



# Cirprotec

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## Overvoltage and Surge Protection



*Check our full  
Catalogue*



Transient and Power frequency Overvoltages (POP)



## Class I+II Pluggable Surge Protectors

**PSC** stands for the renewed design and extended scope of the range of pluggable Type 1+2 protectors, for use in service entrances or areas exposed to lightning activity.

Iimp (10/350): 12,5kA, 25kA,... TT, TNS, TNC, IT and PV  
 Imax (8/20): 65kA, 100kA, ... Remote indication  
 Un: 120V, 230V,...

## Class II Pluggable Surge Protectors

**PSM** stands for the renewed design and extended scope of the range of pluggable Type 2 surge protectors against transient overvoltages.

Imax (8/20): 20kA, 40kA Network configurations:  
 Un: 120V, 230V TT, TNS, TNC and PV  
 Diagnostics: visual & remote indication

## Surge Protectors UL UL 1449 3rd Ed / NEMA

The range of NEMA type TVSS transient voltage surge suppressors has been adapted to meet UL 1449 3rd Ed.

**CPS Nano** is the compact hardwired TVSS series of all-mode protectors (L-G, N-G, L-N, L-L) with Multi-Discharge technology. It has been developed to conveniently complement the **CPS Block** series of high end modular surge protective panels, which feature IAD Intelligent Aging Display and thermal-mechanical disconnection (non-fused). Both series meet IEC-61643 (Imax test).

I<sub>max</sub>/phase (8/20): 40kA to 240kA, all network configurations.

## Class II+III Surge Protectors

**DM2** is the new Type 2+3 device for standard and fine protection against transient overvoltages. DM2 is a series connected device (up to 20A), equipped with EMI filter (up to 80dB) and remote indication. I<sub>max</sub> (8/20): 40kA.

**CS21cd** is the compact (1-DIN rail module) Type 2+3 device. I<sub>max</sub> 20kA.

## Photovoltaic Surge Protectors (DC)

**PSC3** (Iimp 12,5kA / I<sub>max</sub> 65kA) and **PSM3** (I<sub>max</sub> 40kA) are pluggable Type 1+2 and Type 2 surge protectors for PV installations. Uoc: 600, 1000 Vdc.

**CS23** is the compact Type 2 (I<sub>max</sub> 40kA) PV device for common and differential mode protection in only 2 modules, DC "Y" wired.

# Product int



According to  
 EN  
 50539-11



According to  
EN  
50550  
(POP)

# roductions



## Power Frequency Overvoltage Protectors (POP)

**Overcheck** is a programmable self-reclosing device, comprising a control unit and circuit breaker which automatically disconnects the supply when voltage, current or earth leakage exceed preset threshold values, and reconnects the supply when these return to permissible values.



OVERCHECK



ISO-CHECK PV



ISO-CHECK

### Insulation Monitoring Device

**Iso-Check** is the insulation monitor for unearthed power supplies such as IT systems. Iso-Check continuously measures the insulation resistance between the active conductor and ground. Available for voltages up to 440Vac. For PV installations (600Vdc, 1.000Vdc) and for electric vehicles.



G-CHECK

### Grounding System Monitor

**G-Check** is the revolutionary product for TT and TNS networks that checks the grounding installation status in real time and triggers a warning system if the installation is defective or deteriorated.

G-Check is a standalone, compact DIN-rail mountable device for installation in panels which performs earth loop monitoring.



KPL

### LSA-Plus / Krone Telecom Protectors

**KPL** is a single pair, multistage transient overvoltage protector for Krone terminals in telecom building entrance applications. KPL combines fine protection ( $U_p < 0,35kV$ ) and optimal surge rating ( $I_{max} 15kA$ ). These all-mode protectors (L-L/L-PE) are intended for telecom lines: ADSL, PSTN and ISDN. Easy plug-out thanks to soft pull-out fin.

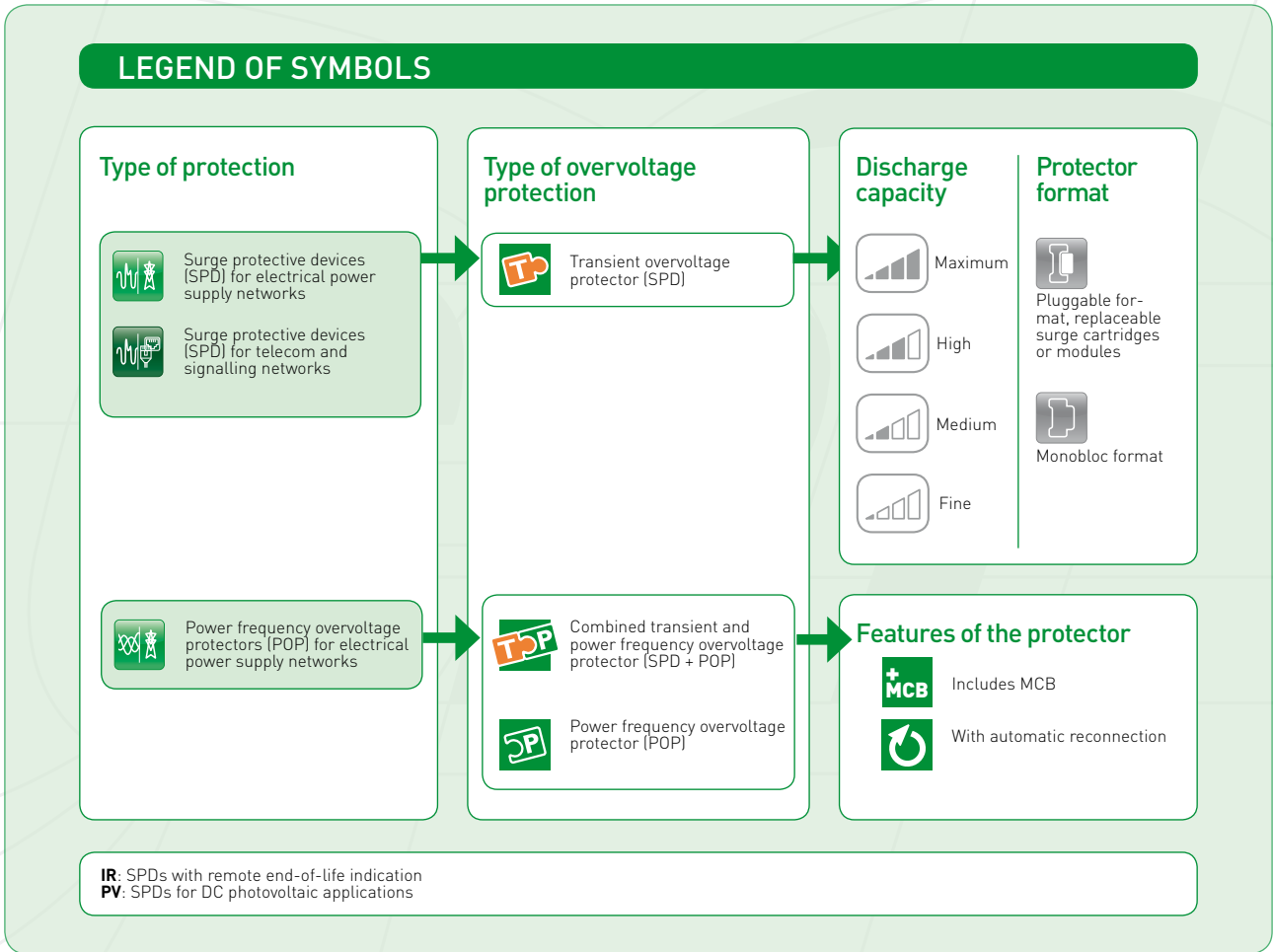


CT-05



### RF Surge Protectors

**CT05** is the series of radiofrequency signal line protectors. CT05 truly protects highly sensitive RF devices against transient overvoltages with  $U_p < 45V$ . CT05 series has a replaceable surge module. Available for most applications and connectors: BNC, F, TV, TNC, N, UHF.



## CIRPROTEC SOLUTION

Cirprotec, a pioneer in the design and manufacture of lightning and surge protection devices, has developed a new catalogue of solutions for complete and comprehensive protection against **voltage surges** (SPD) and **power frequency overvoltages** (POP).

In this way, and true to its usual didactic line, Cirprotec expands its **wide range of catalogues with professional solutions**, with the goal of facilitating the choice of devices for proper protection, in compliance with the current legal framework.

Ask for Cirprotec catalogues with no commitment, or if you need personalised advice, contact our technical sales department or our network of distributors.



# Contents

## > CIRPROTEC

|                          |   |
|--------------------------|---|
| > Why <b>Cirprotec</b> ? | 7 |
|--------------------------|---|



## > THEORETICAL CONCEPTS

|   |    |
|---|----|
| > What are Overvoltages?  | 8  |
| > General operation and selection of a surge protector.....         | 10 |
| > Protection parameters for DIN rail SPDs to IEC 61643-1 .....      | 11 |
| Protector parameters .....  | 11 |
| Classification of protectors.....                                   | 11 |
| Selection of Up based on categories of equipment to be protected .  | 12 |
| Selection of Uc based on topology and nominal supply voltage .....  | 12 |
| > Protection parameters for NEMA TVSS devices to UL 1449 3rd Ed ... | 13 |
| Protector parameters .....  | 13 |
| Classification of protectors.....                                   | 13 |
| > Installation of a surge protector .....                           | 14 |
| Coordination of protectors .....                                    | 14 |
| Visual and remote end of life indication .....                      | 14 |
| Connection cabling .....  | 14 |
| Back-up fuses .....   | 15 |

## > QUICK SELECTION GUIDE of overvoltage protectors

### ELECTRICAL SUPPLY

|   |    |
|---|----|
| <b>SPD</b> devices to <b>IEC 61643-1</b> (DIN rail) ..... | 16 |
| <b>POP</b> devices to <b>EN 50550</b> (DIN rail) .....    | 17 |
| <b>TVSS</b> devices to <b>UL 1449 3rd Ed</b> (NEMA) ..... | 18 |



### TELECOM AND SIGNALLING NETWORKS

|   |    |
|---|----|
| <b>SPD</b> devices to <b>IEC 61643-21</b> ..... | 19 |
|---|----|

## > TECHNICAL CHARACTERISTICS by part number

### ELECTRICAL SUPPLY

|   |    |
|---|----|
| > Surge protectors (DIN rail SPD) .....                       | 20 |
| Class I and Class I+II lightning arresters .....              | 21 |
| Class II surge protectors .....                               | 23 |
| Class II+III and Class III surge protectors .....             | 26 |
| > Surge protectors (NEMA type TVSS) .....                     | 29 |
| Modular panel surge suppressors.....                          | 30 |
| Hardwired surge suppressors .....                             | 32 |
| > Power frequency overvoltage protectors (DIN rail POP) ..... | 33 |
| Combined overvoltage protector (SPD+POP) .....                | 34 |
| POP overvoltage protector (POP).....                          | 36 |



### TELECOM AND SIGNALLING NETWORKS

|  |    |
|--|----|
| > Telephone line surge protectors.....           | 39 |
| > Data Network surge protectors.....             | 40 |
| > Measurement and Control surge protectors ..... | 41 |
| > Radiofrequency surge protectors .....          | 42 |



## > ACCESSORIES

|  |    |
|--|----|
| > Replacement surge cartridges and modules ..... | 43 |
|--|----|



Electrical and electronic equipment is indispensable in the daily activities of today's businesses and individuals. Such devices are connected to the electricity grid, often exchanging data and signals through communication lines and are usually sensitive to disturbances. These interconnecting networks provide a propagation path for **overvoltages**.

Protection against lightning and overvoltages not only ensures the safety of people, goods and equipment, but also ensures continuity of installation services and meet criteria of **energy efficiency**. Overvoltage protection **extends the life of the equipment by more than 20%**, which significantly reduces the volume of electronic waste. It also reduces the power consumption of the installations, all of which translates into cost savings and environmental sustainability.

Standards committees and power generation companies, both in Spain and the rest of the world, have standardised the use of overvoltage protectors by adopting overvoltage standards and even mandatory private technical specifications.

**Cirprotec**, a pioneer in the design and manufacture of lightning and surge protection, has developed this new catalogue in order to facilitate the selection of the best protector for every need and application, based on features and technical parameters such as:

- Type of line to be protected**: electrical supply, telephone line, data line, radio frequency.
- Type of overvoltage**: transient and/or permanent overvoltages (TOV).
- Discharge capacity** of transient overvoltages.
- Standard**: IEC 61643 and UL 1449 3rd Ed.
- Protector format**: (monoblock, plug-in, DIN rail, NEMA, Schucko, etc.).
- Type of communications/data connector**.

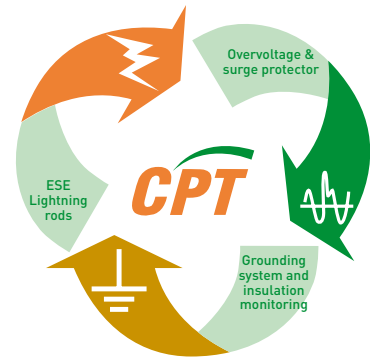
We hope this document will be useful for your projects and we appreciate the interest taken in our solutions.



# Why Cirprotec?

## Specialists in lightning and surge protection

Cirprotec (CPT) is a pioneer in the design and manufacture of lightning and surge protection devices. It has an extensive network of sales offices and is present in over 60 countries.



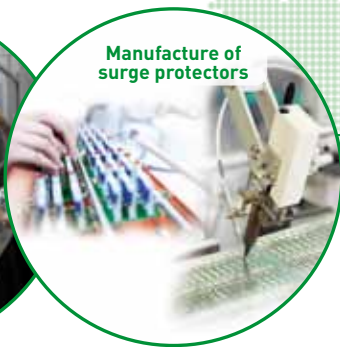
### Comprehensive solution: protection, control and safety

CPT offers a wide range of specific products to provide a solution for any type of need in the field of lightning and surge protection.

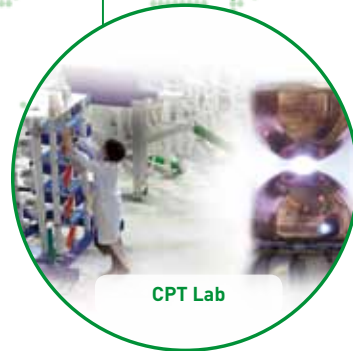
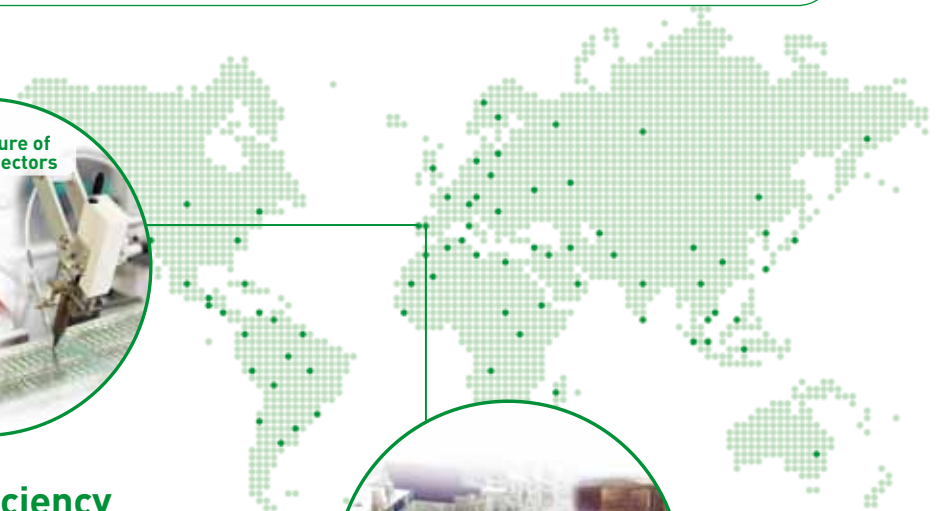
- Internal protection (surge and overvoltage protectors)
  - External protection (ESE lightning rods and Faradisation)
  - Grounding system and insulation monitors
- Design, technical consulting and training services



Manufacture of lightning rods



Manufacture of surge protectors



CPT Lab

## Innovation and energy efficiency

Cirprotec is committed to innovation: A highly specialised team, test laboratories, high investment in R&D&i, international patents and presence on standards committees. More efficient solutions to increase device lifetime and avoid excessive current consumption.

## Quality assurance

Cirprotec has a number of design, manufacturing and production centres and laboratories. Designed and manufactured entirely in Europe in accordance with local and international standards such as IEC, UNE, EN, NFC, VDE, UL, IEEE, always under the control of ISO 9001 quality assurance.



## What are overvoltages?

### Transient overvoltages (SPD)

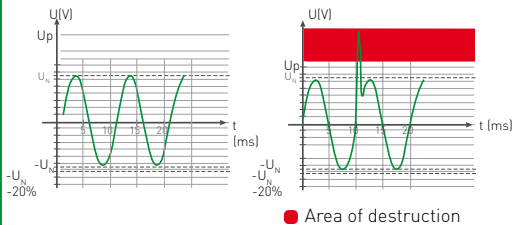
Transient overvoltages are surges that can reach tens of kilovolts with a duration of the order of microseconds. Despite their short duration, the high energy content can cause serious problems to equipment connected to the line, from premature aging to destruction, causing disruptions to service and financial loss.

This type of surge can have various different causes, including atmospheric lightning directly striking the external protection (lightning rods) on a building or transmission line or the associated induction of electromagnetic fields on metallic conductors. Outdoor and longer lines are the most exposed to these fields, which often receive high levels of induction. It is also common for non-weather phenomena, such as transformer centre switching or the disconnection of motors or other inductive loads to cause voltage spikes in adjacent lines.

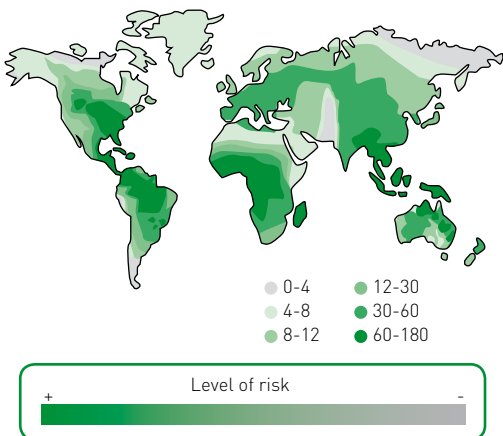
Transient overvoltages do not occur solely in power distribution lines, but are also common in any line formed by metal conductors, such as telephony, communications, measurement and data.

In all these networks, transient overvoltage protection is achieved by installing the protector or line discharger on the vulnerable line, connecting it in parallel between the line and earth. This means that in the event of a transient overvoltage, the protector will discharge excess energy to earth, thus limiting the peak voltage to a value acceptable for the electrical equipment connected.

When the peak voltage reaches a value higher than the equipment can withstand, it causes its destruction (red area).



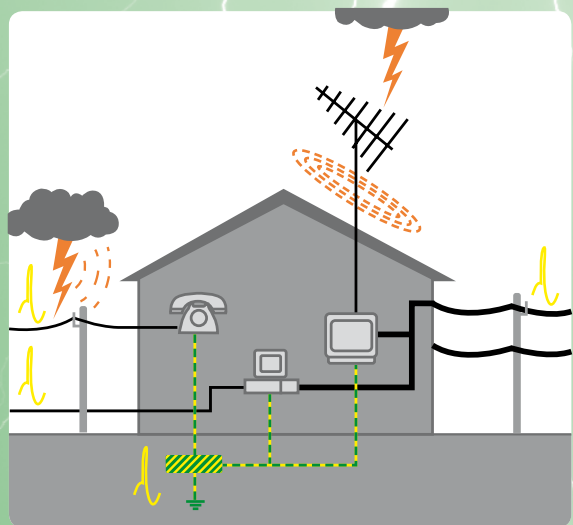
Isokeraunic map. Density of lightning strikes on the ground  $N_g$  (strikes/year · km<sup>2</sup>).



