 2+0            | TNS                   | 60     | 48     | 40                    | 20      | ≤0.7          |    |

## PSM 40

Continue 2 Poles

| Item number | Item description  | Internal conf. | Network configuration | Uc [V] | Un [V] | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|-------------------|----------------|-----------------------|--------|--------|-----------------------|---------|---------------|----|
| 77707927    | PSM2-40/48 ELV IR | 2+0            | TNS                   | 60     | 48     | 40                    | 20      | ≤0.7          | ✓  |
| 77707928    | PSM2-40/60 ELV    | 2+0            | TNS                   | 75     | 60     | 40                    | 20      | ≤0.8          |    |
| 77707929    | PSM2-40/60 ELV IR | 2+0            | TNS                   | 75     | 60     | 40                    | 20      | ≤0.8          | ✓  |

\*ELV: Extra low voltage

## 3 Poles

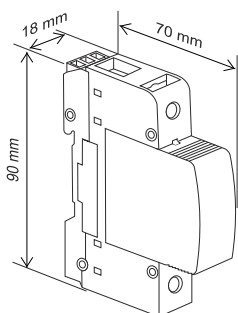
| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------------------|---------|---------------|----|
| 77707865    | PSM3-40/230 TNC IR | 3+0            | TNC                   | 175    | 120/208 | 40                    | 20      | ≤1            | ✓  |
| 77707864    | PSM3-40/230 TNC    | 3+0            | TNC                   | 175    | 120/208 | 40                    | 20      | ≤1            |    |
| 77707866    | PSM3-40/400 TNC    | 3+0            | TNC                   | 275    | 230/400 | 40                    | 20      | ≤1.3          |    |
| 77707867    | PSM3-40/400 TNC IR | 3+0            | TNC                   | 275    | 230/400 | 40                    | 20      | ≤1.3          | ✓  |
| 77707882    | PSM3-40/480 TNC    | 3+0            | TNC                   | 320    | 277/480 | 40                    | 20      | ≤1.5          |    |
| 77707883    | PSM3-40/480 TNC IR | 3+0            | TNC                   | 320    | 277/480 | 40                    | 20      | ≤1.5          | ✓  |
| 77707878    | PSM3-40/400 IT     | 3+0            | IT                    | 440    | -/400   | 40                    | 20      | ≤2            |    |
| 77707879    | PSM3-40/400 IT IR  | 3+0            | IT                    | 440    | -/400   | 40                    | 20      | ≤2            | ✓  |
| 77707870    | PSM3-30/750 TNC    | 3+0            | TNC                   | 750    | 480/830 | 30                    | 15      | ≤3            |    |
| 77707871    | PSM3-30/750 TNC IR | 3+0            | TNC                   | 750    | 480/830 | 30                    | 15      | ≤3            | ✓  |
| 77707887    | PSM3-30/850 TNC IR | 3+0            | TNC                   | 850    | 480/830 | 30                    | 15      | ≤3            | ✓  |