### Why protect?

Transient overvoltages are surges that reach values of tens of kilovolts with a duration of the order of microseconds. Despite their short duration, they cause the destruction of equipment connected to the network, causing:

- Serious damage or destruction.
- Service interruption.

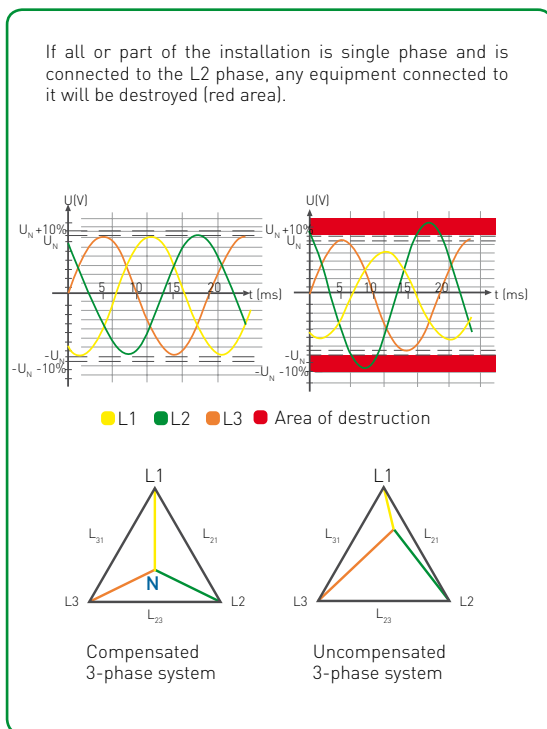




## Power frequency overvoltages (POP)\*\*

Besides the phenomenon of transient overvoltages, which may affect any type of conductor, electric transmission lines can transmit another type of overvoltage, known as power frequency overvoltages. These are considered to be any voltage increase above 10% of the effective nominal value for an indefinite period. POP overvoltages are caused by problems in the electricity distribution network or, more commonly, by bad connections or breakage of the neutral conductor.

Most electric distribution systems in the world use a neutral conductor, usually grounded, which acts as a reference for the phase voltages. The return current through this conductor allows the effective voltage between each phase and neutral (line-to-neutral voltage) to remain constant. Therefore, if this conductor should break, the line-to-neutral voltage would become decompensated; the voltage received by any installation connected between phase and neutral is floating and depends on the load imbalance in the three-phase network. An increase in effective voltage may lead to the premature aging of receivers, current consumption excess or even destruction, with the resulting fire risk.

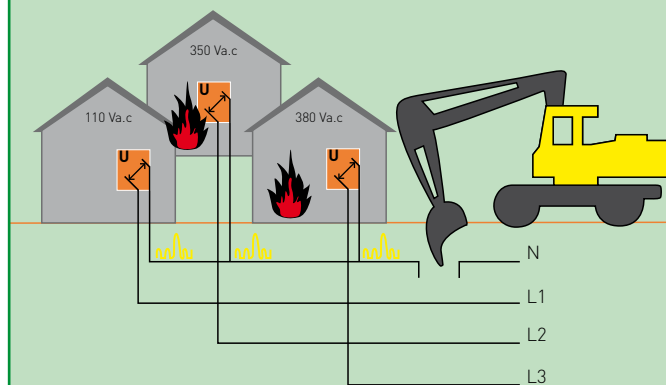


## Why protect?

POP overvoltages are voltage increases of greater than 10% of the nominal voltage for an indefinite period. Supplying equipment with a voltage higher than that for which it has been designed can lead to:

- Equipment overheating.
- Reduction of product lifetime.
- Fires.
- Destruction of equipment.
- Service interruption.

The use of these protectors is essential in areas where there are **fluctuations in the value of the supply voltage**



\*\* Power frequency overvoltages = TOV (temporary overvoltages)  
= Permanent overvoltages

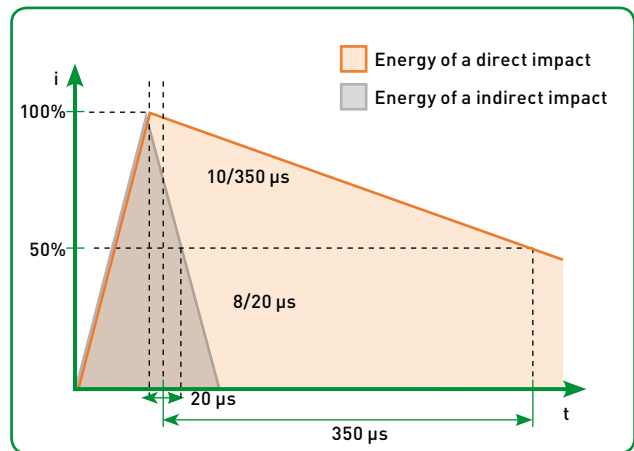
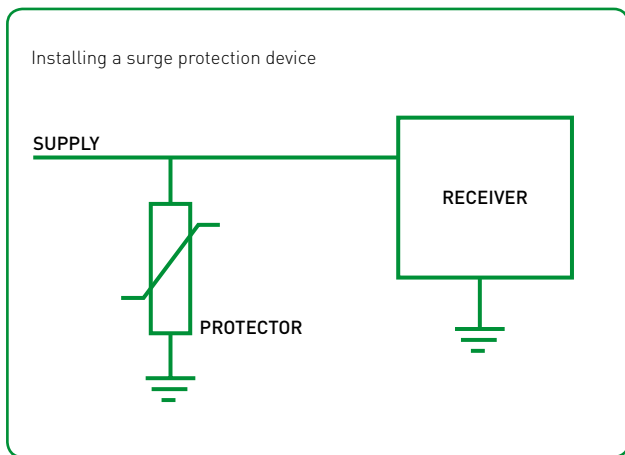
# General operation and selection

## General operation of a protector

A transient overvoltage 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.

By contrast, when the supply voltage is higher than the activation voltage, the protector acts as an element with an impedance close to zero, leading the overvoltage to earth and preventing it from affecting the receivers.

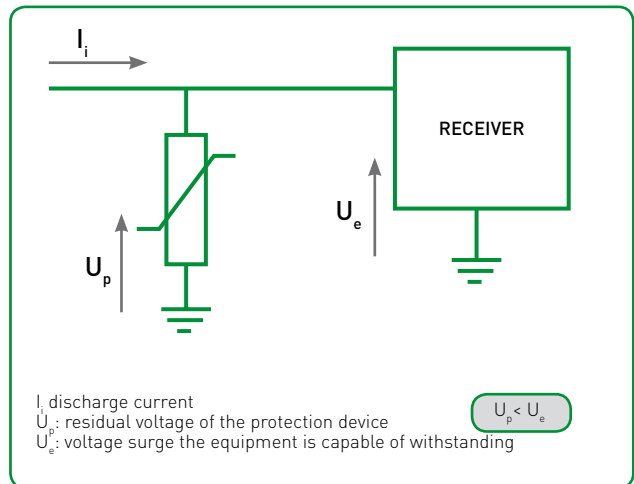
currents generated which the protector must be able to discharge are of lower intensity and duration. In any case, the voltage peaks may be in excess of one kV per metre of conductor at a distance of up to 100 metres. It can be seen from the figure that, even at the same current level, the amount of energy below the 10/350 curve (direct strike) is much more destructive than below the 8/20 curve (indirect strike).



## Selecting a protector

In selecting a surge protective device, the **network topology and the nominal voltage of the electrical supply** must be considered. In addition to the polarity of the protection, these features will condition the maximum continuous operating voltage and the safety margin of the device above the nominal voltage.

On the other hand, depending on the exposure of **the installation to the effects of lightning and transient overvoltages**, protection devices with different discharge capacities will be needed.



In this sense a first distinction is usually made between the direct impact of lightning (conduction) and its indirect impact (electromagnetic induction). When there is a **risk of direct discharge**, and in particular whenever the installation is fitted with an external lightning protection system, the surge protector must be capable of discharging a high energy surge and avoiding the effect of peak voltages of tens of kV. However, when the **risk is of voltages induced by the indirect impact of a nearby lightning strike**, the

Generally, **the optimal system of protection is the staggered or cascade type**, in which successive stages are combined in the performance of high discharge capacity devices and devices with a low voltage protection level.

The various national and international standards classify devices into types or categories based on their discharge capacity and voltage protection level..

## Protection parameters according to IEC 61643-1

### Protector parameters



#### Up

##### LEVEL OF PROTECTION

Maximum residual voltage between the terminals of the protection device during the application of a peak current.

#### In

##### NOMINAL CURRENT

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

#### Imax

##### MAXIMUM DISCHARGE CURRENT

Peak current with 8/20  $\mu$ s waveform which the protection device can withstand without reaching end of life.

#### Uc

##### MAXIMUM CONTINUOUS OPERATING VOLTAGE

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

#### Iimp

##### IMPULSE CURRENT

Peak current with 10/350  $\mu$ s waveform which the protection device can withstand without reaching end of life.

### Classification of protectors

Protection devices are classified into Classes according to discharge capacity:



#### Class I

Tested with a 10/350  $\mu$ 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  $U_p$  (voltage protection level). Must be accompanied by downstream Class II 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.

#### Class II

Tested with a 8/20  $\mu$ 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.

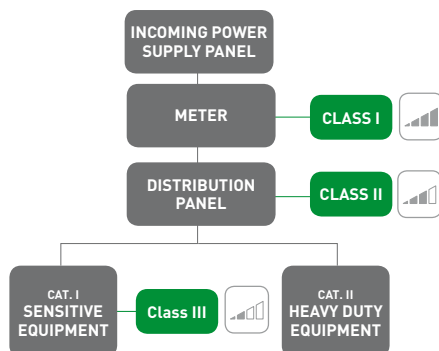
Ability to discharge high currents to earth, providing a medium  $U_p$  (voltage protection level). Designed for use in distribution panels located downstream of Class I protectors or in incoming power supply panels in areas with low exposure to lightning strikes.

#### Class III

Tested with a combined 1.2/50  $\mu$ s - 8/20  $\mu$ 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  $U_p$  (voltage protection level). Always installed downstream of a Class II protection designed to protect sensitive equipment or equipment located more than 20m downstream of the Class II device.

Example of installation with the 3 Classes of protector



The technology can provide protection solutions that combine different types of protection: Class I+II and Class II+III.

## Selection of $U_p$ based on the category of equipment to be protected

The protection device should be selected so that the voltage protection level ( $U_p$ ) is compatible with (lower than) the value of the maximum voltage withstood by the equipment to be protected ( $U_e$ ). For the purposes of standardising design criteria and selection of protection devices, IEC standard 60364-4-443 classifies equipment into four categories, based on the impulse voltage they are capable of withstanding.

| Nominal installation voltage V | Required impulse voltage withstand for kV                                  |  |   |   |
|--------------------------------|--|--|---|---|
|                                | Equipment at the origin of the installation (withstands Category IV surge) | Distribution and final circuit equipment (withstands Category III overvoltage) | Appliances (withstands Category II overvoltage) | Specially protected equipment (withstands Category I overvoltage) |
| 120-230                        | 4  | 2.5  | 1.5   | 0.8   |
| 230/400 277/480                | 6  | 4  | 2.5   | 1.5   |
| 400/690                        | 8  | 6  | 4   | 2.5   |
| 1000                           | 12   | 8  | 6   | 4   |

## Selection of $U_c$ based on the topology and the nominal supply voltage

The maximum continuous operating voltage ( $U_c$ ) of a protection device should provide a safety margin above the nominal voltage of the supply in which it is installed. Supply network topology will also influence the selection, depending on this parameter. IEC standard 60364-5-534 sets the minimum allowed value of  $U_c$  depending on the system configuration.

| Protectors connected between          | Supply grounding arrangement |                |   |  |
|---------------------------------------|------------------------------|----------------|---|--|
|                                       | TN arrangement               | TT arrangement | IT arrangement with distributed neutral | IT arrangement without distributed neutral |
| Phase conductor and neutral conductor | $1.1 U_0$                    | $1.1 U_0$      | $1.1 U_0$                               | N/A  |
| Phase conductor and PE conductor      | $1.1 U_0$                    | $1.1 U_0$      | U                                       | $1.1 \times U$                             |
| Neutral conductor and PE conductor    | $U_0^a$                      | $U_0^a$        | $U_0^a$                                 | N/A  |
| Phase conductor and PEN conductor     | $1.1 U_0$                    | N/A            | N/A                                     | N/A  |
| Phase conductors                      | $1.1 U$                      | $1.1 U$        | $1.1 U$                                 | $1.1 U$                                    |

N/A: Not Applicable

NOTE 1:  $U_0$  is the phase to neutral voltage of the low voltage supply

NOTE 2: U is the voltage between phases of the low voltage supply

NOTE 3: This table refers to EN standard 61643 1

<sup>a</sup>These values refer to the most unfavourable conditions of the defect, so do not take into account the 10% safety margin

## Protection parameters according to UL 1449 3rd Ed

### Protector parameters



#### VPR

##### VOLTAGE PROTECTION RATING

Indicates the maximum value of residual voltage across the terminals of the protection device during the application of peak current.

#### MCOV

##### MAXIMUM CONTINUOUS OPERATING VOLTAGE

Indicates the maximum effective voltage that can be applied permanently to the terminals of the protection device.

#### In

##### NOMINAL CURRENT

Peak current with 8/20  $\mu$ s waveform which the protection device can withstand 15 times without reaching end of life.

#### I<sub>max</sub>

##### MAXIMUM DISCHARGE CURRENT

Maximum peak current, per phase, with 8/20  $\mu$ s waveform which the protection device can withstand.

### Classification of protectors

There are two different protector classifications: according to UL1449 3rd Ed. and according to the C62.41.2-2002 IEEE guide.



#### UL 1449 3rd Ed.:

##### Type 1:

Permanently connected, designed to be installed between the service transformer station and the line (adjacent to the overvoltage device), as well as on the load side or meters.

##### Type 2:

Permanently connected, to the service load side, in distribution panels.

##### Type 3:

"Cord-connected" or "direct plug-in", installed adjacent to the equipment to be protected (about 10 meters from the service panel)

#### IEEE C62.41.2-2002:

##### Location Category C:

Subject to external transients of atmospheric origin, network switching by the power company and nearby industries, and faults in the distribution system.

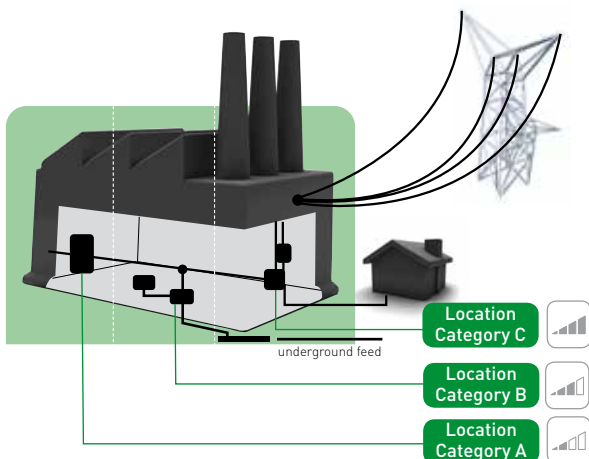
##### Location Category B:

Subject to externally generated transients as well as switching and transients in the form of a "ring wave" of internal origin. These can be caused by equipment such as motors and production and office equipment.

##### Location Category A:

Subject to a high level of switching transients and "ring waves" caused by commercial, industrial and office equipment, etc.

Example of a 3-step solution



| IEEE C62.41 Location | Level of exposure | Type as per UL 1449 | I <sub>max</sub> kA |
|----------------------|-------------------|---------------------|---------------------|
| C                    | Highest           | 1 and 2             | 240 kA              |
| C                    | Very high         | 1 and 2             | 200 kA              |
| B                    | Medium-high       | 2                   | 160 kA              |
| B                    | Medium            | 2                   | 100 kA              |
| A                    | Medium-low        | 2 and 3             | 80 kA               |
| A                    | Low               | 2 and 3             | 40 kA               |

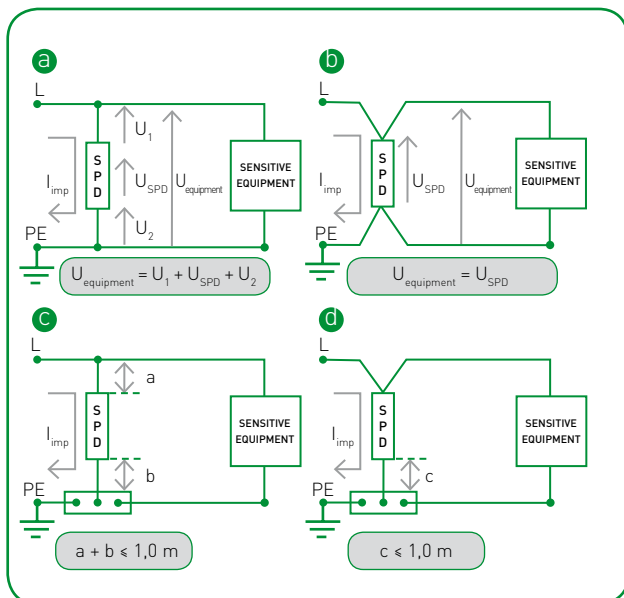
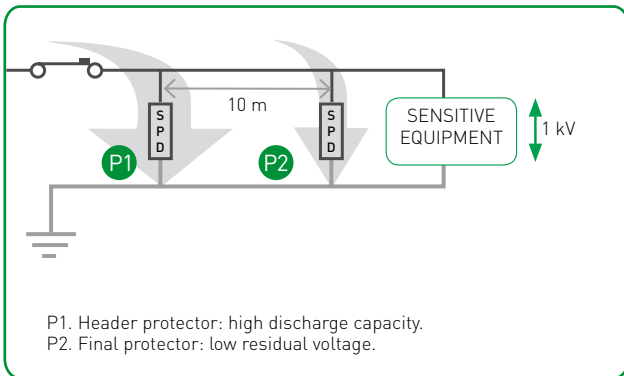
# Installation of a Surge Protector

## Coordination of protectors

Many facilities need more than one protection step. This achieves higher discharge capacity while ensuring a lower residual voltage.

To achieve the coordinated actuation of protection stages based on different technologies, a minimum clearance of 10 m must be maintained between protection devices. This ensures that the first step of protection (P1) is activated first and discharges the majority of the energy. The second step (P2) will subsequently perform the function of reducing the residual voltage at the output of the first protection device.

In panels in which the two protection steps are centralised and there is no 10 m clearance, combined protection devices must be used or decoupling coils must be fitted to simulate the cable clearance.



## Indication of end of life of the protection device

### Visual indication

Models with visual indication feature a viewer on the front for local end-of-life signalling of the protection device.

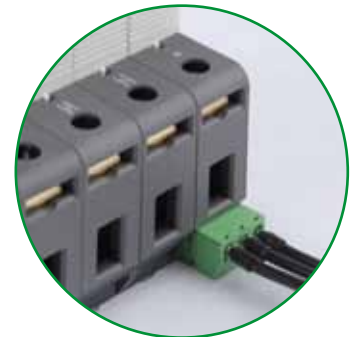


Visual diagnosis of the % of protection available for each mode, in this case 66%.

No signal or green colour: **Protector OK**  
Red signal: **End of life**

### Remote indication

Models with remote indication (IR) have a dry contact for remote signalling of the protector end of life.



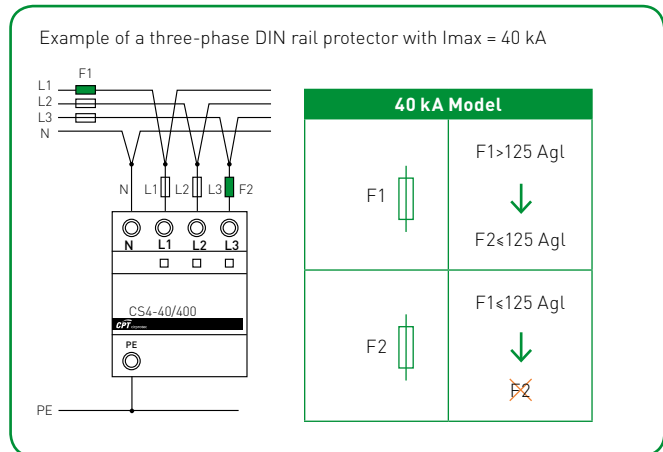
## Connection cabling

The length and type of cabling are critical for minimising the voltage received by the equipment. Increasing the length of the feed cables to the protection device reduces the effectiveness of overvoltage protection (Figure a). For optimum protection, these conductors should be as short as possible. The performance of a V-cable at the input and/or output device can help reduce this effect (Figure b).