## 4 Poles

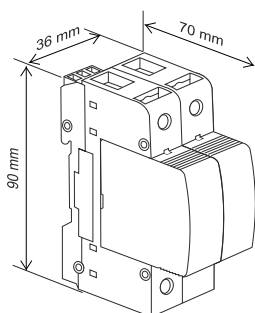
| Item number | Item description   | Internal conf. | Network configuration | Uc [V] | Un [V]  | I <sub>max</sub> [kA] | In [kA] | Up at In [kV] | IR |
|-------------|--------------------|----------------|-----------------------|--------|---------|-----------------------|---------|---------------|----|
| 77707804    | PSM4-40/230 TT     | 3+1            | TT, TNS               | 175    | 120/208 | 40                    | 20      | ≤1            |    |
| 77707805    | PSM4-40/230 TT IR  | 3+1            | TT, TNS               | 175    | 120/208 | 40                    | 20      | ≤1            | ✓  |
| 77707806    | PSM4-40/400 TT     | 3+1            | TT, TNS               | 275    | 230/400 | 40                    | 20      | ≤1.3          |    |
| 77707807    | PSM4-40/400 TT IR  | 3+1            | TT, TNS               | 275    | 230/400 | 40                    | 20      | ≤1.3          | ✓  |
| 77707810    | PSM4-40/480 TT     | 3+1            | TT, TNS               | 320    | 277/480 | 40                    | 20      | ≤1.5          |    |
| 77707811    | PSM4-40/480 TT IR  | 3+1            | TT, TNS               | 320    | 277/480 | 40                    | 20      | ≤1.5          | ✓  |
| 77707954    | PSM4-40/230 TNS    | 4+0            | TNS                   | 175    | 120/208 | 40                    | 20      | ≤1            |    |
| 77707955    | PSM4-40/230 TNS IR | 4+0            | TNS                   | 175    | 120/208 | 40                    | 20      | ≤0.9          | ✓  |
| 77707956    | PSM4-40/400 TNS    | 4+0            | TNS                   | 275    | 230/400 | 40                    | 20      | ≤1.3          |    |
| 77707957    | PSM4-40/400 TNS IR | 4+0            | TNS                   | 275    | 230/400 | 40                    | 20      | ≤1.3          | ✓  |
| 77707989    | PSM4-40/480 TNS    | 4+0            | TNS                   | 320    | 277/480 | 40                    | 20      | ≤1.5          |    |
| 77707990    | PSM4-40/480 TNS IR | 4+0            | TNS                   | 320    | 277/480 | 40                    | 20      | ≤1.5          | ✓  |

## Dimensions

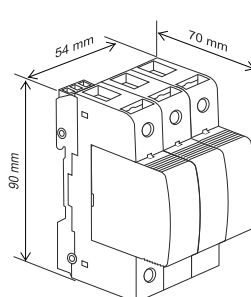
## 1 Pole



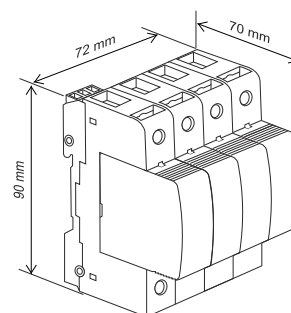
## 2 Poles

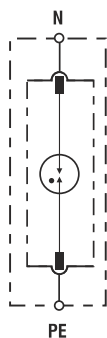
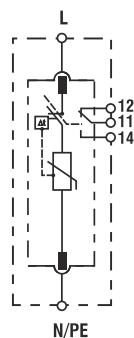
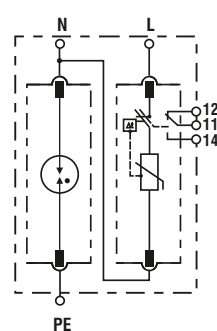
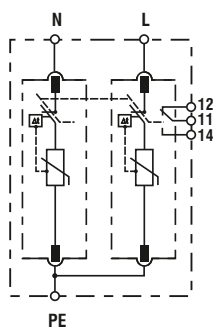
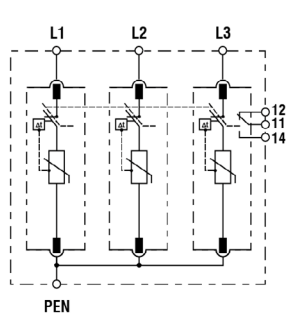
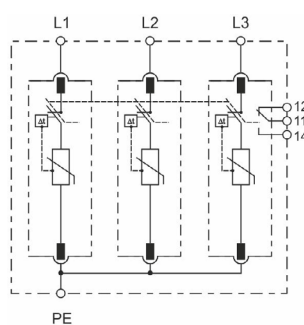
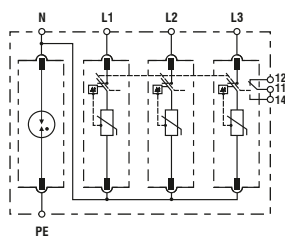
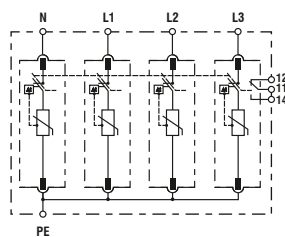


## 3 Poles



## 4 Poles



**Internal configuration****TNS (1+0)****TT, TNS (0+1)****TNS, TNC, TT (only L-N) (1+0)****TT, TNS (1+1)****TNS (2+0)****TNC (3+0)****IT (3+0)****TT, TNS (3+1)****TNS (4+0)**

PHOTOVOLTAIC & ENERGY STORAGE SPDs

PSC YPV



Type 1+2 surge protection device (SPD) for transient overvoltages pluggable with limp 5 kA. The PSC YPV range is suitable for PV installations.