The IEC installation directive requires that lengths a+b (Figure c) and c (Figure d) should preferably not exceed 0.5 m, and in no case should exceed 1 m.

## Back-up fuses

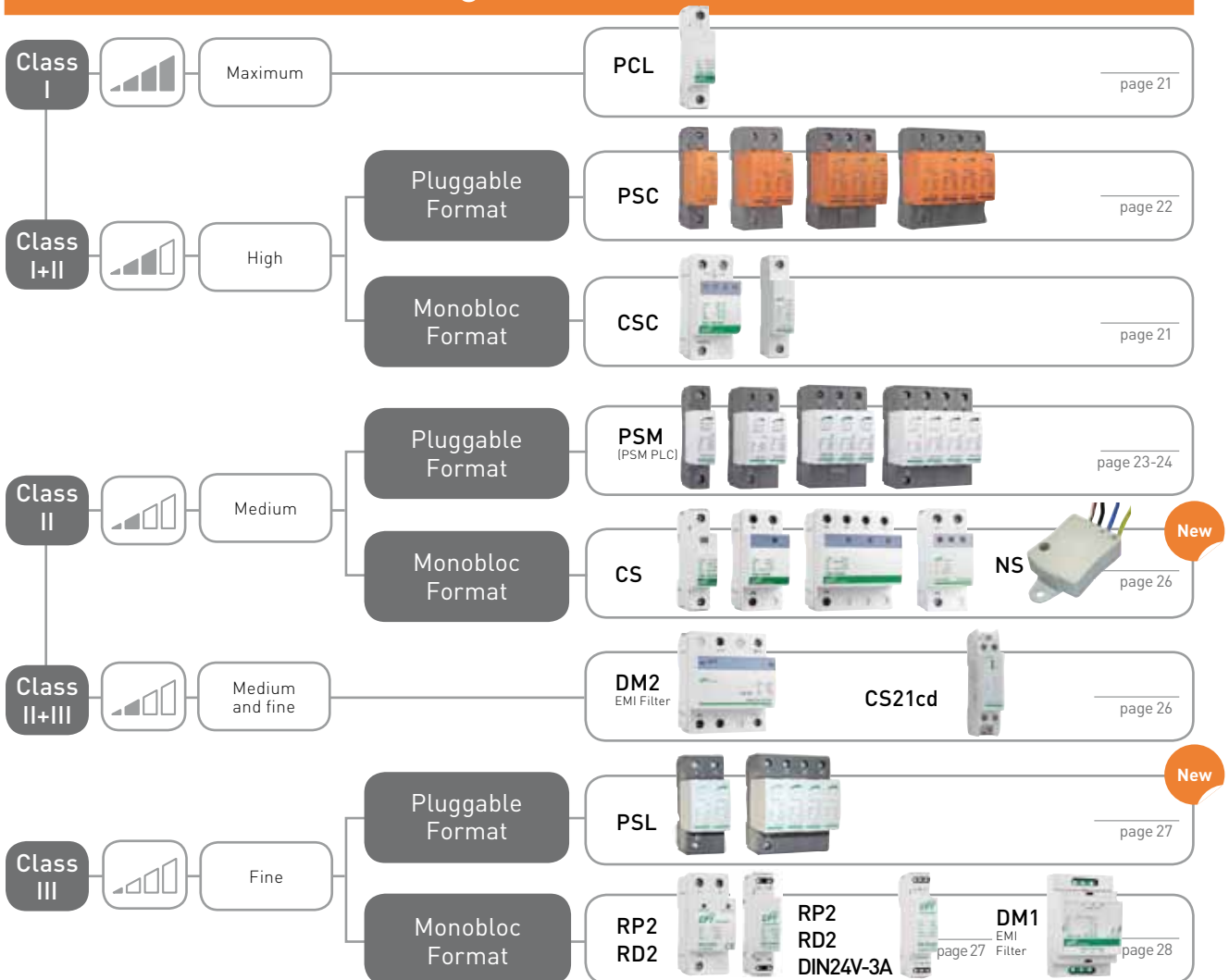
Surge protection devices are connected downstream of a circuit breaker or fuse (F1), in parallel with the installation to be protected. Depending on the size of the fuse, it may be necessary to install an additional disconnection element F2 (circuit breaker or fuse). Specifically, the installation of the F2 element is compulsory where the calibre of F1 is higher than a certain value. This value is different for each protector and is specified in its technical documentation.



## Electrical Supply



### Transient Overvoltages (according to IEC standard 61643-1)

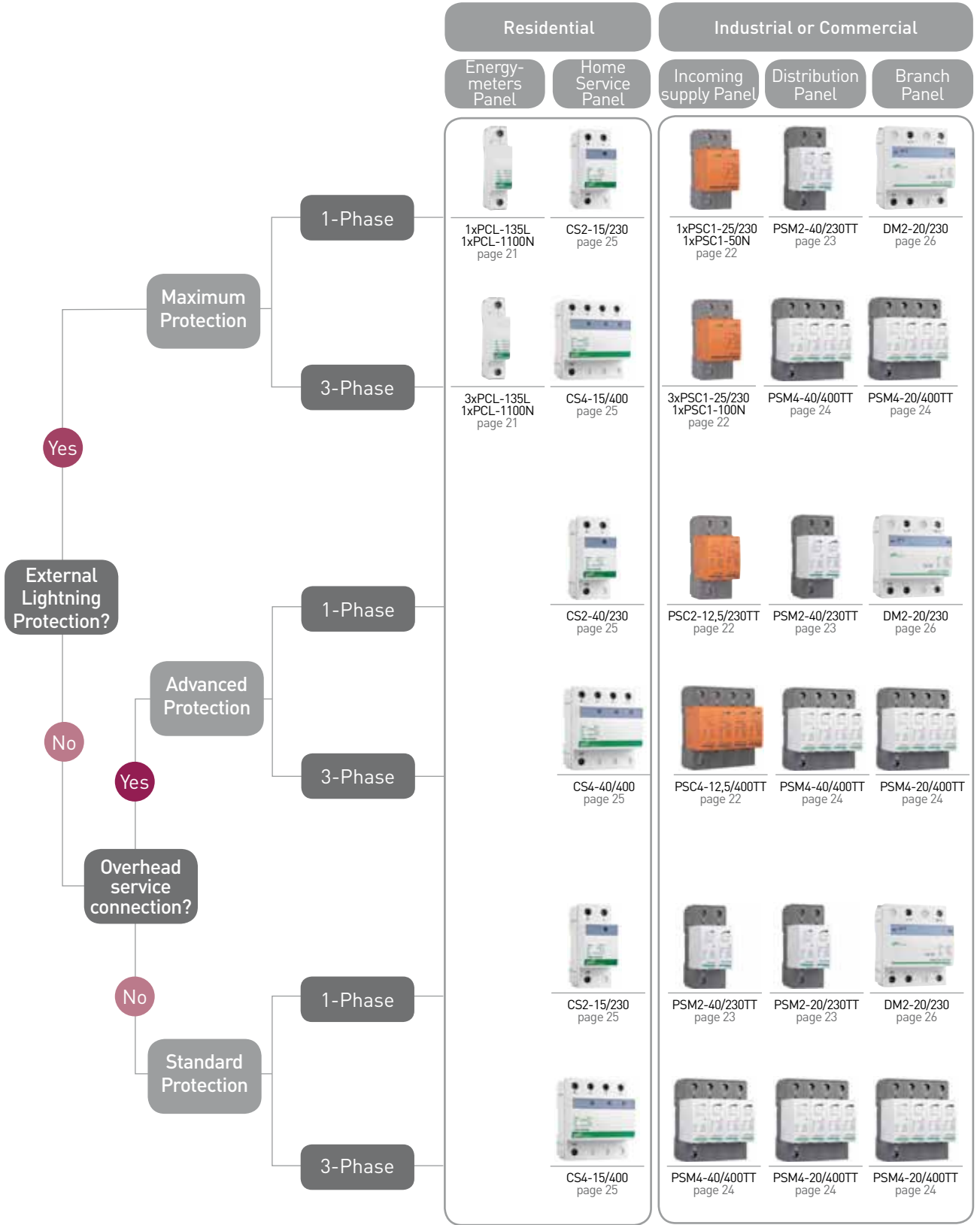


Discharge capacity

## Electrical Supply



### Transient Overvoltages (according to IEC standard 61643-1)



Note: indicative selection guide for TT network configurations. See pages 20-28 for other networks and voltages as well as for fine protection devices (Class III SPDs)



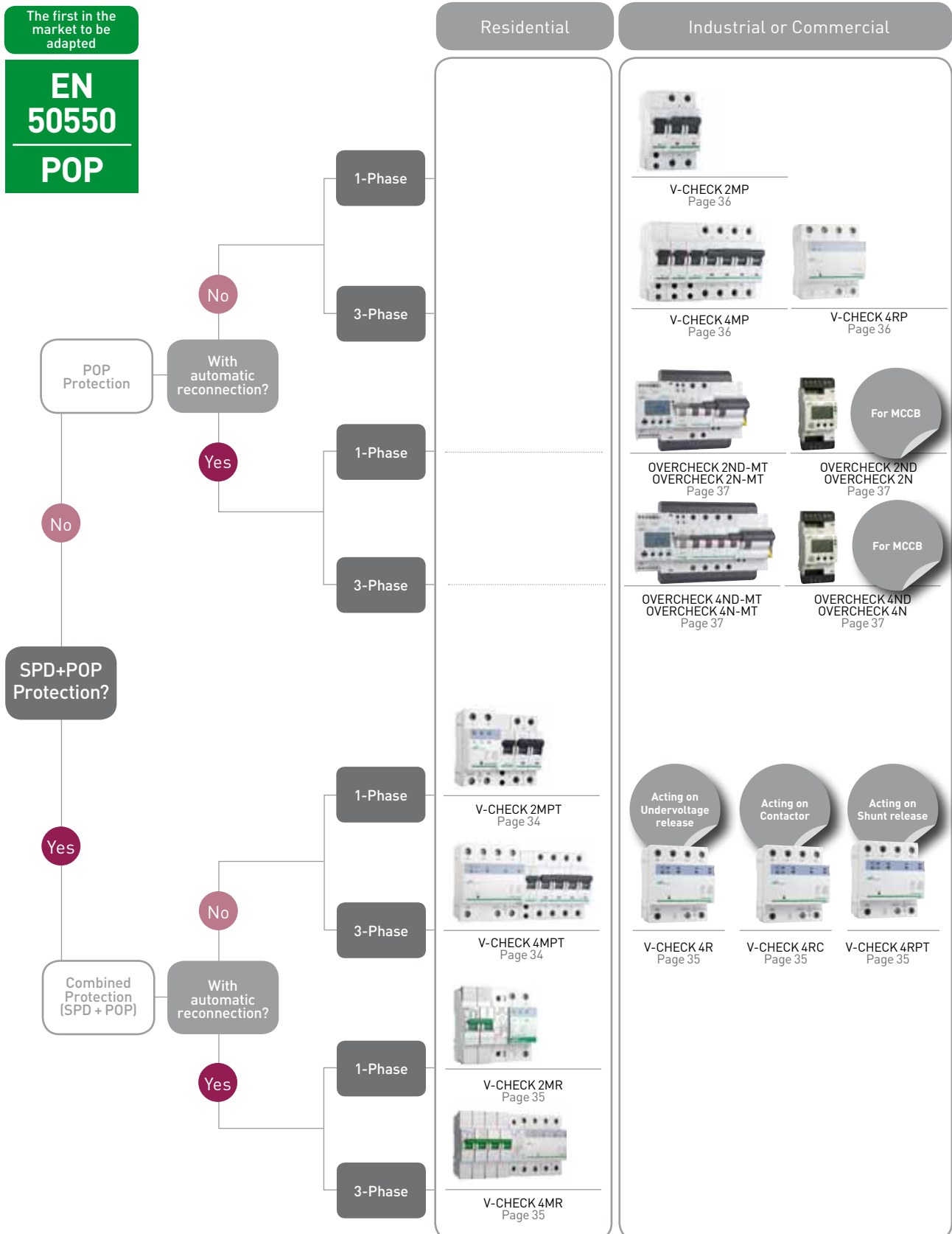
## Electrical Supply



### Combined Protection (Transient + Power frequency) (according to EN 50550)

The first in the market to be adapted

**EN 50550 POP**

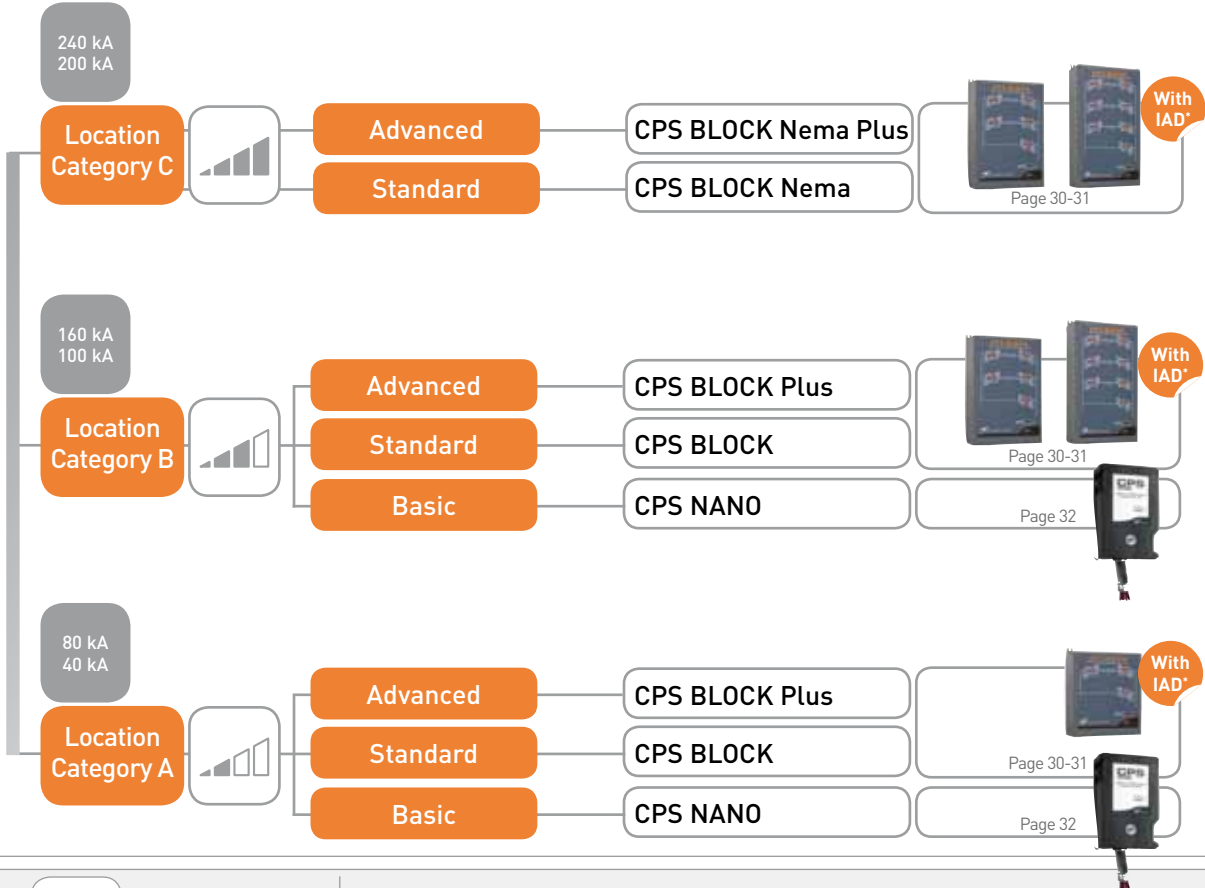


## Electrical Supply



### Transient Voltage Surges (Protection against Transients UL 1449 3rd Ed)

In accordance with ANSI/IEEE C62.41-2002 the table suggests the CPS series models suitable for various levels of exposure.

























Discharge capacity

\*IAD: Intelligent Aging Display (Remaining % of protection in each mode).

## Telecom and Signalling Networks



### Transient Overvoltages (according to IEC standard 61643-1)

| Application             | Signal type                     | Protector format    | CPT Model | CPT Protector   |   |
|-------------------------|---------------------------------|---------------------|-----------|---|---|
| Telephone lines         | <b>ADSL Telephony</b>           | DIN                 | DIN-ADSL  |      |   |
|                         |                                 | Krone               | KPL1      |   |   |
|                         |                                 | R&M                 | TPL1      |   |   |
|                         |                                 | Aerial              | MCH       |   |   |
|                         | <b>ISDN Telephony</b>           | Aerial              |           |   |   |
|                         | <b>PP Telephony</b>             | Aerial              |           |   |   |
| Data networks           | <b>Ethernet Cat 5e</b>          | DIN                 | DIN-PP    | DIN ADSL<br>page 40   |   |
|                         |                                 | rack 18 poles       | NETPRO    | MCH-RDSI<br>page 40   |   |
|                         |                                 | rack 24 poles       |           | KPL1<br>page 40   |   |
|                         |                                 |                     |           |   |   |
|                         | <b>Ethernet Cat 6</b>           | 1 pole              |           |     |   |
|                         |                                 | rack 18 poles       |           | NETPRO 100 BT<br>page 40  |   |
|                         |                                 | rack 24 poles       |           | NETPRO CG-1P M<br>page 40   |   |
|                         | <b>Power over Ethernet, POE</b> | 1 pole              |           | NETPRO CG-24P [CAT6]<br>page 40   |   |
| Measurement and control | <b>Device NET</b>               | DIN                 | DIN 6V    |    |   |
|                         | <b>KNX-Bus</b>                  | DIN                 | DIN 150V  |   | BNV30<br>page 41  |
|                         |                                 |                     |           |   |   |
|                         | <b>Modbus</b>                   | DIN                 | DIN 6V    |    |   |
|                         | <b>Profibus PA</b>              | DIN                 | DIN 24V   |   | DIN 12V-2C<br>page 41   |
|                         |                                 |                     |           |   |   |
|                         |                                 |                     | Sub-D 9   | DB  |   |
|                         | <b>RS 232</b>                   | DIN                 | DIN 12V   |     |   |
|                         |                                 |                     |           |   | DB25-V35HS<br>page 42   |
|                         |                                 |                     |           |   | DB9 12V/9HS<br>page 42  |
|                         |                                 |                     |           |   |   |
|                         |                                 | <b>RS 485 / 422</b> | DIN       | DIN 485   |  |
|                         |                                 |                     | DIN 24V   | DIN 24V-4G2<br>page 41  |   |
|                         |                                 |                     |           |   |   |
|                         | <b>4-20 mA</b>                  | DIN                 | DIN 12V   |    |   |
|                         |                                 |                     | DIN 24V   |   |   |
|                         |                                 |                     | BNV       |   |   |
|                         | <b>Binary signals</b>           | DIN                 | DIN 12V   |     |   |
|                         |                                 |                     | DIN 24V   |   | DIN 485-3<br>page 42  |
|                         |                                 |                     | BNV       |   | DIN 12V-8<br>page 41  |
|                         | <b>Temperature probe (PTC)</b>  | DIN                 | DIN 6V    |   |   |
| Radio frequency         | <b>Coaxial signal antennas</b>  | Coaxial             | CT 10     |         |   |
|                         | <b>CCTV</b>                     | Coaxial             | CT 05     |   | NW TV TNC N BNC UHF F CCTV<br>page 42   |



See pages 40-42 for product part numbers and selection parameters.