Standards

- EN IEC 61643-31
- UL 1449 5th Edition

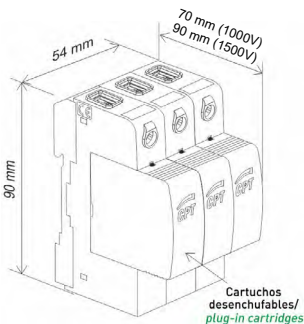


Part numbers

| Item number | Item description  | Ucpv [V] | Internal conf. | limp [kA] | Imax [kA] | In [kA] | Up at In [kV] | Iscpv [kA] | IR |
|-------------|-------------------|----------|----------------|-----------|-----------|---------|---------------|------------|----|
| 77738377    | PSC3-5/1000 PV    | 1060     | +, -, PE       | 5         | 40        | 20      | ≤4            | 10         |    |
| 77738378    | PSC3-5/1000 PV IR | 1060     | +, -, PE       | 5         | 40        | 20      | ≤4            | 10         | ✓  |
| 77738652    | PSC3-5/1500 PV    | 1500     | +, -, PE       | 5         | 40        | 20      | ≤5            | 10         |    |
| 77738653    | PSC3-5/1500 PV IR | 1500     | +, -, PE       | 5         | 40        | 20      | ≤5            | 10         | ✓  |

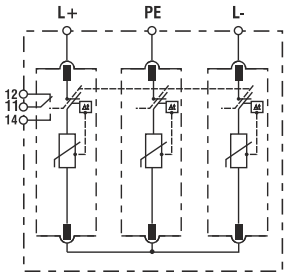
Dimensions

YPV



Internal configuration

+, -, PE (YPV)



PHOTOVOLTAIC & ENERGY STORAGE SPDs

PSM YPV



Type 2 surge protection device (SPD) for transient overvoltages pluggable with I<sub>max</sub> 40 kA. The PSM YPV range is suitable for PV installations.

Standards

- EN IEC 61643-31
- UL 1449 5th Edition

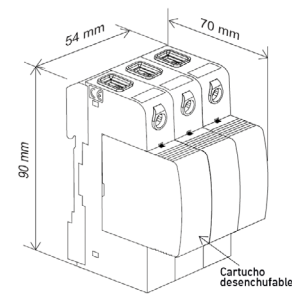


Part numbers

| Item number | Item description   | Ucpv [V] | Internal conf. | I <sub>max</sub> [kA] | I <sub>n</sub> [kA] | Up at I <sub>n</sub> [kV] | Iscpv [kA] | IR |
|-------------|--------------------|----------|----------------|-----------------------|---------------------|---------------------------|------------|----|
| 77707850    | PSM3-40/600 PV     | 660      | +, -, PE       | 40                    | 20                  | ≤2.6                      | 10         |    |
| 77707851    | PSM3-40/600 PV IR  | 660      | +, -, PE       | 40                    | 20                  | ≤2.6                      | 10         | ✓  |
| 77707852    | PSM3-40/1000 PV    | 1060     | +, -, PE       | 40                    | 20                  | ≤4                        | 10         |    |
| 77707853    | PSM3-40/1000 PV IR | 1060     | +, -, PE       | 40                    | 20                  | ≤4                        | 10         | ✓  |
| 77707840    | PSM3-40/1500 PV    | 1500     | +, -, PE       | 40                    | 15                  | ≤5                        | 10         |    |
| 77707841    | PSM3-40/1500 PV IR | 1500     | +, -, PE       | 40                    | 15                  | ≤5                        | 10         | ✓  |

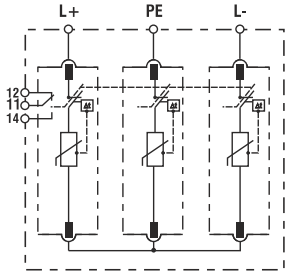
Dimensions

YPV



Internal configuration

+, -, PE (YPV)









LIGHTNING RODS & ACCESSORIES

# **EXTERNAL LIGHTNING PROTECTION SYSTEMS**

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# LIGHTNING RODS (AIR TERMINATION SYSTEMS)

## Lightning rods nimbus® type ESE

Early streamer emission lightning rod, in accordance with UNE 21186 v2011 and CTE SU8. Stainless steel AISI 316.



| Item number | Item description | Early streamer emission time [μs] |
|-------------|------------------|-----------------------------------|
| 77901115    | nimbus 15        | 15                                |
| 77901130    | nimbus 30        | 30                                |
| 77901145    | nimbus 45        | 45                                |
| 77901160    | nimbus 60        | 60                                |

Coverage radius according to UNE 21186:2011 / NF C 17-102:2011

| NP →   | Level I (D=20m) |            |            |            | Level II (D=30m) |            |            |            | Level III (D=45m) |            |            |            | Level IV (D=60m) |            |            |            |
|--------|-----------------|------------|------------|------------|------------------|------------|------------|------------|-------------------|------------|------------|------------|------------------|------------|------------|------------|
| ↓ h(m) | nimbus® 15      | nimbus® 30 | nimbus® 45 | nimbus® 60 | nimbus® 15       | nimbus® 30 | nimbus® 45 | nimbus® 60 | nimbus® 15        | nimbus® 30 | nimbus® 45 | nimbus® 60 | nimbus® 15       | nimbus® 30 | nimbus® 45 | nimbus® 60 |
| 5      | 32              | 48         | 63         | 79         | 37               | 55         | 71         | 86         | 45                | 63         | 81         | 97         | 51               | 71         | 89         | 107        |

\*h: height (m) between the tip of the lightning rod and the highest point of the area to be protected.

## nimbus® R | ESE lightning rod - remotely testable

Lightning rod with remote testing via the R-Tester universal controller (accessory). Complies with standards NF C 17-102:2011 and UNE 21186:2011, as well as the UNE 61000-6 series for radiated emissions.



| Item number | Item description | Early streamer emission time [μs] | Remotely testable |
|-------------|------------------|-----------------------------------|-------------------|
| 77901401    | nimbus® R 15     | 15                                | ✓                 |
| 77901403    | nimbus® R 30     | 30                                | ✓                 |
| 77901404    | nimbus® R 45     | 45                                | ✓                 |
| 77901406    | nimbus® R 60     | 60                                | ✓                 |
| 77901410    | R-Tester         | -                                 | -                 |

## Adapting piece nimbus® to mast

Adapting piece nimbus® to the mast.



| Item number | Item description |
|-------------|------------------|
| 77902610    | P-ADAP D36,5     |
| 77902600    | P-ADAP D39,5     |

## Franklin top

Franklin top of stainless steel AISI 316, with piece of adjustment.



| Item number | Item description |
|-------------|------------------|
| 77900400    | P-FRANKLIN       |

## EXTERNAL LIGHTNING PROTECTION SYSTEMS

# ACCESSORIES

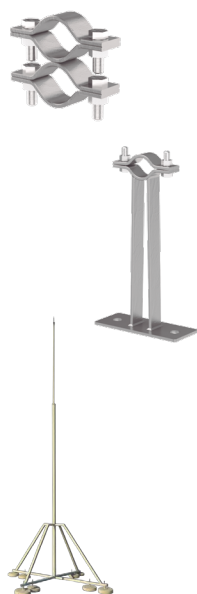
### Mast

Galvanized iron mast.