IEC  
61643-1  
(SPD)

## Low Voltage Electrical Supply Transient Overvoltages to IEC 61643-1

Class I



page 21

Class I+II



page 22

Class II



page 23

Class II+III



page 26

Class III



page 27

## Electrical Supply . Transient Overvoltages

### Lightning Current Arresters | Class I



#### PCL Range | Monobloc format



PCL-135L



CPCL-1100 TF

| No. Prot. Poles | No. DIN modules | Un        | Iimp                         | In  | Up     | Icc   | I <sub>fi</sub>              | Code     | Part number  |
|-----------------|-----------------|-----------|------------------------------|---|--------|-------|------------------------------|----------|--------------|
| 1P              | 1               | 230 V     | 35 kA                        | 35 kA                                       | < 4 kV | 25 kA | 1,5 kA                       | 77739600 | PCL-135L     |
| N               | 1               | -         | 100 kA                       | 100 kA (8/20)                               | < 4 kV | -     | 100 A                        | 77739700 | PCL-1100N    |
| -               | 1               | -         | -                            | -   | -      | -     | -                            | 77739710 | PCL-BP       |
| 1P+N            | panel           | 230 V     | 35 kA (L-N)<br>100 kA (N-PE) | 35 kA (8/20) (L-N);<br>100 kA (8/20) (N-PE) | < 4 kV | -     | 1,5 kA (L-N)<br>100 A (N-PE) | 7772050  | CPCL-1100 MF |
| 3P+N            | panel           | 230/400 V | 35 kA (L-N)<br>100 kA (N-PE) | 35 kA (8/20) (L-N);<br>100 kA (8/20) (N-PE) | < 4 kV | -     | 1,5 kA (L-N)<br>100 A (N-PE) | 7772100  | CPCL-1100 TF |

### Lightning Current and Surge Arresters | Class I+II



#### CSC Range | Monobloc format



CSC1-15/230

| No. Prot. Poles | No. DIN modules | Un      | I <sub>max</sub> | I <sub>imp</sub> | In    | Up       | Icc   | IR | Network          | Code     | Part number     |
|-----------------|-----------------|---------|------------------|------------------|-------|----------|-------|----|------------------|----------|-----------------|
| 1P              | 1               | 120 V   | 65 kA            | 7,5 kA           | 20 kA | ≤ 0,9 kV | 25 kA |    | TT, TNS, TNC     | 77738700 | CSC1-7,5/120    |
|                 | 1               | 120 V   | 65 kA            | 7,5 kA           | 20 kA | ≤ 0,9 kV | 25 kA | ✓  | TT, TNS, TNC     | 77738701 | CSC1-7,5/120 IR |
|                 | 1               | 230 V   | 65 kA            | 7,5 kA           | 20 kA | ≤ 1,5 kV | 25 kA |    | TT, TNS, TNC     | 77738702 | CSC1-7,5/230    |
|                 | 1               | 230 V   | 65 kA            | 7,5 kA           | 20 kA | ≤ 1,5 kV | 25 kA | ✓  | TT, TNS, TNC     | 77738703 | CSC1-7,5/230 IR |
|                 | 2               | 120 V   | 100 kA           | 15 kA            | 30 kA | ≤ 0,9 kV | 25 kA |    | TT, TNS, TNC     | 77738710 | CSC1-15/120*    |
|                 | 2               | 120 V   | 100 kA           | 15 kA            | 30 kA | ≤ 0,9 kV | 25 kA | ✓  | TT, TNS, TNC     | 77738711 | CSC1-15/120 IR* |
|                 | 2               | 230 V   | 100 kA           | 15 kA            | 30 kA | ≤ 1,3 kV | 25 kA |    | TT, TNS, TNC     | 77738712 | CSC1-15/230*    |
|                 | 2               | 230 V   | 100 kA           | 15 kA            | 30 kA | ≤ 1,3 kV | 25 kA | ✓  | TT, TNS, TNC     | 77738713 | CSC1-15/230 IR* |
|                 | 2               | 400 V   | 100 kA           |                  | 30 kA | ≤ 1,9 kV | 25 kA |    | TT, TNS, TNC     | 77738716 | CSC1-15/400*    |
|                 | 2               | 400 V   | 100 kA           |                  | 30 kA | ≤ 1,9 kV | 25 kA | ✓  | TT, TNS, TNC     | 77738717 | CSC1-15/400 IR* |
| N               | 1               | neutral | 65 kA            | 15 kA            | 20 kA | ≤ 1,5 kV | 25 kA |    | IT, TT, TNS, TNC | 77738706 | CSC1-15N        |
|                 | 2               | neutral | 100kA            | 30kA             | 65kA  | ≤ 1,5kV  | 25 kA |    | IT, TT, TNS, TNC | 77738718 | CSC1-30N*       |



*\*CSC1-15 protectors are direct equivalents of former CS1-100 models*

## Lightning Current and Surge Arresters | Class I+II



### PSC Range | Pluggable format

Spares \*

| No. Prot. Poles | No. DIN modules | Un | Imax     | Iimp   | In                            | Up                          | Icc                               | IR    | Network | Code             | Part number | Spares *              |     |     |
|-----------------|-----------------|----|----------|--------|-------------------------------|-----------------------------|-----------------------------------|-------|---------|------------------|-------------|-----------------------|-----|-----|
|                 |                 |    |          |        |                               |                             |                                   |       |         |                  |             | L                     | N   |     |
|                 | 1P              | 1  | 120V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1 kV                            | 25 kA |         | TT, TNS, TNC     | 77738100    | PSC1-12,5/120         | C01 |     |
|                 |                 | 1  | 120V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1 kV                            | 25 kA | ✓       | TT, TNS, TNC     | 77738101    | PSC1-12,5/120IR       | C01 |     |
|                 |                 | 1  | 230V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,3 kV                          | 25 kA |         | IT, TT, TNS, TNC | 77738105    | PSC1-12,5/230         | C02 |     |
|                 |                 | 1  | 230V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,3 kV                          | 25 kA | ✓       | IT, TT, TNS, TNC | 77738106    | PSC1-12,5/230IR       | C02 |     |
|                 |                 | 1  | 400V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,8 kV                          | 25 kA |         | IT, TT, TNS, TNC | 77738110    | PSC1-12,5/400         | C03 |     |
|                 |                 | 1  | 400V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,8 kV                          | 25 kA | ✓       | IT, TT, TNS, TNC | 77738111    | PSC1-12,5/400IR       | C03 |     |
|                 |                 | 2  | 120V     | 100 kA | 25 kA                         | 25 kA                       | ≤ 1,2 kV                          | 25 kA |         | TT, TNS, TNC     | 77738120    | PSC1-25/120           | C04 |     |
|                 |                 | 2  | 120V     | 100 kA | 25 kA                         | 25 kA                       | ≤ 1,2 kV                          | 25 kA | ✓       | TT, TNS, TNC     | 77738121    | PSC1-25/120 IR        | C04 |     |
|                 |                 | 2  | 230V     | 100 kA | 25 kA                         | 25 kA                       | ≤ 1,5 kV                          | 25 kA |         | IT, TT, TNS, TNC | 77738125    | PSC1-25/230           | C05 |     |
|                 |                 | 2  | 230V     | 100 kA | 25 kA                         | 25 kA                       | ≤ 1,5 kV                          | 25 kA | ✓       | IT, TT, TNS, TNC | 77738126    | PSC1-25/230 IR        | C05 |     |
|                 | N               | 1  | neutral  | 65 kA  | 25 kA                         | 25 kA                       | ≤ 1,5 kV                          | 25 kA |         | TT, TNS          | 77738180    | PSC1-25N              | C07 |     |
|                 |                 | 1  | neutral  | 65 kA  | 50 kA                         | 50 kA                       | ≤ 1,5 kV                          | 25 kA |         | TT, TNS          | 77738182    | PSC1-50N              | C08 |     |
|                 |                 | 2  | neutral  | 100 kA | 100 kA                        | 50 kA                       | ≤ 1,5 kV                          | 25 kA |         | TT, TNS          | 77738183    | PSC1-100N             | C09 |     |
|                 | P+N             | 2  | 120V     | 65 kA  | 12,5 kA (L-N)<br>25 kA (N-PE) | 20 kA                       | ≤ 1 kV (L-N)<br>≤ 1,5 kV (N-PE)   | 25 kA |         | TT, TNS          | 77738200    | PSC2-12,5/120TT       | C01 | C07 |
|                 |                 | 2  | 120V     | 65 kA  | 12,5 kA (L-N)<br>25 kA (N-PE) | 20 kA                       | ≤ 1 kV (L-N)<br>≤ 1,5 kV (N-PE)   | 25 kA | ✓       | TT, TNS          | 77738201    | PSC2-12,5/120TTIR     | C01 | C07 |
|                 |                 | 2  | 230V     | 65 kA  | 12,5 kA (L-N)<br>25 kA (N-PE) | 20 kA                       | ≤ 1,3 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |         | TT, TNS          | 77738205    | PSC2-12,5/230TT       | C02 | C07 |
|                 | 2P              | 2  | 120V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1 kV (L-PE)                     | 25 kA |         | TT, TNS          | 77738250    | PSC2-12,5/120 TNS     | C01 |     |
|                 |                 | 2  | 120V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1 kV (L-PE)                     | 25 kA | ✓       | TT, TNS          | 77738251    | PSC2-12,5/120 TNSIR   | C01 |     |
|                 |                 | 2  | 230V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,3 kV (L-PE)                   | 25 kA |         | TT, TNS          | 77738255    | PSC2-12,5/230 TNS     | C02 |     |
|                 |                 | 2  | 230V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,3 kV (L-PE)                   | 25 kA | ✓       | TT, TNS          | 77738256    | PSC2-12,5/230 TNSIR   | C02 |     |
|                 | L+ / L-         | 3  | 600Vdc   | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 2,6 kV                          | 25 kA |         | ⚙ PV             | 77738370    | PSC3-12,5/600PV***    | C10 |     |
|                 |                 | 3  | 600Vdc   | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 2,6 kV                          | 25 kA | ✓       | ⚙ PV             | 77738371    | PSC3-12,5/600PVIR***  | C10 |     |
|                 |                 | 3  | 1000Vdc  | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 3,6 kV                          | 25 kA |         | ⚙ PV             | 77738375    | PSC3-12,5/1000PV***   | C11 |     |
|                 |                 | 3  | 1000Vdc  | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 3,6 kV                          | 25 kA | ✓       | ⚙ PV             | 77738376    | PSC3-12,5/1000PVIR*** | C11 |     |
|                 | 3P              | 3  | 230V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1 kV (L-PE)                     | 25 kA |         | TNC              | 77738320    | PSC3-12,5/230 TNC     | C01 |     |
|                 |                 | 3  | 230V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1 kV (L-PE)                     | 25 kA | ✓       | TNC              | 77738321    | PSC3-12,5/230 TNCIR   | C01 |     |
|                 |                 | 3  | 400V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,3 kV (L-PE)                   | 25 kA |         | TNC              | 77738325    | PSC3-12,5/400 TNC     | C02 |     |
|                 |                 | 3  | 400V     | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,3 kV (L-PE)                   | 25 kA | ✓       | TNC              | 77738326    | PSC3-12,5/400 TNCIR   | C02 |     |
|                 | 3P+N            | 4  | 120/230V | 65 kA  | 12,5 kA (L-N)<br>50 kA (N-PE) | 20 kA (L-N)<br>50 kA (N-PE) | ≤ 1 kV (L-N)<br>≤ 1,5 kV (N-PE)   | 25 kA |         | TT, TNS          | 77738400    | PSC4-12,5/230 TT      | C01 | C08 |
|                 |                 | 4  | 120/230V | 65 kA  | 12,5 kA (L-N)<br>50 kA (N-PE) | 20 kA (L-N)<br>50 kA (N-PE) | ≤ 1 kV (L-N)<br>≤ 1,5 kV (N-PE)   | 25 kA | ✓       | TT, TNS          | 77738401    | PSC4-12,5/230 TTIR    | C01 | C08 |
|                 |                 | 4  | 230/400V | 65 kA  | 12,5 kA (L-N)<br>50 kA (N-PE) | 20 kA (L-N)<br>50 kA (N-PE) | ≤ 1,3 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |         | TT, TNS          | 77738405    | PSC4-12,5/400 TT      | C02 | C08 |
|                 |                 | 4  | 230/400V | 65 kA  | 12,5 kA (L-N)<br>50 kA (N-PE) | 20 kA (L-N)<br>50 kA (N-PE) | ≤ 1,3 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓       | TT, TNS          | 77738406    | PSC4-12,5/400 TTIR    | C02 | C08 |
|                 |                 | 8  | 230/400V | 100 kA | 25 kA (L-N)<br>100 kA (N-PE)  | 25 kA (L-N)<br>50 kA (N-PE) | ≤ 1,5 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |         | TT, TNS          | 77738425    | PSC4-25/400 TT        | C05 | C09 |
|                 |                 | 8  | 230/400V | 100 kA | 25 kA (L-N)<br>100 kA (N-PE)  | 25 kA (L-N)<br>50 kA (N-PE) | ≤ 1,5 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓       | TT, TNS          | 77738426    | PSC4-25/400 TT IR     | C05 | C09 |
|                 | 4P              | 4  | 120/230V | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1 kV (L-PE)                     | 25 kA |         | TT, TNS          | 77738450    | PSC4-12,5/230 TNS     | C01 |     |
|                 |                 | 4  | 120/230V | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1 kV (L-PE)                     | 25 kA | ✓       | TT, TNS          | 77738451    | PSC4-12,5/230 TNSIR   | C01 |     |
|                 |                 | 4  | 230/400V | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,3 kV (L-PE)                   | 25 kA |         | TT, TNS          | 77738455    | PSC4-12,5/400 TNS     | C02 |     |
|                 |                 | 4  | 230/400V | 65 kA  | 12,5 kA                       | 20 kA                       | ≤ 1,3 kV (L-PE)                   | 25 kA | ✓       | TT, TNS          | 77738456    | PSC4-12,5/400 TNSIR   | C02 |     |

## Surge Protective Devices | Class II



### PSM Range | Pluggable format

Spares \*

| No. Prot. Poles | No. DIN modules | Un      | Imax  | In    | Up                                | Icc   | IR | Network          | Code     | Part number           | Spares * |     |
|-----------------|-----------------|---------|-------|-------|-----------------------------------|-------|----|------------------|----------|-----------------------|----------|-----|
|                 |                 |         |       |       |                                   |       |    |                  |          |                       | L        | N   |
| 1P              | 1               | 120 V   | 20 kA | 10 kA | ≤ 0,8 kV                          | 25 kA |    | TT, TNS, TNC     | 77707700 | PSM1-20/120           | M01      |     |
|                 | 1               | 120 V   | 20 kA | 10 kA | ≤ 0,8 kV                          | 25 kA | ✓  | TT, TNS, TNC     | 77707701 | PSM1-20/120 IR        | M01      |     |
|                 | 1               | 230 V   | 20 kA | 10 kA | ≤ 1,4 kV                          | 25 kA |    | IT, TT, TNS, TNC | 77707702 | PSM1-20/230           | M02      |     |
|                 | 1               | 230 V   | 20 kA | 10 kA | ≤ 1,4 kV                          | 25 kA | ✓  | IT, TT, TNS, TNC | 77707703 | PSM1-20/230 IR        | M02      |     |
|                 | 1               | 400 V   | 20 kA | 10 kA | ≤ 2 kV                            | 25 kA |    | IT, TT, TNS, TNC | 77707704 | PSM1-20/400           | M03      |     |
|                 | 1               | 400 V   | 20 kA | 10 kA | ≤ 2 kV                            | 25 kA | ✓  | IT, TT, TNS, TNC | 77707705 | PSM1-20/400 IR        | M03      |     |
|                 | 1               | 120 V   | 40 kA | 20 kA | ≤ 0,9 kV                          | 25 kA |    | TT, TNS, TNC     | 77707706 | PSM1-40/120           | M04      |     |
|                 | 1               | 120 V   | 40 kA | 20 kA | ≤ 0,9 kV                          | 25 kA | ✓  | TT, TNS, TNC     | 77707707 | PSM1-40/120 IR        | M04      |     |
|                 | 1               | 230 V   | 40 kA | 20 kA | ≤ 1,3 kV                          | 25 kA |    | IT, TT, TNS, TNC | 77707708 | PSM1-40/230           | M05      |     |
|                 | 1               | 230 V   | 40 kA | 20 kA | ≤ 1,3 kV                          | 25 kA | ✓  | IT, TT, TNS, TNC | 77707709 | PSM1-40/230 IR        | M05      |     |
|                 | 1               | 400 V   | 40 kA | 20 kA | ≤ 2 kV                            | 25 kA |    | IT, TT, TNS, TNC | 77707710 | PSM1-40/400           | M06      |     |
|                 | 1               | 400 V   | 40 kA | 20 kA | ≤ 2 kV                            | 25 kA | ✓  | IT, TT, TNS, TNC | 77707711 | PSM1-40/400 IR        | M06      |     |
|                 | 1               | 690 V   | 30 kA | 15 kA | ≤ 3 kV                            | 25 kA |    | TT, TNS, TNC     | 77707714 | PSM1-30/750           | M09      |     |
|                 | 1               | 690 V   | 30 kA | 15 kA | ≤ 3 kV                            | 25 kA | ✓  | TT, TNS, TNC     | 77707715 | PSM1-30/750 IR        | M09      |     |
| N               | 1               | neutral | 20 kA | 10 kA | ≤ 1,5 kV                          | 25 kA |    | TT, TNS          | 77707745 | PSM1-20N              |          | M10 |
|                 | 1               | neutral | 40 kA | 20 kA | ≤ 1,5 kV                          | 25 kA |    | TT, TNS          | 77707746 | PSM1-40N              |          | M11 |
| P+N             | 2               | 120 V   | 20 kA | 10 kA | ≤ 0,8 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |    | TT, TNS          | 77707750 | PSM2-20/120 TT        | M01      | M10 |
|                 | 2               | 120 V   | 20 kA | 10 kA | ≤ 0,8 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓  | TT, TNS          | 77707751 | PSM2-20/120 TT IR     | M01      | M10 |
|                 | 2               | 230 V   | 20 kA | 10 kA | ≤ 1,4 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |    | TT, TNS          | 77707752 | PSM2-20/230 TT        | M02      | M10 |
|                 | 2               | 230 V   | 20 kA | 10 kA | ≤ 1,4 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓  | TT, TNS          | 77707753 | PSM2-20/230 TT IR     | M02      | M10 |
|                 | 2               | 230 V   | 20 kA | 10 kA | ≤ 1,5 kV                          | 25 kA |    | TT, TNS          | 77707980 | PSM2-20/230 PLCTT**   | M12      | M10 |
|                 | 2               | 230 V   | 20 kA | 10 kA | ≤ 1,5 kV                          | 25 kA | ✓  | TT, TNS          | 77707981 | PSM2-20/230 PLCTTIR** | M12      | M10 |
|                 | 2               | 120 V   | 40 kA | 20 kA | ≤ 0,9 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |    | TT, TNS          | 77707754 | PSM2-40/120 TT        | M04      | M11 |
|                 | 2               | 120 V   | 40 kA | 20 kA | ≤ 0,9 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓  | TT, TNS          | 77707755 | PSM2-40/120 TT IR     | M04      | M11 |
|                 | 2               | 230 V   | 40 kA | 20 kA | ≤ 1,3 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |    | TT, TNS          | 77707756 | PSM2-40/230 TT        | M05      | M11 |
|                 | 2               | 230 V   | 40 kA | 20 kA | ≤ 1,3 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓  | TT, TNS          | 77707757 | PSM2-40/230 TT IR     | M05      | M11 |
| 2P              | 2               | 120 V   | 20 kA | 10 kA | ≤ 0,8 kV                          | 25 kA |    | TT, TNS          | 77707900 | PSM2-20/120 TNS       | M01      |     |
|                 | 2               | 120 V   | 20 kA | 10 kA | ≤ 0,8 kV                          | 25 kA | ✓  | TT, TNS          | 77707901 | PSM2-20/120 TNS IR    | M01      |     |
|                 | 2               | 230 V   | 20 kA | 10 kA | ≤ 1,4 kV                          | 25 kA |    | TT, TNS          | 77707902 | PSM2-20/230 TNS       | M02      |     |
|                 | 2               | 230 V   | 20 kA | 10 kA | ≤ 1,4 kV                          | 25 kA | ✓  | TT, TNS          | 77707903 | PSM2-20/230 TNS IR    | M02      |     |
|                 | 2               | 120 V   | 40 kA | 20 kA | ≤ 0,9 kV                          | 25 kA |    | TT, TNS          | 77707904 | PSM2-40/120 TNS       | M04      |     |
|                 | 2               | 120 V   | 40 kA | 20 kA | ≤ 0,9 kV                          | 25 kA | ✓  | TT, TNS          | 77707905 | PSM2-40/120 TNS IR    | M04      |     |
|                 | 2               | 230 V   | 40 kA | 20 kA | ≤ 1,3 kV                          | 25 kA |    | TT, TNS          | 77707906 | PSM2-40/230 TNS       | M05      |     |
|                 | 2               | 230 V   | 40 kA | 20 kA | ≤ 1,3 kV                          | 25 kA | ✓  | TT, TNS          | 77707907 | PSM2-40/230 TNS IR    | M05      |     |







PSM1-40/230



PSM2-40/230 TT

\*See page 43 for identification of the exact ordering code and part number of the spare cartridges for L (line) and N (neutral) poles  
 \*\*PSM PCL exhibits no degradation leakage currents and is compatible with PLC Power Line Communications  
 \*\*\* Products for PV photovoltaic system



|   | No. Prot. Poles | No. DIN modules   | Un        | Imax  | In        | Up                                | Icc   | IR       | Network | Code     | Part number              | Spares * |                    |     |  |
|---|-----------------|---|-----------|-------|-----------|-----------------------------------|-------|----------|---------|----------|--------------------------|----------|--------------------|-----|--|
|   |                 |   |           |       |           |                                   |       |          |         |          |                          | L        | N                  |     |  |
|    | 3P              | 3   | 230 V     | 20 kA | 10 kA     | ≤ 0,8 kV                          | 25 kA |          | TNC     | 77707860 | PSM3-20/230 TNC          | M01      |                    |     |  |
|   |                 | 3   | 230 V     | 20 kA | 10 kA     | ≤ 0,8 kV                          | 25 kA | ✓        | TNC     | 77707861 | PSM3-20/230 TNC IR       | M01      |                    |     |  |
|   |                 | 3   | 400 V     | 20 kA | 10 kA     | ≤ 1,4 kV                          | 25 kA |          | TNC     | 77707862 | PSM3-20/400 TNC          | M02      |                    |     |  |
|   |                 | 3   | 400 V     | 20 kA | 10 kA     | ≤ 1,4 kV                          | 25 kA | ✓        | TNC     | 77707863 | PSM3-20/400 TNC IR       | M02      |                    |     |  |
|   |                 | 3   | 400 V     | 20 kA | 10 kA     | ≤ 1,5 kV                          | 25 kA |          | TNC     | 77707982 | PSM3-20/400 PLC TNC**    | M12      | M10                |     |  |
|   |                 | 3   | 400 V     | 20 kA | 10 kA     | ≤ 1,5 kV                          | 25 kA | ✓        | TNC     | 77707983 | PSM3-20/400 PLC TNC IR** | M12      | M10                |     |  |
|   |                 | 3   | 230 V     | 40 kA | 20 kA     | ≤ 0,9 kV                          | 25 kA |          | TNC     | 77707864 | PSM3-40/230 TNC          | M04      |                    |     |  |
|   |                 | 3   | 230 V     | 40 kA | 20 kA     | ≤ 0,9 kV                          | 25 kA | ✓        | TNC     | 77707865 | PSM3-40/230 TNC IR       | M04      |                    |     |  |
|   |                 | 3   | 400 V     | 40 kA | 20 kA     | ≤ 1,3 kV                          | 25 kA |          | TNC     | 77707866 | PSM3-40/400 TNC          | M05      |                    |     |  |
|   |                 | 3   | 400 V     | 40 kA | 20 kA     | ≤ 1,3 kV                          | 25 kA | ✓        | TNC     | 77707867 | PSM3-40/400 TNC IR       | M05      |                    |     |  |
|   |                 | 3   | 690 V     | 30 kA | 15 kA     | ≤ 1,3 kV                          | 25 kA |          | TNC     | 77707870 | PSM3-30/750 TNC          | M09      |                    |     |  |
|   |                 | 3   | 690 V     | 30 kA | 15 kA     | ≤ 1,3 kV                          | 25 kA | ✓        | TNC     | 77707871 | PSM3-30/750 TNC IR       | M09      |                    |     |  |
|   | L+ / L-         | 3   | 600 Vdc   | 40 kA | 20 kA     | ≤ 2,6 kV                          | 25 kA |          | ⚙ PV    | 77707850 | PSM3-40/600 PV***        | M07      |                    |     |  |
|   |                 | 3   | 600 Vdc   | 40 kA | 20 kA     | ≤ 2,6 kV                          | 25 kA | ✓        | ⚙ PV    | 77707851 | PSM3-40/600 PV IR***     | M07      |                    |     |  |
|   |                 | 3   | 1.000 Vdc | 40 kA | 20 kA     | ≤ 4 kV                            | 25 kA |          | ⚙ PV    | 77707852 | PSM3-40/1000 PV***       | M08      |                    |     |  |
|   |                 | 3   | 1.000 Vdc | 40 kA | 20 kA     | ≤ 4 kV                            | 25 kA | ✓        | ⚙ PV    | 77707853 | PSM3-40/1000 PV IR***    | M08      |                    |     |  |
|  | 3P+N            | 4   | 120/230 V | 20 kA | 10 kA     | ≤ 0,8 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |          | TT, TNS | 77707800 | PSM4-20/230 TT           | M01      | M10                |     |  |
|   |                 | 4   | 120/230 V | 20 kA | 10 kA     | ≤ 0,8 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓        | TT, TNS | 77707801 | PSM4-20/230 TT IR        | M01      | M10                |     |  |
|   |                 | 4   | 230/400 V | 20 kA | 10 kA     | ≤ 1,4 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |          | TT, TNS | 77707802 | PSM4-20/400 TT           | M02      | M10                |     |  |
|   |                 | 4   | 230/400 V | 20 kA | 10 kA     | ≤ 1,4 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓        | TT, TNS | 77707803 | PSM4-20/400 TT IR        | M02      | M10                |     |  |
|   |                 | 4   | 230/400 V | 20 kA | 10 kA     | ≤ 1,5 kV                          | 25 kA |          | TT, TNS | 77707985 | PSM4-20/400 PLC TT**     | M12      | M10                |     |  |
|   |                 | 4   | 230/400 V | 20 kA | 10 kA     | ≤ 1,5 kV                          | 25 kA | ✓        | TT, TNS | 77707986 | PSM4-20/400 PLC TT IR**  | M12      | M10                |     |  |
|   |                 | 4   | 120/230 V | 40 kA | 20 kA     | ≤ 0,9 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |          | TT, TNS | 77707804 | PSM4-40/230 TT           | M04      | M11                |     |  |
|   |                 | 4   | 120/230 V | 40 kA | 20 kA     | ≤ 0,9 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓        | TT, TNS | 77707805 | PSM4-40/230 TT IR        | M04      | M11                |     |  |
|   |                 | 4   | 230/400 V | 40 kA | 20 kA     | ≤ 1,3 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA |          | TT, TNS | 77707806 | PSM4-40/400 TT           | M05      | M11                |     |  |
|   |                 | 4   | 230/400 V | 40 kA | 20 kA     | ≤ 1,3 kV (L-N)<br>≤ 1,5 kV (N-PE) | 25 kA | ✓        | TT, TNS | 77707807 | PSM4-40/400 TT IR        | M05      | M11                |     |  |
|   |                 |  | 4P        | 4     | 120/230 V | 20 kA                             | 10 kA | ≤ 0,8 kV | 25 kA   |          | TT, TNS                  | 77707950 | PSM4-20/230 TNS    | M01 |  |
|   |                 |   |           | 4     | 120/230 V | 20 kA                             | 10 kA | ≤ 0,8 kV | 25 kA   | ✓        | TT, TNS                  | 77707951 | PSM4-20/230 TNS IR | M01 |  |
| 4   | 230/400 V       |   |           | 20 kA | 10 kA     | ≤ 1,4 kV                          | 25 kA |          | TT, TNS | 77707952 | PSM4-20/400 TNS          | M02      |                    |     |  |
| 4   | 230/400 V       |   |           | 20 kA | 10 kA     | ≤ 1,4 kV                          | 25 kA | ✓        | TT, TNS | 77707953 | PSM4-20/400 TNS IR       | M02      |                    |     |  |
| 4   | 120/230 V       |   |           | 40 kA | 20 kA     | ≤ 0,9 kV                          | 25 kA |          | TT, TNS | 77707954 | PSM4-40/230 TNS          | M04      |                    |     |  |
| 4   | 120/230 V       |   |           | 40 kA | 20 kA     | ≤ 0,9 kV                          | 25 kA | ✓        | TT, TNS | 77707955 | PSM4-40/230 TNS IR       | M04      |                    |     |  |
| 4   | 230/400 V       |   |           | 40 kA | 20 kA     | ≤ 1,3 kV                          | 25 kA |          | TT, TNS | 77707956 | PSM4-40/400 TNS          | M05      |                    |     |  |
| 4   | 230/400 V       |   |           | 40 kA | 20 kA     | ≤ 1,3 kV                          | 25 kA | ✓        | TT, TNS | 77707957 | PSM4-40/400 TNS IR       | M05      |                    |     |  |

PSM4-40/400 TT

\* See page 43 for identification of the exact ordering code and part number of the spare cartridges for L (line) and N (neutral) poles.  
 \*\* PSM PCL exhibits no degradation leakage currents and is compatible with PLC Power Line Communications.  
 \*\*\* Products for PV photovoltaic system. According to EN50539-11.





## Surge Protective Devices | Class II



### CS Range | Monobloc format

| No. Prot. Poles | No. DIN modules | Un        | Imax  | In    | Up                                | Icc   | IR | Network       | Code     | Part number        |
|-----------------|-----------------|-----------|-------|-------|-----------------------------------|-------|----|---------------|----------|--------------------|
| 1P              | 1               | 120 V     | 15 kA | 5 kA  | ≤ 0,7 kV                          | 10 kA |    | TT,TNS,TNC    | 77705105 | CS1-15/120         |
|                 | 1               | 120 V     | 15 kA | 5 kA  | ≤ 0,7 kV                          | 10 kA | ✓  | TT,TNS,TNC    | 77705106 | CS1-15/120 IR      |
|                 | 1               | 230 V     | 15 kA | 5 kA  | ≤ 1,2 kV                          | 10 kA |    | IT,TT,TNS,TNC | 77705110 | CS1-15/230         |
|                 | 1               | 230 V     | 15 kA | 5 kA  | ≤ 1,2 kV                          | 10 kA | ✓  | IT,TT,TNS,TNC | 77705111 | CS1-15/230 IR      |
|                 | 1               | 400 V     | 15 kA | 5 kA  | ≤ 1,8 kV                          | 10 kA |    | IT,TT,TNS,TNC | 77705115 | CS1-15/400         |
|                 | 1               | 400 V     | 15 kA | 5 kA  | ≤ 1,8 kV                          | 10 kA | ✓  | IT,TT,TNS,TNC | 77705116 | CS1-15/400 IR      |
|                 | 1               | 120 V     | 40 kA | 15 kA | ≤ 0,9 kV                          | 25 kA |    | TT,TNS,TNC    | 77705120 | CS1-40/120         |
|                 | 1               | 120 V     | 40 kA | 15 kA | ≤ 0,9 kV                          | 25 kA | ✓  | TT,TNS,TNC    | 77705121 | CS1-40/120 IR      |
|                 | 1               | 230 V     | 40 kA | 20 kA | ≤ 1,3 kV                          | 25 kA |    | IT,TT,TNS,TNC | 77705125 | CS1-40/230         |
|                 | 1               | 230 V     | 40 kA | 20 kA | ≤ 1,3 kV                          | 25 kA | ✓  | IT,TT,TNS,TNC | 77705126 | CS1-40/230 IR      |
|                 | 1               | 400 V     | 40 kA | 15 kA | ≤ 1,8 kV                          | 25 kA |    | IT,TT,TNS,TNC | 77705130 | CS1-40/400         |
|                 | 1               | 400 V     | 40 kA | 15 kA | ≤ 1,8 kV                          | 25 kA | ✓  | IT,TT,TNS,TNC | 77705131 | CS1-40/400 IR      |
| N               | 1               | -         | 15 kA | 5 kA  | ≤ 1,5 kV                          | -     |    | TT,TNS        | 77705149 | CS1-15N            |
|                 | 1               | -         | 40 kA | 20 kA | ≤ 1,5 kV                          | -     |    | TT,TNS        | 77705151 | CS1-40N            |
| 1P+N            | 2               | 230 V     | 15 kA | 5 kA  | ≤ 1,2 kV [L-N]<br>≤ 1,5 kV [N-PE] | 10 kA |    | TT,TNS        | 77705211 | CS2-15/230         |
|                 | 2               | 230 V     | 15 kA | 5 kA  | ≤ 1,2 kV [L-N]<br>≤ 1,5 kV [N-PE] | 10 kA | ✓  | TT,TNS        | 77705212 | CS2-15/230 IR      |
|                 | 2               | 230 V     | 40 kA | 20 kA | ≤ 1,3 kV [L-N]<br>≤ 1,5 kV [N-PE] | 25 kA |    | TT,TNS        | 77705241 | CS2-40/230         |
|                 | 2               | 230 V     | 40 kA | 20 kA | ≤ 1,3 kV [L-N]<br>≤ 1,5 kV [N-PE] | 25 kA | ✓  | TT,TNS        | 77705242 | CS2-40/230 IR      |
| 2P              | 2               | 230 V     | 15 kA | 5 kA  | ≤ 1,2 kV                          | 10 kA |    | TT,TNS        | 77705228 | CS2P-15/230        |
|                 | 2               | 230 V     | 15 kA | 5 kA  | ≤ 1,2 kV                          | 10 kA | ✓  | TT,TNS        | 77705229 | CS2P-15/230 IR     |
|                 | 2               | 230 V     | 40 kA | 15 kA | ≤ 1,3 kV                          | 25 kA |    | TT,TNS        | 77705248 | CS2P-40/230        |
|                 | 2               | 230 V     | 40 kA | 15 kA | ≤ 1,3 kV                          | 25 kA | ✓  | TT,TNS        | 77705249 | CS2P-40/230 IR     |
| L+ / L-         | 2               | 600 Vdc   | 40 kA | 20 kA | ≤ 2,6 kV                          | 10 kA |    | ⚙ PV          | 77707360 | CS23-40/600***     |
|                 | 2               | 600 Vdc   | 40 kA | 20 kA | ≤ 2,6 kV                          | 10 kA | ✓  | ⚙ PV          | 77707361 | CS23-40/600 IR***  |
|                 | 2               | 1000 Vdc  | 40 kA | 20 kA | ≤ 3,8 kV                          | 10 kA |    | ⚙ PV          | 77707362 | CS23-40/1000***    |
|                 | 2               | 1000 Vdc  | 40 kA | 20 kA | ≤ 3,8 kV                          | 10 kA | ✓  | ⚙ PV          | 77707363 | CS23-40/1000 IR*** |
| 3P+N            | 4               | 230/400 V | 15 kA | 5 kA  | ≤ 1,2 kV [L-N]<br>≤ 1,5 kV [N-PE] | 10 kA |    | TT,TNS        | 77705421 | CS4-15/400         |
|                 | 4               | 230/400 V | 15 kA | 5 kA  | ≤ 1,2 kV [L-N]<br>≤ 1,5 kV [N-PE] | 10 kA | ✓  | TT,TNS        | 77705422 | CS4-15/400 IR      |
|                 | 4               | 230/400 V | 40 kA | 20 kA | ≤ 1,3 kV [L-N]<br>≤ 1,5 kV [N-PE] | 25 kA |    | TT,TNS        | 77705451 | CS4-40/400         |
|                 | 4               | 230/400 V | 40 kA | 20 kA | ≤ 1,3 kV [L-N]<br>≤ 1,5 kV [N-PE] | 25 kA | ✓  | TT,TNS        | 77705452 | CS4-40/400 IR      |
| 4P              | 4               | 230/400 V | 15 kA | 5 kA  | ≤ 1,2 kV                          | 10 kA |    | TT,TNS        | 77705428 | CS4P-15/400        |
|                 | 4               | 230/400 V | 15 kA | 5 kA  | ≤ 1,2 kV                          | 10 kA | ✓  | TT,TNS        | 77705429 | CS4P-15/400 IR     |
|                 | 4               | 230/400 V | 40 kA | 15 kA | ≤ 1,3 kV                          | 25 kA |    | TT,TNS        | 77705458 | CS4P-40/400        |
|                 | 4               | 230/400 V | 40 kA | 15 kA | ≤ 1,3 kV                          | 25 kA | ✓  | TT,TNS        | 77705459 | CS4P-40/400 IR     |

CS4-15/400

\*\*\* Products for PV photovoltaic system.