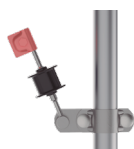
| Item number | Reference                      | Item description                                 |
|-------------|--------------------------------|--------------------------------------------------|
| 77903010    | MAST 3M FEG                    | 3m (1 section of 3 m)                            |
| 77903110    | MAST 6M FEG                    | 6m (2 section of 3 m)                            |
| 77903020    | MAST 3M INOX                   | 3m (1 section of 3 m)                            |
| 77903120    | MAST 6M INOX                   | 6m (2 section of 3 m)                            |
| 77904155    | TRIP TEJ+MST 8M FEG+P ADP NIMB | Tripod + 8m mast + adapter piece                 |
| 77903160    | MAST 8M FEG + P ADAP D35       | 8m (3 section of 3, 3 and 2m)<br>+ adapter piece |

### Mast anchorages



| Item number | Reference                               | Item description                                                                               |
|-------------|-----------------------------------------|------------------------------------------------------------------------------------------------|
| 77904100    | PIE SOP MAST TEJ                        | Mast base support on flat roof or ground. 2 pieces                                             |
| 77904200    | ANCLAJES EMPO 30 D 1 1/2" (MAST 3 Y 6M) | Set of 30 cm anchorages for recessed mounting or welding (2 pieces). Mast D 1 1/2" (3m and 6m) |
| 77904202    | ANCLAJES EMPO 30 D 2" (MAST 9M)         | Set of 30 cm anchorages for recessed mounting or welding (3 pieces). Mast D 2" 9m              |
| 77904300    | ANCLAJES PL 15 D 1 1/2" (MAST 3 Y 6M)   | Set of 15 cm metal screw-plate anchorings (2 pieces). D 1 1/2" Mast 3 and 6m                   |
| 77904400    | ANCLAJES PL 30 D 1 1/2" (MAST 3 Y 6M)   | Set of 30 cm metal screw-plate anchorings (2 pieces). Mast D 1 1/2" (3m and 6m)                |
| 77904700    | ANCLAJES PL 60                          | Set of 60 cm metal screw-plate anchorings (2 pieces). Mast D 1 1/2" (3m and 6m)                |
| 77904311    | ANCL-PLA-15-MAST-9M-3-UDS               | Set of 15 cm metal screw-plate anchorings (3 pieces). Mast D 2" (8m or 9m)                     |
| 77904403    | ANCL-PLA-30-MAST-9M-3-UDS               | Set of 30 cm metal screw-plate anchorings (3 pieces). Mast D 2" (8m or 9m)                     |
| 77904500    | ANCLAJES BARAN H                        | Pair of fixations for horizontal rail (2 pcs)                                                  |
| 77904600    | ANCLAJES BARAN V                        | Pair of fixations for vertical rail (2 pcs)                                                    |

### Antenna mast protection (spark gap)



| Item number | Reference                   | Item description                                           |
|-------------|-----------------------------|------------------------------------------------------------|
| 77920500    | VIA CHISPAS PVC             | Spark gap (mast-to-antenna)                                |
| 77920510    | KIT VIA CHISPAS+MAST-ANTENA | Spark gap kit for mast-to-Antenna protection               |
| 77920310    | EQUIPOT TIERRA              | Spark gap (equipotential bonding of independent earthings) |

## ACCESSORIES

### Roof cable support



| Item number | Reference                    | Item description                                                                                                  |
|-------------|------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 776111630   | SOP-COND TEJ HORM D8         | Concrete roof conductor holder for 8 mm                                                                           |
| 779001161   | SOP-CEM CABLE PLETINA        | Pyramidal conductor holders for flat roofs filled in with concrete. Suitable for flat conductors 30x2 mm or cable |
| 776111019   | SOP-COND NIRO CLIP V2A D8 AI | Hook type clamp for roof tiles, for 8 mm cable                                                                    |
| 776111144   | SOP-TEJ INOX NIRO-CLIP D8    | Support- roof conductor holder - Stainless steel niro-clip. Diameter 8                                            |
| 776111397   | SOP-COND TF ISO CABLE D10    | Clamp metal. cable 8-10 mm                                                                                        |

### Wall-mounted down conductor support



| Item number | Reference                   | Item description                                                                 |
|-------------|-----------------------------|----------------------------------------------------------------------------------|
| 77909100    | SOP-CABLE Br M8 TIRAF 50/70 | M8 bronze bracket with screw rings, for 50 and 70 mm <sup>2</sup> cable          |
| 776110072   | SOP-COND TR BR H-M8         | M8 bronze bracket with thread, for 50 and 70 mm <sup>2</sup> cable               |
| 776001155   | SOP-COND TF NYLON D8MM      | Nylon support for down conductor cable 8 mm with dowel                           |
| 77600030    | SOP-COND D-8/10 TF MET FeCG | Support in galvanized steel for cable 8-10 mm with dowel for metallic structure. |
| 776001032   | SOP-COND TF Cu/ PVC D8MM    | Copper conductor bracket with dowel 8 mm                                         |

### Lightning strike counters



| Item number | Reference | Item description                                 |
|-------------|-----------|--------------------------------------------------|
| 77920130    | CDR-401   | Lightning strike counter for flat tape and cable |

### Connecting sleeves



| Item number | Reference                    | Item description                                     |
|-------------|------------------------------|------------------------------------------------------|
| 77912000    | MANGUITO-U C-70              | Sleeve joint for cable 8-10 mm                       |
| 776001270   | BORNA MULTI-CLAMP FECG D8-10 | Universal T joint in galvanized steel, Ø 8-10 mm     |
| 776001272   | BORNA MULTI-CLAMP CU D8      | Universal T-Multiclap, +, parallel copper and Ø 8 mm |
| 776001273   | BORNA MULTI-CLAMP INOX D8    | Multiple cable joint in stainless steel, Ø 8-10 mm   |

### Protection pipe



| Item number | Reference           | Item description                                                 |
|-------------|---------------------|------------------------------------------------------------------|
| 77920200    | TUB-PROT BAJ 3M D32 | 3 m. down-conductor protection pipe of Ø 32 mm. Galvanized steel |

## EXTERNAL LIGHTNING PROTECTION SYSTEMS

# ACCESSORIES

### Earthing inspection pit and accessories



| Item number     | Reference                             | Item description                                                                                          |
|-----------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>77930110</b> | <b>ARQUETA COMPLETA 300X300</b>       | Polypropilene inspection pit 300x300 mm. complete with equipotential terminal strip and 3 clamp terminals |
| 77930100        | ARQUETA REG 300X300                   | Polypropilene inspection pit 300x300 mm                                                                   |
| 77931100        | REGL EQUIPOT ARQ                      | Equipotential terminal strip                                                                              |
| 77931000        | TERM BRIDA CABLE-TRZ                  | Clamp terminal for braided cable                                                                          |
| <b>77930000</b> | <b>PLACA SEÑAL DE PUESTA A TIERRA</b> | Earth connection sign                                                                                     |
| <b>77938501</b> | <b>LOWPAT 25 KG</b>                   | Long-lasting liquid activating compound for earth connections (25 kg)                                     |
| 77938300        | SALES MINERALES 5 KG                  | 5 kg. bag of mineral salts                                                                                |

### Earth rods and grounding components



| Item number     | Reference             | Item description                         |
|-----------------|-----------------------|------------------------------------------|
| <b>77932100</b> | <b>JAB Cu 2 D14</b>   | Copper earth rod 300 micras 2 m, Ø 14 mm |
| 77932000        | JAB INOX 2 D14        | Stainless steel earth rod 2 m, Ø 14 mm   |
| 77940000        | ELECTRODO GRAF R      | Graphite rigid electrode                 |
| 77936100        | PLACA TT Cu 500X500X2 | Copper earth plate 500 x 500 x 2 mm      |

### Earth rod clamp



| Item number     | Reference               | Item description                                      |
|-----------------|-------------------------|-------------------------------------------------------|
| <b>77934200</b> | <b>GRAPA-AB La /JAB</b> | Earth rod U-bolt brass earth rod cable                |
| 77934300        | GRAPA-AB INOX/JAB       | Earth rod connection stainless steel U-bolt           |
| 77934400        | GRAPA-AB La D-14/18     | Brass U-bolt 14 and 18 mm. Ø (2 conductors)           |
| 77934500        | GRAPA-AB INOX D-14/18   | Stainless steel U-bolt 14 and 18 mm. Ø (2 conductors) |

## nimbus® project designer software

This software integrates all the tools needed for system design, risk analysis, geometric optimization of lightning rod placement, and the generation of technical documentation into a single platform.



**nimbus®**   
**PROJECT DESIGNER**

<https://nimbus.cirprotec.com/en>



THE SPECIALIST BRAND IN LIGHTNING AND SURGE PROTECTIONS

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