## Surge Protective Devices | Class II



### NSP Range | Aerial format



| No. Prot. Poles | Un    | I <sub>max</sub> | I <sub>n</sub> | U <sub>p</sub>                    | I <sub>cc</sub> | I <sub>N</sub> | IR | Connection | Code     | Part number    |
|-----------------|-------|------------------|----------------|-----------------------------------|-----------------|----------------|----|------------|----------|----------------|
| 1P+N            | 230 V | 15 kA            | 5 kA           | ≤ 1,2 kV (L-N)<br>≤ 1,5 kV (N-PE) | 10 kA           | -              | -  | Parallel   | 77705500 | NSP2-15/230    |
|                 | 230 V | 15 kA            | 5 kA           | ≤ 1,2 kV (L-N)<br>≤ 1,5 kV (N-PE) | 10 kA           | -              | ✓  | Parallel   | 77705501 | NSP2-15/230 IR |
|                 | 230 V | 15 kA            | 5 kA           | ≤ 1,2 kV (L-N)<br>≤ 1,5 kV (N-PE) | 10 kA           | 10 A           | -  | Series     | 77705510 | NSS2-15/230    |

NSP2-15/230

## Surge Protective Devices | Class II+III



### DM2 Range | With EMI filter | Connected in series



| No. Prot. Poles | No. DIN modules | Un    | I <sub>max</sub> | I <sub>n</sub> | U <sub>p</sub> | U <sub>oc</sub> | I <sub>N</sub> | IR | Code     | Part number    |
|-----------------|-----------------|-------|------------------|----------------|----------------|-----------------|----------------|----|----------|----------------|
| L1-L2           | 4               | 120 V | 20 kA            | 10 kA          | ≤ 0,8 kV       | < 6 kV          | 20 A           | ✓  | 77702840 | DM2-20A/120 IR |
|                 | 4               | 230 V | 20 kA            | 10 kA          | ≤ 1,2 kV       | < 6 kV          | 20 A           | ✓  | 77702830 | DM2-20A/230 IR |

DM2-20A/230 IR

## Surge Protective Devices | Class II+III



### CS21 Range | In a single DIN module | Connected in parallel



| No. Prot. Poles | No. DIN modules | Un    | I <sub>max</sub> | I <sub>n</sub> | U <sub>p</sub> | U <sub>oc</sub> | IR | Code     | Part number    |
|-----------------|-----------------|-------|------------------|----------------|----------------|-----------------|----|----------|----------------|
| L1-L2           | 1               | 230 V | 20 kA            | 10 kA          | ≤ 1,4 kV       | < 6 kV          | -  | 77704111 | CS21 CD/230    |
|                 | 1               | 230 V | 20 kA            | 10 kA          | ≤ 1,4 kV       | < 6 kV          | ✓  | 77704112 | CS21 CD/230 IR |

CS21 CD/230 IR

## Decoupling Inductances

### L Range | Inductances



| No. DIN modules | Un    | L <sub>n</sub> | I <sub>N</sub> | Max. back-up fuse | Code     | Part number |
|-----------------|-------|----------------|----------------|-------------------|----------|-------------|
| 1               | 500 V | 15 uH +/- 15%  | 16 A           | 16 A gL           | 77785950 | L-15/16     |
| 2               | 500 V | 15 uH +/- 15%  | 32 A           | 32 A gL           | 77785900 | L-15/32     |
| 4               | 500 V | 15 uH +/- 15%  | 63 A           | 63 A gL           | 77786000 | L-15/63     |

L-15/32

NEW

## Surge Protective Devices | Class III



### PSL Range | Pluggable format



PSL2-8/230 TT IR



PSL4-8/400 TNS

| No. Prot. Poles | No. DIN modules | Un       | Imax | In   | Up                                | Uoc  | Icc   | IR | Network | Code     | Part Number       | Spares* |     |
|-----------------|-----------------|----------|------|------|-----------------------------------|------|-------|----|---------|----------|-------------------|---------|-----|
|                 |                 |          |      |      |                                   |      |       |    |         |          |                   | L       | N   |
| P+N             | 2               | 230 V    | 8 kA | 3 kA | ≤ 1,1 kV (L-N)<br>≤ 1,5 kV (N-PE) | 6 kV | 25 kA |    | TT, TNS | 77708155 | PSL2-8/230 TT     | L01     | L02 |
|                 | 2               | 230 V    | 8 kA | 3 kA | ≤ 1,1 kV (L-N)<br>≤ 1,5 kV (N-PE) | 6 kV | 25 kA | ✓  | TT, TNS | 77708156 | PSL2-8/230 TT IR  | L01     | L02 |
| 2P              | 2               | 230 V    | 8 kA | 3 kA | ≤ 1,1 kV                          | 6 kV | 25 kA |    | TT, TNS | 77708175 | PSL2-8/230 TNS    | L01     |     |
|                 | 2               | 230 V    | 8 kA | 3 kA | ≤ 1,1 kV                          | 6 kV | 25 kA | ✓  | TT, TNS | 77708176 | PSL2-8/230 TNS IR | L01     |     |
| 3P+N            | 4               | 230/400V | 8 kA | 3 kA | ≤ 1,1 kV (L-N)<br>≤ 1,5 kV (N-PE) | 6 kV | 25 kA |    | TT, TNS | 77708205 | PSL4-8/400 TT     | L01     | L02 |
|                 | 4               | 230/400V | 8 kA | 3 kA | ≤ 1,1 kV (L-N)<br>≤ 1,5 kV (N-PE) | 6 kV | 25 kA | ✓  | TT, TNS | 77708206 | PSL4-8/400 TT IR  | L01     | L02 |
| 4P              | 4               | 230/400V | 8 kA | 3 kA | ≤ 1,1 kV                          | 6 kV | 25 kA |    | TT, TNS | 77708225 | PSL4-8/400 TNS    | L01     |     |
|                 | 4               | 230/400V | 8 kA | 3 kA | ≤ 1,1 kV                          | 6 kV | 25 kA | ✓  | TT, TNS | 77708226 | PSL4-8/400 TNS IR | L01     |     |

\*See page 43 for identification of the exact ordering code and part number of the spare cartridges for L (line) and N (neutral) poles

## Surge Protective Devices | Class III



### RD2, RP2 and DIN Ranges | DIN rail



RD2-10/60



RP2-10/230



DIN24V-3A

| No. Prot. Poles | No. DIN modules | Un    | In     | Up  | Uoc                         | Icc   | IN  | IR | Network | Code     | Part number   |
|-----------------|-----------------|-------|--------|---|-----------------------------|-------|-----|----|---------|----------|---------------|
| L1-L2           | 2               | 12 V  | 1 kA   | < 0,08 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE) | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77704055 | RD2-10/12     |
|                 | 2               | 12 V  | 1 kA   | < 0,08 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE) | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     | ✓  | TT, TNS | 77704060 | RD2-10/12 IR  |
|                 | 2               | 24 V  | 1 kA   | < 0,3 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77704045 | RD2-10/24     |
|                 | 2               | 24 V  | 1 kA   | < 0,3 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     | ✓  | TT, TNS | 77704050 | RD2-10/24 IR  |
|                 | 2               | 48 V  | 1 kA   | < 0,4 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77704035 | RD2-10/48     |
|                 | 2               | 48 V  | 1 kA   | < 0,4 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     | ✓  | TT, TNS | 77704040 | RD2-10/48 IR  |
|                 | 2               | 60 V  | 2,5 kA | < 0,6 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 5 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77704025 | RD2-10/60     |
|                 | 2               | 60 V  | 2,5 kA | < 0,6 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 5 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     | ✓  | TT, TNS | 77704030 | RD2-10/60 IR  |
|                 | 2               | 120 V | 2,5 kA | < 0,7 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 5 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77704015 | RD2-10/120    |
|                 | 2               | 120 V | 2,5 kA | < 0,7 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 5 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     | ✓  | TT, TNS | 77704020 | RD2-10/120 IR |
|                 | 2               | 230 V | 3 kA   | < 1,2 kV (L1-L2)<br>< 1,5 kV (L1(L2)-PE)  | 6 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77704005 | RD2-10/230    |
|                 | 2               | 230 V | 3 kA   | < 1,2 kV (L1-L2)<br>< 1,5 kV (L1(L2)-PE)  | 6 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     | ✓  | TT, TNS | 77704010 | RD2-10/230 IR |
| RP2-10/12       | 1               | 12 V  | 1 kA   | < 0,08 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE) | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77702235 | RP2-10/12     |
|                 | 1               | 24 V  | 1 kA   | < 0,2 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77702230 | RP2-10/24     |
| RP2-10/48       | 1               | 48 V  | 1 kA   | < 0,2 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 2 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77702225 | RP2-10/48     |
|                 | 1               | 60 V  | 2,5 kA | < 0,6 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 5 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77702220 | RP2-10/60     |
| RP2-10/120      | 1               | 120 V | 2,5 kA | < 0,7 kV (L1-L2)<br>< 0,8 kV (L1(L2)-PE)  | 5 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77702215 | RP2-10/120    |
|                 | 1               | 230 V | 3 kA   | < 1,2 kV (L1-L2)<br>< 1,5 kV (L1(L2)-PE)  | 6 kV (L1-L2,<br>L1(L2)-PE)  | 10 kA |     |    | TT, TNS | 77702210 | RP2-10/230    |
| DIN 12V-3A      | 1               | 12 V  | 5 kA   | < 45 V                                    | 10 kV (L1-L2,<br>L1(L2)-PE) | 10 kA | 3 A |    |         | 77840928 | DIN 12V-3A    |
|                 | 1               | 24 V  | 5 kA   | < 45 V                                    | 10 kV (L1-L2,<br>L1(L2)-PE) | 10 kA | 3 A |    |         | 77840927 | DIN 24V-3A    |



## Surge Protective Devices | Class III



### DM1 Range | DIN rail with EMI filter



| No. Prot. Poles | No. DIN modules | Un    | In   | Up                                 | Uoc                      | IN  | Code     | Part number |
|-----------------|-----------------|-------|------|------------------------------------|--------------------------|-----|----------|-------------|
| L1-L2           | 3               | 230 V | 5 kA | < 1 kV (L-N)<br>< 1,2 kV (L(N)-PE) | < 10 kV (L1-N, L1(N)-PE) | 8 A | 77702800 | DM1-230     |

DM1-230

## Surge Protective Devices | Class III



### TM6 and NTB Ranges | Socket outlets



TM6-A




NTB-16 ES/ADSL

| No. Prot. Poles | Un    | No. sockets | Complementary protection | In     | Up                                   | Uoc  | IN   | Code     | Part Number    |
|-----------------|-------|-------------|--------------------------|--------|--------------------------------------|------|------|----------|----------------|
| L1-L2           | 230 V | 6           |                          | 3 kA   | < 1 kV                               | 3 kV | 16 A | 77703010 | TM6-A          |
|                 | 230 V | 1           |                          | 3 kA   | < 1,2 kV (L-N)<br>< 1,5 kV (L(N)-PE) | 6 kV | 6 A  | 77703220 | NTB-6 ES       |
|                 | 230 V | 1           | ADSL                     | 3 kA   | < 1,2 kV (L-N)<br>< 1,5 kV (L(N)-PE) | 6 kV | 6 A  | 77703235 | NTB-6 ES/ADSL  |
|                 | 230 V | 1           |                          | 3 kA   | < 1,2 kV (L-N)<br>< 1,5 kV (L(N)-PE) | 6 kV | 16 A | 77703260 | NTB-16 ES      |
|                 | 230 V | 1           | ADSL                     | 3 kA   | < 1,2 kV (L-N)<br>< 1,5 kV (L(N)-PE) | 6 kV | 16 A | 77703275 | NTB-16 ES/ADSL |
|                 | 230 V | 1           | TV                       | 3 kA   | < 1,1 kV (L-N)<br>< 1,2 kV (L(N)-PE) | 6 kV | 16 A | 77703280 | NTB-16 ES/TV   |
|                 | 120 V | 1           |                          | 2,5 kA | < 0,7 kV                             | 5 kV | 15 A | 77703325 | NTB-15 US      |
|                 | 120 V | 1           | ADSL                     | 2,5 kA | < 0,7 kV                             | 5 kV | 15 A | 77703340 | NTB-15 US/ADSL |



A yellow circular logo with a white border and a white corner, containing the text "UL 1449 3rd Ed (SPD-TVSS)".

UL  
1449 3rd Ed  
(SPD-TVSS)

A background image featuring a black silhouette of a power line tower on the left and a green background with white binary code (0s and 1s) on the right.

## Low Voltage Electrical Supply Transient Overvoltages UL 1449 3rd Ed, NEMA Type

**Modular panels**



page 30

**Hardwired**



page 32

## TVSS Surge Protective Devices | UL 1449 3rd Ed



### CPS BLOCK Range | Modular panels

Configure your code:

**77797** **x** **yz**

| Value of X         | 1         | 2    | 3    | 4         | 5     |
|--------------------|-----------|------|------|-----------|-------|
| Series             | CPS BLOCK |      |      |           |       |
| Version            | Basic     | Plus | NEMA | NEMA Plus | Spare |
| Surge counter      |           | ✓    |      | ✓         |       |
| EMI filter         |           | ✓    |      | ✓         |       |
| NEMA 12            |           |      | ✓    | ✓         |       |
| All Mode (CM + DM) |           | ✓    | ✓    | ✓         |       |
| IAC                | ✓         | ✓    | ✓    | ✓         |       |
| MDS                | ✓         | ✓    | ✓    | ✓         |       |
| EPM                | ✓         | ✓    | ✓    | ✓         |       |
| IR                 | ✓         | ✓    | ✓    | ✓         |       |
| Status LEDs        | ✓         | ✓    | ✓    | ✓         |       |

Replacement surge module (one per mode)



3-PHASE    SPLIT-PHASE    1-PHASE

| Network / Wires    | For use in electrical supplies | I <sub>max</sub> | VPR (L-N, L-PE, L-L) | VPR (N-PE) | Code     | Part number *                      |
|--------------------|--------------------------------|------------------|----------------------|------------|----------|------------------------------------|
| 1-Phase (2W+G)     | 120 V                          | 40 kA            | 600 V                | 1200 V     | 77797X11 | CPS BLOCK 1-Phase 40 kA 120 V      |
|                    | 120 V                          | 80 kA            | 600 V                | 1200 V     | 77797X21 | CPS BLOCK 1-Phase 80 kA 120 V      |
|                    | 120 V                          | 100 kA           | 600 V                | 1200 V     | 77797X31 | CPS BLOCK 1-Phase 100 kA 120 V     |
|                    | 120 V                          | 160 kA           | 600 V                | 1200 V     | 77797X41 | CPS BLOCK 1-Phase 160 kA 120 V     |
|                    | 120 V                          | 200 kA           | 600 V                | 1200 V     | 77797X51 | CPS BLOCK 1-Phase 200 kA 120 V     |
|                    | 120 V                          | 240 kA           | 600 V                | 1200 V     | 77797X61 | CPS BLOCK 1-Phase 240 kA 120 V     |
|                    | 230 V                          | 40 kA            | 1200 V               | 1400 V     | 77797X12 | CPS BLOCK 1-Phase 40 kA 230 V      |
|                    | 230 V                          | 80 kA            | 1200 V               | 1400 V     | 77797X22 | CPS BLOCK 1-Phase 80 kA 230 V      |
|                    | 230 V                          | 100 kA           | 1200 V               | 1400 V     | 77797X32 | CPS BLOCK 1-Phase 100 kA 230 V     |
|                    | 230 V                          | 160 kA           | 1200 V               | 1400 V     | 77797X42 | CPS BLOCK 1-Phase 160 kA 230 V     |
|                    | 230 V                          | 200 kA           | 1200 V               | 1400 V     | 77797X52 | CPS BLOCK 1-Phase 200 kA 230 V     |
|                    | 230 V                          | 240 kA           | 1200 V               | 1400 V     | 77797X62 | CPS BLOCK 1-Phase 240 kA 230 V     |
| Split Phase (3W+G) | 120 V                          | 40 kA            | 600 V                | 1200 V     | 77797X13 | CPS BLOCK Split Phase 40 kA 120 V  |
|                    | 120 V                          | 80 kA            | 600 V                | 1200 V     | 77797X23 | CPS BLOCK Split Phase 80 kA 120 V  |
|                    | 120 V                          | 100 kA           | 600 V                | 1200 V     | 77797X33 | CPS BLOCK Split Phase 100 kA 120 V |
|                    | 120 V                          | 160 kA           | 600 V                | 1200 V     | 77797X43 | CPS BLOCK Split Phase 160 kA 120 V |
|                    | 120 V                          | 200 kA           | 600 V                | 1200 V     | 77797X53 | CPS BLOCK Split Phase 200 kA 120 V |
|                    | 120 V                          | 240 kA           | 600 V                | 1200 V     | 77797X63 | CPS BLOCK Split Phase 240 kA 120 V |
| 3-Phase WYE (4W+G) | 120 V                          | 40 kA            | 600 V                | 1200 V     | 77797X14 | CPS BLOCK 3-Phase WYE 40 kA 120 V  |
|                    | 120 V                          | 80 kA            | 600 V                | 1200 V     | 77797X24 | CPS BLOCK 3-Phase WYE 80 kA 120 V  |
|                    | 120 V                          | 100 kA           | 600 V                | 1200 V     | 77797X34 | CPS BLOCK 3-Phase WYE 100 kA 120 V |
|                    | 120 V                          | 160 kA           | 600 V                | 1200 V     | 77797X44 | CPS BLOCK 3-Phase WYE 160 kA 120 V |
|                    | 120 V                          | 200 kA           | 600 V                | 1200 V     | 77797X54 | CPS BLOCK 3-Phase WYE 200 kA 120 V |
|                    | 120 V                          | 240 kA           | 600 V                | 1200 V     | 77797X64 | CPS BLOCK 3-Phase WYE 240 kA 120 V |
|                    | 230 V                          | 40 kA            | 1200 V               | 1400 V     | 77797X15 | CPS BLOCK 3-Phase WYE 40 kA 230 V  |
|                    | 230 V                          | 80 kA            | 1200 V               | 1400 V     | 77797X25 | CPS BLOCK 3-Phase WYE 80 kA 230 V  |
|                    | 230 V                          | 100 kA           | 1200 V               | 1400 V     | 77797X35 | CPS BLOCK 3-Phase WYE 100 kA 230 V |
|                    | 230 V                          | 160 kA           | 1200 V               | 1400 V     | 77797X45 | CPS BLOCK 3-Phase WYE 160 kA 230 V |
|                    | 230 V                          | 200 kA           | 1200 V               | 1400 V     | 77797X55 | CPS BLOCK 3-Phase WYE 200 kA 230 V |
|                    | 230 V                          | 240 kA           | 1200 V               | 1400 V     | 77797X65 | CPS BLOCK 3-Phase WYE 240 kA 230 V |
|                    | 277 V                          | 40 kA            | 1200 V               | 1400 V     | 77797X16 | CPS BLOCK 3-Phase WYE 40 kA 277 V  |
|                    | 277 V                          | 80 kA            | 1200 V               | 1400 V     | 77797X26 | CPS BLOCK 3-Phase WYE 80 kA 277 V  |
|                    | 277 V                          | 100 kA           | 1200 V               | 1400 V     | 77797X36 | CPS BLOCK 3-Phase WYE 100 kA 277 V |
|                    | 277 V                          | 160 kA           | 1200 V               | 1400 V     | 77797X46 | CPS BLOCK 3-Phase WYE 160 kA 277 V |
|                    | 277 V                          | 200 kA           | 1200 V               | 1400 V     | 77797X56 | CPS BLOCK 3-Phase WYE 200 kA 277 V |
|                    | 277 V                          | 240 kA           | 1200 V               | 1400 V     | 77797X66 | CPS BLOCK 3-Phase WYE 240 kA 277 V |

\*To generate the complete Part Number, choose one of the following "versions": Basic, Plus, Nema, Nema Plus. Configure the "X" value according to the table.

- IAC:** Visual indicator of **intelligent aging control** (protection % remaining in each mode).
- EPM:** **Efficient preventive maintenance** with replaceable suppression modules per mode.
- MDS:** **Multidischarge system** with individual disconnection of each varistor.
- IR:** Remote Indication.

# Electrical Supply - Transient Overvoltages

Internal Protection | Electrical Supply | Surge Protectors (NEMA type)



Configure your code:

77797 X yz

| Value of X         | 1         | 2    | 3    | 4         | 5     |
|--------------------|-----------|------|------|-----------|-------|
| Series             | CPS BLOCK |      |      |           |       |
| Version            | Basic     | Plus | NEMA | NEMA Plus | Spare |
| Surge counter      |           | ✓    |      | ✓         |       |
| EMI filter         |           | ✓    |      | ✓         |       |
| NEMA 12            |           |      | ✓    | ✓         |       |
| All Mode (CM + DM) |           | ✓    | ✓    | ✓         |       |
| IAC                | ✓         | ✓    | ✓    | ✓         |       |
| MDS                | ✓         | ✓    | ✓    | ✓         |       |
| EPM                | ✓         | ✓    | ✓    | ✓         |       |
| IR                 | ✓         | ✓    | ✓    | ✓         |       |
| Status LEDs        | ✓         | ✓    | ✓    | ✓         |       |

Replacement surge module (one per mode)

| Network / Wires      | For use in electrical supplies | I <sub>max</sub> | VPR (L-N, L-PE, L-L) | VPR (N-PE) | Code     | Part number *                         |                                      |
|----------------------|--------------------------------|------------------|----------------------|------------|----------|---------------------------------------|--------------------------------------|
| 3-Phase Delta (3W+G) | 230 V                          | 40 kA            | 1200 V               | 1400 V     | 77797X17 | CPS BLOCK 3-Phase Delta 40 kA 230 V   |                                      |
|                      | 230 V                          | 80 kA            | 1200 V               | 1400 V     | 77797X27 | CPS BLOCK 3-Phase Delta 80 kA 230 V   |                                      |
|                      | 230 V                          | 100 kA           | 1200 V               | 1400 V     | 77797X37 | CPS BLOCK 3-Phase Delta 100 kA 230 V  |                                      |
|                      | 230 V                          | 160 kA           | 1200 V               | 1400 V     | 77797X47 | CPS BLOCK 3-Phase Delta 160 kA 230 V  |                                      |
|                      | 230 V                          | 200 kA           | 1200 V               | 1400 V     | 77797X57 | CPS BLOCK 3-Phase Delta 200 kA 230 V  |                                      |
|                      | 230 V                          | 240 kA           | 1200 V               | 1400 V     | 77797X67 | CPS BLOCK 3-Phase Delta 240 kA 230 V  |                                      |
|                      | 400 V                          | 40 kA            | 1200 V               | 1400 V     | 77797X18 | CPS BLOCK 3-Phase Delta 40 kA 400 V   |                                      |
|                      | 400 V                          | 80 kA            | 1200 V               | 1400 V     | 77797X28 | CPS BLOCK 3-Phase Delta 80 kA 400 V   |                                      |
|                      | 400 V                          | 100 kA           | 1200 V               | 1400 V     | 77797X38 | CPS BLOCK 3-Phase Delta 100 kA 400 V  |                                      |
|                      | 400 V                          | 160 kA           | 1200 V               | 1400 V     | 77797X48 | CPS BLOCK 3-Phase Delta 160 kA 400 V  |                                      |
|                      | 400 V                          | 200 kA           | 1200 V               | 1400 V     | 77797X58 | CPS BLOCK 3-Phase Delta 200 kA 400 V  |                                      |
|                      | 400 V                          | 240 kA           | 1200 V               | 1400 V     | 77797X68 | CPS BLOCK 3-Phase Delta 240 kA 400 V  |                                      |
|                      | 480 V                          | 40 kA            | 1425 V               | 2850 V     | 77797X19 | CPS BLOCK 3-Phase Delta 40 kA 480 V   |                                      |
|                      | 480 V                          | 80 kA            | 1425 V               | 2850 V     | 77797X29 | CPS BLOCK 3-Phase Delta 80 kA 480 V   |                                      |
|                      | 480 V                          | 100 kA           | 1425 V               | 2850 V     | 77797X39 | CPS BLOCK 3-Phase Delta 100 kA 480 V  |                                      |
|                      | 480 V                          | 160 kA           | 1425 V               | 2850 V     | 77797X49 | CPS BLOCK 3-Phase Delta 160 kA 480 V  |                                      |
|                      | 480 V                          | 200 kA           | 1425 V               | 2850 V     | 77797X59 | CPS BLOCK 3-Phase Delta 200 kA 480 V  |                                      |
|                      | 480 V                          | 240 kA           | 1425 V               | 2850 V     | 77797X69 | CPS BLOCK 3-Phase Delta 240 kA 480 V  |                                      |
|                      | High Leg Delta (4W+G)          | 120 V            | 40 kA                | 1200 V     | 1400 V   | 77797X10                              | CPS BLOCK High Leg Delta 40 kA 120 V |
|                      |                                | 120 V            | 80 kA                | 1200 V     | 1400 V   | 77797X20                              | CPS BLOCK High Leg Delta 80 kA 120 V |
| 120 V                |                                | 100 kA           | 1200 V               | 1400 V     | 77797X30 | CPS BLOCK High Leg Delta 100 kA 120 V |                                      |
| 120 V                |                                | 160 kA           | 1200 V               | 1400 V     | 77797X40 | CPS BLOCK High Leg Delta 160 kA 120 V |                                      |
| 120 V                |                                | 200 kA           | 1200 V               | 1400 V     | 77797X50 | CPS BLOCK High Leg Delta 200 kA 120 V |                                      |
| 120 V                |                                | 240 kA           | 1200 V               | 1400 V     | 77797X60 | CPS BLOCK High Leg Delta 240 kA 120 V |                                      |

\*To generate the complete Part Number, choose one of the following "versions": Basic, Plus, Nema, Nema Plus. Configure the "X" value according to the table.



3-PHASE HIGH LEG DELTA

**IAC:** Visual indicator of **intelligent aging control** (protection % remaining in each mode).

**EPM:** **Efficient preventive maintenance** with replaceable suppression modules per mode.

**MDS:** **Multidischarge system** with individual disconnection of each varistor.

**IR:** Remote Indication.







**TVSS Surge Protective Devices | UL 1449 3rd Ed**



**CPS NANO Range | Hardwired format**

| FEATURES           |   |
|--------------------|---|
| All Mode (CM + DM) | ✓ |
| NEMA 4             | ✓ |
| MDS                | ✓ |
| Status LED's       | ✓ |
| Remote indication  | ✓ |

|   | Network / Wires       | For use in electrical supplies | I <sub>max</sub> | VPR (L-N, L-PE, L-L) | VPR (N-PE) | Code     | Part number                          |
|---|-----------------------|--------------------------------|------------------|----------------------|------------|----------|--------------------------------------|
|    | 1-Phase (2W+G)        | 120 V                          | 40 kA            | 500 V                | 1000 V     | 77797611 | CPS NANO 1-Phase 40 kA 120 V         |
|   |                       | 120 V                          | 60 kA            | 500 V                | 1000 V     | 77797621 | CPS NANO 1-Phase 60 kA 120 V         |
|   |                       | 120 V                          | 80 kA            | 500 V                | 1000 V     | 77797631 | CPS NANO 1-Phase 80 kA 120 V         |
|   |                       | 120 V                          | 120 kA           | 500 V                | 1000 V     | 77797641 | CPS NANO 1-Phase 120 kA 120 V        |
|   |                       | 230 V                          | 40 kA            | 1000 V               | 2000 V     | 77797612 | CPS NANO 1-Phase 40 kA 230 V         |
|   |                       | 230 V                          | 60 kA            | 1000 V               | 2000 V     | 77797622 | CPS NANO 1-Phase 60 kA 230 V         |
|   |                       | 230 V                          | 80 kA            | 1000 V               | 2000 V     | 77797632 | CPS NANO 1-Phase 80 kA 230 V         |
|    | Split Phase (3W+G)    | 120 V                          | 40 kA            | 500 V                | 1000 V     | 77797613 | CPS NANO Split Phase 40 kA 120 V     |
|   |                       | 120 V                          | 60 kA            | 500 V                | 1000 V     | 77797623 | CPS NANO Split Phase 60 kA 120 V     |
|   |                       | 120 V                          | 80 kA            | 500 V                | 1000 V     | 77797633 | CPS NANO Split Phase 80 kA 120 V     |
|   |                       | 120 V                          | 120 kA           | 500 V                | 1000 V     | 77797643 | CPS NANO Split Phase 120 kA 120 V    |
|  | 3-Phase WYE (4W+G)    | 120 V                          | 40 kA            | 500 V                | 1000 V     | 77797614 | CPS NANO 3-Phase WYE 40 kA 120 V     |
|   |                       | 120 V                          | 60 kA            | 500 V                | 1000 V     | 77797624 | CPS NANO 3-Phase WYE 60 kA 120 V     |
|   |                       | 120 V                          | 80 kA            | 500 V                | 1000 V     | 77797634 | CPS NANO 3-Phase WYE 80 kA 120 V     |
|   |                       | 120 V                          | 120 kA           | 500 V                | 1000 V     | 77797644 | CPS NANO 3-Phase WYE 120 kA 120 V    |
|   |                       | 230 V                          | 40 kA            | 1000 V               | 2000 V     | 77797615 | CPS NANO 3-Phase WYE 40 kA 230 V     |
|   |                       | 230 V                          | 60 kA            | 1000 V               | 2000 V     | 77797625 | CPS NANO 3-Phase WYE 60 kA 230 V     |
|   |                       | 230 V                          | 80 kA            | 1000 V               | 2000 V     | 77797635 | CPS NANO 3-Phase WYE 80 kA 230 V     |
|   |                       | 230 V                          | 120 kA           | 1000 V               | 2000 V     | 77797645 | CPS NANO 3-Phase WYE 120 kA 230 V    |
|   |                       | 277 V                          | 40 kA            | 1000 V               | 2000 V     | 77797616 | CPS NANO 3-Phase WYE 40 kA 277 V     |
|   |                       | 277 V                          | 60 kA            | 1000 V               | 2000 V     | 77797626 | CPS NANO 3-Phase WYE 60 kA 277 V     |
|   |                       | 277 V                          | 80 kA            | 1000 V               | 2000 V     | 77797636 | CPS NANO 3-Phase WYE 80 kA 277 V     |
|   |                       | 277 V                          | 120 kA           | 1000 V               | 2000 V     | 77797646 | CPS NANO 3-Phase WYE 120 kA 277 V    |
|  | High Leg Delta (4W+G) | 120 V                          | 40 kA            | 1200 V               | 2400 V     | 77797610 | CPS NANO High Leg Delta 40 kA 120 V  |
|   |                       | 120 V                          | 60 kA            | 1200 V               | 2400 V     | 77797620 | CPS NANO High Leg Delta 60 kA 120 V  |
|   |                       | 120 V                          | 80 kA            | 1200 V               | 2400 V     | 77797630 | CPS NANO High Leg Delta 80 kA 120 V  |
|   |                       | 120 V                          | 120 kA           | 1200 V               | 2400 V     | 77797640 | CPS NANO High Leg Delta 120 kA 120 V |

MDS: Multidischarge system with individual disconnection of each varistor.



EN  
50550  
(POP)

## Low Voltage Electrical Supply Power frequency Overvoltages (POP) to EN 50550

**SPD + POP  
w/MCB**



page 34

**SPD + POP w/MCB and  
auto. reconnection**



page 35

**SPD + POP w/out  
MCB,  $I_n > 63$  A**



page 35

**POP w/MCB**



page 36

**Programmable Line Control  
unit w/auto reconnection**



page 37

## Electrical Supply . Combined Protection (SPD + POP)

### Combined overvoltage protectors (SPD + POP)



**V-CHECK MPT Range | Includes MCB |  $I_{n(MCB)} \leq 63 A$**

**EN 50550 POP**



V-CHECK 2MPT-40



V-CHECK 4MPT-40

| No. Prot. Poles | No. DIN modules | Un        | POP Protector |       | SPD Protector Class II |          |                 | MCB               |                      | Code                 | Part number |
|-----------------|-----------------|-----------|---------------|-------|------------------------|----------|-----------------|-------------------|----------------------|----------------------|-------------|
|                 |                 |           | Ua            | Imax  | In                     | Up       | In C curve      | Breaking capacity |                      |                      |             |
| P+N             | 5               | 230 V     | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 25 A            | 6 kA*             | 77706451             | V-CHECK 2MPT-25      |             |
|                 | 5               | 230 V     | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 32 A            | 6 kA*             | 77706452             | V-CHECK 2MPT-32      |             |
|                 | 5               | 230 V     | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 40 A            | 6 kA*             | 77706453             | V-CHECK 2MPT-40      |             |
|                 | 5               | 230 V     | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 50 A            | 6 kA*             | 77706454             | V-CHECK 2MPT-50      |             |
|                 | 5               | 230 V     | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 63 A            | 6 kA*             | 77706455             | V-CHECK 2MPT-63      |             |
| 3P+N            | 9               | 230/400 V | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 10 A            | 6 kA* - 10 kA**   | 77706477             | V-CHECK 4MPT-10      |             |
|                 | 9               | 230/400 V | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 16 A            | 6 kA* - 10 kA**   | 77706478             | V-CHECK 4MPT-16      |             |
|                 | 9               | 230/400 V | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 20 A            | 6 kA* - 10 kA**   | 77706476             | V-CHECK 4MPT-20      |             |
|                 | 9               | 230/400 V | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 25 A            | 6 kA* - 10 kA**   | 77706471             | V-CHECK 4MPT-25      |             |
|                 | 9               | 230/400 V | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 32 A            | 6 kA* - 10 kA**   | 77706472             | V-CHECK 4MPT-32      |             |
|                 | 9               | 230/400 V | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 40 A            | 6 kA* - 10 kA**   | 77706473             | V-CHECK 4MPT-40      |             |
|                 | 9               | 230/400 V | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 50 A            | 6 kA* - 10 kA**   | 77706474             | V-CHECK 4MPT-50      |             |
|                 | 9               | 230/400 V | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 63 A            | 6 kA* - 10 kA**   | 77706475             | V-CHECK 4MPT-63      |             |
|                 | 9               | 230/400 V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV | 10 A            | 6 kA* - 10 kA**   | 77706467             | V-CHECK 4MPT-10 PLUS |             |
|                 | 9               | 230/400 V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV | 16 A            | 6 kA* - 10 kA**   | 77706468             | V-CHECK 4MPT-16 PLUS |             |
|                 | 9               | 230/400 V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV | 20 A            | 6 kA* - 10 kA**   | 77706466             | V-CHECK 4MPT-20 PLUS |             |
|                 | 9               | 230/400 V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV | 25 A            | 6 kA* - 10 kA**   | 77706461             | V-CHECK 4MPT-25 PLUS |             |
|                 | 9               | 230/400 V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV | 32 A            | 6 kA* - 10 kA**   | 77706462             | V-CHECK 4MPT-32 PLUS |             |
|                 | 9               | 230/400 V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV | 40 A            | 6 kA* - 10 kA**   | 77706463             | V-CHECK 4MPT-40 PLUS |             |
| 9               | 230/400 V       | > 275 V   | 40 kA         | 15 kA | ≤ 1,8 kV               | 50 A     | 6 kA* - 10 kA** | 77706464          | V-CHECK 4MPT-50 PLUS |                      |             |
| 9               | 230/400 V       | > 275 V   | 40 kA         | 15 kA | ≤ 1,8 kV               | 63 A     | 6 kA* - 10 kA** | 77706465          | V-CHECK 4MPT-63 PLUS |                      |             |

Complies with EN 50550  
 \* According to EN 60898  
 \*\* According to EN 60947-2





## Combined overvoltage protectors (SPD + POP)



**V-CHECK MR Range | Includes MCB |  $I_{n(MCB)} \leq 63 \text{ A}$  | With automatic reconnection**

EN 50550  
POP

| No. Prot. Poles   | No. DIN modules | Un       | POP Protector |       | SPD Protector Class II |          |            | MCB               |          | Code           | Part number |
|---|-----------------|----------|---------------|-------|------------------------|----------|------------|-------------------|----------|----------------|-------------|
|   |                 |          | Ua            | Imax  | In                     | Up       | In C curve | Breaking capacity |          |                |             |
| <br>V-CHECK 2MR-40<br>P+N  | 5               | 230 V    | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 6 A        | 10 kA             | 77706256 | V-CHECK 2MR-6  |             |
|   | 5               | 230 V    | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 10 A       | 10 kA             | 77706257 | V-CHECK 2MR-10 |             |
|   | 5               | 230 V    | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 25 A       | 10 kA             | 77706250 | V-CHECK 2MR-25 |             |
|   | 5               | 230 V    | > 275 V       | 15 kA | 3 kA                   | ≤ 1,5 kV | 40 A       | 10 kA             | 77706255 | V-CHECK 2MR-40 |             |
| <br>V-CHECK 4MR-40<br>3P+N | 9               | 230/400V | > 275 V       | 20 kA | 5 kA                   | ≤ 1,5 kV | 10 A       | 6 kA* - 10 kA**   | 77706267 | V-CHECK 4MR-10 |             |
|   | 9               | 230/400V | > 275 V       | 20 kA | 5 kA                   | ≤ 1,5 kV | 16 A       | 6 kA* - 10 kA**   | 77706268 | V-CHECK 4MR-16 |             |
|   | 9               | 230/400V | > 275 V       | 20 kA | 5 kA                   | ≤ 1,5 kV | 20 A       | 6 kA* - 10 kA**   | 77706266 | V-CHECK 4MR-20 |             |
|   | 9               | 230/400V | > 275 V       | 20 kA | 5 kA                   | ≤ 1,5 kV | 25 A       | 6 kA* - 10 kA**   | 77706261 | V-CHECK 4MR-25 |             |
|   | 9               | 230/400V | > 275 V       | 20 kA | 5 kA                   | ≤ 1,5 kV | 32 A       | 6 kA* - 10 kA**   | 77706262 | V-CHECK 4MR-32 |             |
|   | 9               | 230/400V | > 275 V       | 20 kA | 5 kA                   | ≤ 1,5 kV | 40 A       | 6 kA* - 10 kA**   | 77706263 | V-CHECK 4MR-40 |             |
|   | 9               | 230/400V | > 275 V       | 20 kA | 5 kA                   | ≤ 1,5 kV | 50 A       | 6 kA* - 10 kA**   | 77706264 | V-CHECK 4MR-50 |             |
|   | 9               | 230/400V | > 275 V       | 20 kA | 5 kA                   | ≤ 1,5 kV | 63 A       | 6 kA* - 10 kA**   | 77706265 | V-CHECK 4MR-63 |             |


V-CHECK 4MR-40

Complies with EN 50550  
\* According to EN 60898  
\*\* According to EN 60947-2

## Combined overvoltage protectors (SPD + POP)



**V-CHECK R Range | MCB not included**

| No. Prot. Poles   | No. DIN modules | Un       | POP Protector |       | SPD Protector Class II |          |                       | Acting on     |         |          | Code         | Part number |
|---|-----------------|----------|---------------|-------|------------------------|----------|-----------------------|---------------|---------|----------|--------------|-------------|
|   |                 |          | Ua            | Imax  | In                     | Up       | Under-voltage release | Shunt release | Contact |          |              |             |
| <br>V-CHECK 4RPT<br>3P+N | 4               | 230/400V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV | ✓                     |               |         | 77706400 | V-CHECK 4R   |             |
|   | 4               | 230/400V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV |                       | ✓             |         | 77706415 | V-CHECK 4RPT |             |
|   | 4               | 230/400V | > 275 V       | 40 kA | 15 kA                  | ≤ 1,8 kV |                       |               | ✓       | 77706417 | V-CHECK 4RC  |             |

V-CHECK 4RPT



## Electrical Supply . Power frequency Overvoltages (POP)

### Power frequency Overvoltage Protectors (POP)



V-CHECK MP Range | Includes MCB |  $I_{n(MCB)} \leq 63 \text{ A}$



*\*V-CHECK MP protectors are direct equivalents of former V-CHECK MB models*



V-CHECK 2MP-40



V-CHECK 4MP-40

| No. Prot. Poles | No. DIN modules | Un        | POP Protector | MCB        |                   | Code     | Part number    |
|-----------------|-----------------|-----------|---------------|------------|-------------------|----------|----------------|
|                 |                 |           | Ua            | In C curve | Breaking capacity |          |                |
| P+N             | 3               | 230 V     | > 275 V       | 6 A        | 6 kA              | 77706361 | V-CHECK 2MP-6  |
|                 | 3               | 230 V     | > 275 V       | 10 A       | 6 kA              | 77706362 | V-CHECK 2MP-10 |
|                 | 3               | 230 V     | > 275 V       | 16 A       | 6 kA              | 77706363 | V-CHECK 2MP-16 |
|                 | 3               | 230 V     | > 275 V       | 20 A       | 6 kA              | 77706364 | V-CHECK 2MP-20 |
|                 | 3               | 230 V     | > 275 V       | 25 A       | 6 kA              | 77706365 | V-CHECK 2MP-25 |
|                 | 3               | 230 V     | > 275 V       | 32 A       | 6 kA              | 77706366 | V-CHECK 2MP-32 |
|                 | 3               | 230 V     | > 275 V       | 40 A       | 6 kA              | 77706367 | V-CHECK 2MP-40 |
|                 | 3               | 230 V     | > 275 V       | 50 A       | 6 kA              | 77706368 | V-CHECK 2MP-50 |
|                 | 3               | 230 V     | > 275 V       | 63 A       | 6 kA              | 77706369 | V-CHECK 2MP-63 |
| 3P+N            | 7               | 230/400 V | > 275 V       | 6 A        | 6 kA              | 77706371 | V-CHECK 4MP-6  |
|                 | 7               | 230/400 V | > 275 V       | 10 A       | 6 kA              | 77706372 | V-CHECK 4MP-10 |
|                 | 7               | 230/400 V | > 275 V       | 16 A       | 6 kA              | 77706373 | V-CHECK 4MP-16 |
|                 | 7               | 230/400 V | > 275 V       | 20 A       | 6 kA              | 77706374 | V-CHECK 4MP-20 |
|                 | 7               | 230/400 V | > 275 V       | 25 A       | 6 kA              | 77706375 | V-CHECK 4MP-25 |
|                 | 7               | 230/400 V | > 275 V       | 32 A       | 6 kA              | 77706376 | V-CHECK 4MP-32 |
|                 | 7               | 230/400 V | > 275 V       | 40 A       | 6 kA              | 77706377 | V-CHECK 4MP-40 |
|                 | 7               | 230/400 V | > 275 V       | 50 A       | 6 kA              | 77706378 | V-CHECK 4MP-50 |
|                 | 7               | 230/400 V | > 275 V       | 63 A       | 6 kA              | 77706379 | V-CHECK 4MP-63 |

Complies with EN 50550

### Power frequency Overvoltage Protectors (POP)



V-CHECK RP Range | MCB not included



V-CHECK 4RP

| No. Prot. Poles | No. DIN modules | Un       | POP Protector | Code     | Part number |
|-----------------|-----------------|----------|---------------|----------|-------------|
|                 |                 |          | Ua            |          |             |
| 3P+N            | 4               | 230/400V | > 275 V       | 77706640 | V-CHECK 4RP |

### Earth leakage toroid

TOCK Range



TOCK-30

| Usable cross-section | Code     | Part number |
|----------------------|----------|-------------|
| 20mm                 | 77762401 | TOCK-20     |
| 30mm                 | 77762402 | TOCK-30     |

## Power frequency Overvoltage Protectors (POP)



**OVERCHECK Range | Programmable, w/ auto. reconnection** |  $I_{n(MCB)} \leq 63 \text{ A}$

EN  
50550  
POP



OVERCHECK 2ND/120



OVERCHECK 4ND/120 - MT40

### POP Protection

- Undervoltage threshold: 90 – 110 V
- Overvoltage threshold: 130 – 175 V

### Overcurrent Protection

- Breaking capacity: 6 kA (EN 60898) - 10 kA (EN 60947-2)

### Earth leakage protection

- Sensitivity: 30 – 1000 mA
- Reconnection delay
- Class A

### Programmable

All values are adjustable

### Voltage control:

- Reconnection delay: 3 – 250 s
- No. reconnections: user defined

### Overcurrent protection:

- Reconnection delay: 1 – 60 min
- No. reconnections: 0 – 3

### Earth leakage protection:

- Reconnection delay: 3 – 250 s
- No. reconnections: 0 – 10
- Trip delay: 20 – 1.000 ms
- Sensitivity adjustment: 30 – 1.000 mA

### Phase sequence fault:

- No. reconnections: user defined

| No. Prot. Poles | No. DIN modules | Un       | Includes MCB | Nominal current (MCB) | Earth leakage protection | Phase sequence fault | Code                    | Part number              |
|-----------------|-----------------|----------|--------------|-----------------------|--------------------------|----------------------|-------------------------|--------------------------|
| P+N             | 3               | 120 V    |              | -                     | ✓                        |                      | 77762550                | OVERCHECK 2ND/120        |
|                 | 9               | 120 V    | ✓            | 6A                    | ✓                        |                      | 77762551                | OVERCHECK 2ND/120 - MT6  |
|                 | 9               | 120 V    | ✓            | 10A                   | ✓                        |                      | 77762552                | OVERCHECK 2ND/120 - MT10 |
|                 | 9               | 120 V    | ✓            | 16A                   | ✓                        |                      | 77762553                | OVERCHECK 2ND/120 - MT16 |
|                 | 9               | 120 V    | ✓            | 20A                   | ✓                        |                      | 77762554                | OVERCHECK 2ND/120 - MT20 |
|                 | 9               | 120 V    | ✓            | 25A                   | ✓                        |                      | 77762555                | OVERCHECK 2ND/120 - MT25 |
|                 | 9               | 120 V    | ✓            | 32A                   | ✓                        |                      | 77762556                | OVERCHECK 2ND/120 - MT32 |
|                 | 9               | 120 V    | ✓            | 40A                   | ✓                        |                      | 77762557                | OVERCHECK 2ND/120 - MT40 |
|                 | 9               | 120 V    | ✓            | 50A                   | ✓                        |                      | 77762558                | OVERCHECK 2ND/120 - MT50 |
|                 | 9               | 120 V    | ✓            | 63A                   | ✓                        |                      | 77762559                | OVERCHECK 2ND/120 - MT63 |
|                 | 3               | 120 V    |              | -                     |                          |                      | 77762570                | OVERCHECK 2N/120         |
|                 | 9               | 120 V    | ✓            | 6A                    |                          |                      | 77762571                | OVERCHECK 2N/120 - MT6   |
|                 | 9               | 120 V    | ✓            | 10A                   |                          |                      | 77762572                | OVERCHECK 2N/120 - MT10  |
|                 | 9               | 120 V    | ✓            | 16A                   |                          |                      | 77762573                | OVERCHECK 2N/120 - MT16  |
|                 | 9               | 120 V    | ✓            | 20A                   |                          |                      | 77762574                | OVERCHECK 2N/120 - MT20  |
|                 | 9               | 120 V    | ✓            | 25A                   |                          |                      | 77762575                | OVERCHECK 2N/120 - MT25  |
|                 | 9               | 120 V    | ✓            | 32A                   |                          |                      | 77762576                | OVERCHECK 2N/120 - MT32  |
|                 | 9               | 120 V    | ✓            | 40A                   |                          |                      | 77762577                | OVERCHECK 2N/120 - MT40  |
|                 | 9               | 120 V    | ✓            | 50A                   |                          |                      | 77762578                | OVERCHECK 2N/120 - MT50  |
| 9               | 120 V           | ✓        | 63A          |                       |                          | 77762579             | OVERCHECK 2N/120 - MT63 |                          |
| 3P+N            | 3               | 120/230V |              | -                     | ✓                        | ✓                    | 77762650                | OVERCHECK 4ND/120        |
|                 | 11              | 120/230V | ✓            | 10A                   | ✓                        | ✓                    | 77762652                | OVERCHECK 4ND/120 - MT10 |
|                 | 11              | 120/230V | ✓            | 16A                   | ✓                        | ✓                    | 77762653                | OVERCHECK 4ND/120 - MT16 |
|                 | 11              | 120/230V | ✓            | 20A                   | ✓                        | ✓                    | 77762654                | OVERCHECK 4ND/120 - MT20 |
|                 | 11              | 120/230V | ✓            | 25A                   | ✓                        | ✓                    | 77762655                | OVERCHECK 4ND/120 - MT25 |
|                 | 11              | 120/230V | ✓            | 32A                   | ✓                        | ✓                    | 77762656                | OVERCHECK 4ND/120 - MT32 |
|                 | 11              | 120/230V | ✓            | 40A                   | ✓                        | ✓                    | 77762657                | OVERCHECK 4ND/120 - MT40 |
|                 | 11              | 120/230V | ✓            | 50A                   | ✓                        | ✓                    | 77762658                | OVERCHECK 4ND/120 - MT50 |
|                 | 11              | 120/230V | ✓            | 63A                   | ✓                        | ✓                    | 77762659                | OVERCHECK 4ND/120 - MT63 |
|                 | 3               | 120/230V |              | -                     |                          | ✓                    | 77762670                | OVERCHECK 4N/120         |
|                 | 11              | 120/230V | ✓            | 10A                   |                          | ✓                    | 77762672                | OVERCHECK 4N/120 - MT10  |
|                 | 11              | 120/230V | ✓            | 16A                   |                          | ✓                    | 77762673                | OVERCHECK 4N/120 - MT16  |
|                 | 11              | 120/230V | ✓            | 20A                   |                          | ✓                    | 77762674                | OVERCHECK 4N/120 - MT20  |
|                 | 11              | 120/230V | ✓            | 25A                   |                          | ✓                    | 77762675                | OVERCHECK 4N/120 - MT25  |
|                 | 11              | 120/230V | ✓            | 32A                   |                          | ✓                    | 77762676                | OVERCHECK 4N/120 - MT32  |
|                 | 11              | 120/230V | ✓            | 40A                   |                          | ✓                    | 77762677                | OVERCHECK 4N/120 - MT40  |
|                 | 11              | 120/230V | ✓            | 50A                   |                          | ✓                    | 77762678                | OVERCHECK 4N/120 - MT50  |
|                 | 11              | 120/230V | ✓            | 63A                   |                          | ✓                    | 77762679                | OVERCHECK 4N/120 - MT63  |

Complies with EN 50550





OVERCHECK 2ND/230



OVERCHECK 4ND/230 - MT40

### POP Protection

- Undervoltage threshold: 170 – 200 V
- Overvoltage threshold: 250 – 350 V

### Overcurrent Protection

- Breaking capacity:  
6 kA (EN 60898) - 10 kA (EN 60947-2)

### Earth leakage protection

- Sensitivity: 30 – 1000 mA
- Reconnection delay
- Class A

### Programmable

All values are adjustable

### Voltage control:

- Reconnection delay: 3 – 250 s
- No. reconnections: user defined

### Overcurrent protection:

- Reconnection delay: 1 – 60 min
- No. reconnections: 0 – 3

### Earth leakage protection:

- Reconnection delay: 3 – 250 s
- No. reconnections: 0 – 10
- Trip delay: 20 – 1.000 ms
- Sensitivity adjustment: 30 – 1.000 mA

### Phase sequence fault:

- No. reconnections: user defined

| No. Prot. Poles | No. DIN modules | Un       | Includes MCB | Nominal current (MCB) | Earth leakage protection | Phase sequence fault | Code                    | Part number              |
|-----------------|-----------------|----------|--------------|-----------------------|--------------------------|----------------------|-------------------------|--------------------------|
| P+N             | 3               | 230 V    |              | -                     | ✓                        |                      | 77762540                | OVERCHECK 2ND/230        |
|                 | 9               | 230 V    | ✓            | 6A                    | ✓                        |                      | 77762541                | OVERCHECK 2ND/230 - MT-6 |
|                 | 9               | 230 V    | ✓            | 10A                   | ✓                        |                      | 77762542                | OVERCHECK 2ND/230 - MT10 |
|                 | 9               | 230 V    | ✓            | 16A                   | ✓                        |                      | 77762543                | OVERCHECK 2ND/230 - MT16 |
|                 | 9               | 230 V    | ✓            | 20A                   | ✓                        |                      | 77762544                | OVERCHECK 2ND/230 - MT20 |
|                 | 9               | 230 V    | ✓            | 25A                   | ✓                        |                      | 77762545                | OVERCHECK 2ND/230 - MT25 |
|                 | 9               | 230 V    | ✓            | 32A                   | ✓                        |                      | 77762546                | OVERCHECK 2ND/230 - MT32 |
|                 | 9               | 230 V    | ✓            | 40A                   | ✓                        |                      | 77762547                | OVERCHECK 2ND/230 - MT40 |
|                 | 9               | 230 V    | ✓            | 50A                   | ✓                        |                      | 77762548                | OVERCHECK 2ND/230 - MT50 |
|                 | 9               | 230 V    | ✓            | 63A                   | ✓                        |                      | 77762549                | OVERCHECK 2ND/230 - MT63 |
|                 | 3               | 230 V    |              | -                     |                          |                      | 77762560                | OVERCHECK 2N/230         |
|                 | 9               | 230 V    | ✓            | 6A                    |                          |                      | 77762561                | OVERCHECK 2N/230 - MT6   |
|                 | 9               | 230 V    | ✓            | 10A                   |                          |                      | 77762562                | OVERCHECK 2N/230 - MT10  |
|                 | 9               | 230 V    | ✓            | 16A                   |                          |                      | 77762563                | OVERCHECK 2N/230 - MT16  |
|                 | 9               | 230 V    | ✓            | 20A                   |                          |                      | 77762564                | OVERCHECK 2N/230 - MT20  |
|                 | 9               | 230 V    | ✓            | 25A                   |                          |                      | 77762565                | OVERCHECK 2N/230 - MT25  |
|                 | 9               | 230 V    | ✓            | 32A                   |                          |                      | 77762566                | OVERCHECK 2N/230 - MT32  |
|                 | 9               | 230 V    | ✓            | 40A                   |                          |                      | 77762567                | OVERCHECK 2N/230 - MT40  |
|                 | 9               | 230 V    | ✓            | 50A                   |                          |                      | 77762568                | OVERCHECK 2N/230 - MT50  |
| 9               | 230 V           | ✓        | 63A          |                       |                          | 77762569             | OVERCHECK 2N/230 - MT63 |                          |
| 3P+N            | 3               | 230/400V |              | -                     | ✓                        | ✓                    | 77762640                | OVERCHECK 4ND/230        |
|                 | 11              | 230/400V | ✓            | 10A                   | ✓                        | ✓                    | 77762642                | OVERCHECK 4ND/230 - MT10 |
|                 | 11              | 230/400V | ✓            | 16A                   | ✓                        | ✓                    | 77762643                | OVERCHECK 4ND/230 - MT16 |
|                 | 11              | 230/400V | ✓            | 20A                   | ✓                        | ✓                    | 77762644                | OVERCHECK 4ND/230 - MT20 |
|                 | 11              | 230/400V | ✓            | 25A                   | ✓                        | ✓                    | 77762645                | OVERCHECK 4ND/230 - MT25 |
|                 | 11              | 230/400V | ✓            | 32A                   | ✓                        | ✓                    | 77762646                | OVERCHECK 4ND/230 - MT32 |
|                 | 11              | 230/400V | ✓            | 40A                   | ✓                        | ✓                    | 77762647                | OVERCHECK 4ND/230 - MT40 |
|                 | 11              | 230/400V | ✓            | 50A                   | ✓                        | ✓                    | 77762648                | OVERCHECK 4ND/230 - MT50 |
|                 | 11              | 230/400V | ✓            | 63A                   | ✓                        | ✓                    | 77762649                | OVERCHECK 4ND/230 - MT63 |
|                 | 11              | 230/400V | ✓            | 10A                   |                          | ✓                    | 77762662                | OVERCHECK 4N/230 - MT10  |
|                 | 3               | 230/400V |              | -                     |                          | ✓                    | 77762660                | OVERCHECK 4N/230         |
|                 | 11              | 230/400V | ✓            | 16A                   |                          | ✓                    | 77762663                | OVERCHECK 4N/230 - MT16  |
|                 | 11              | 230/400V | ✓            | 20A                   |                          | ✓                    | 77762664                | OVERCHECK 4N/230 - MT20  |
|                 | 11              | 230/400V | ✓            | 25A                   |                          | ✓                    | 77762665                | OVERCHECK 4N/230 - MT25  |
|                 | 11              | 230/400V | ✓            | 32A                   |                          | ✓                    | 77762666                | OVERCHECK 4N/230 - MT32  |
|                 | 11              | 230/400V | ✓            | 40A                   |                          | ✓                    | 77762667                | OVERCHECK 4N/230 - MT40  |
|                 | 11              | 230/400V | ✓            | 50A                   |                          | ✓                    | 77762668                | OVERCHECK 4N/230 - MT50  |
|                 | 11              | 230/400V | ✓            | 63A                   |                          | ✓                    | 77762669                | OVERCHECK 4N/230 - MT63  |



IEC  
61643-21  
(SPD)

## Telecom and Signalling Networks Transient Overvoltages to IEC 61643-21

Telephone Lines



page 40

Data Networks



page 40

Measurement and  
Control



page 41

Radiofrequency



page 42

## Telecom and Signalling Networks

### Telephone lines



#### DIN rail format



| No. Protected Pairs | No. DIN modules | Un   | Uc    | Imax  | In   | Up          | Code     | Part number |
|---------------------|-----------------|------|-------|-------|------|-------------|----------|-------------|
| 1                   | 1               | 50 V | 180 V | 10 kA | 5 kA | < 200 V     | 77840115 | DIN-ADSL    |
|                     | 1               | 5 V  | 7 V   | 10 kA | 5 kA | < 10 / 20 V | 77840120 | DIN-PP      |

DIN-ADSL



#### Aerial format



| No. Protected Pairs | Uc      | Imax  | In   | Up          | Code     | Part number |
|---------------------|---------|-------|------|-------------|----------|-------------|
| 2                   | 18/56 V | 10 kA | 5 kA | < 27 / 75 V | 77834010 | MCH-RDSI    |
| 1                   | 180 V   | 10 kA | 5 kA | < 200 V     | 77834020 | MCH-ADSL    |
|                     | 7 V     | 10 kA | 5 kA | < 10 / 20 V | 77834025 | MCH-PP      |

MCH-ADSL



#### Format for MDF Main Distribution Frame disconnection terminal blocks



| No. Protected Pairs | Un    | Uc    | Imax   | In   | Up      | Terminal block type (not included) |     | Code     | Part number |
|---------------------|-------|-------|--------|------|---------|------------------------------------|-----|----------|-------------|
|                     |       |       |        |      |         | Krone                              | R&M |          |             |
| 1                   | 110 V | 180 V | 15 kA  | 5 kA | < 350 V |                                    | ✓   | 77830050 | TPL1 CG     |
|                     | 110 V | 180 V | 2,4 kA | 1 kA | < 575 V |                                    | ✓   | 77830060 | TPL1 SG     |
|                     | 110 V | 180 V | 15 kA  | 5 kA | < 350 V | ✓                                  |     | 77830070 | KPL1 CG     |
|                     | 110 V | 180 V | 2,4 kA | 1 kA | < 575 V | ✓                                  |     | 77830080 | KPL1 SG     |

KPL1 SG

### Data networks



#### Aerial or Rack format | Ethernet Cat. 5 E and 6



| No. Protected Pairs | Un             | Uc  | In    | Up   | Bandwidth | Category | Code     | Part number            |
|---------------------|----------------|-----|-------|--|-----------|----------|----------|------------------------|
| 4x18                | 5 V            | 6 V | 250 A | < 35 V                                     | 250 MHz   | Cat. 6   | 77811933 | NETPRO CG18P [CAT. 6]  |
| 4x24                | 5 V            | 6 V | 250 A | < 35 V                                     | 250 MHz   | Cat. 6   | 77811935 | NETPRO CG-24P [CAT6]   |
|                     | 5 V            | 6 V | 250 A | < 35 V                                     | 100 MHz   | Cat. 5.E | 77811940 | NETPRO CG-24P [CAT5.E] |
| 4                   | 5 V            | 6 V | 250 A | < 35 V                                     | 100 MHz   | Cat. 5.E | 77811900 | NETPRO 100 BT          |
|                     | 5 V            | 6 V | 250 A | < 35 V                                     | 250 MHz   | Cat. 6   | 77811930 | NETPRO CG1P            |
|                     | 5 V            | 6 V | 250 A | < 35 V                                     | 250 MHz   | Cat. 6   | 77811945 | NETPRO CG-1P M         |
|                     | 5 V*<br>48 V** | 6 V | 250 A | 130 V [L-L / signal]<br>35 V [L-L / power] | 250 MHz   | Cat. 6   | 77811931 | NETPRO 1P POE [CAT. 6] |

NETPRO 100 BT

\* Signal / pairs 1-2-3-6  
\*\* Power / pairs 4-5-7-8

POE



## Measurement and Control



### Protection of analog signals 12 V or 24 V



| No. Protected Wires | No. DIN modules | Un   | Uc   | I <sub>max</sub> | In   | Up                                 | Code     | Part number |
|---------------------|-----------------|------|------|------------------|------|------------------------------------|----------|-------------|
| 2+GND               | 2               | 12 V | 16 V | 10 kA            | 5 kA | < 45 V (L-PE) < 27 V (L-GND)       | 77840710 | DIN 12V-3   |
| 4+GND               | 2               | 12 V | 16 V | 10 kA            | 5 kA | < 45 V (L-PE) < 27 V (L-GND)       | 77840721 | DIN 12V-5N  |
| 7+GND               | 2               | 12 V | 16 V | 10 kA            | 5 kA | < 45 V (L-PE) (L-L) < 27 V (L-GND) | 77840735 | DIN 12V-8   |
| 2+GND               | 2               | 24 V | 30 V | 10 kA            | 5 kA | < 90 V (L-PE) < 45 V (L-GND)       | 77840760 | DIN 24V-3   |
| 4+GND               | 2               | 24 V | 30 V | 10 kA            | 5 kA | < 67 V (L-PE) < 45 V (L-GND)       | 77840771 | DIN 24V-5N  |
| 7+GND               | 2               | 24 V | 30 V | 10 kA            | 5 kA | < 67 V (L-L) (L-PE) < 39 V (L-GND) | 77840785 | DIN-24V-8   |

DIN 12V-8



### Protection of lines of 1 pair of wires



| No. Protected Wires | No. DIN modules | Un    | Uc    | I <sub>max</sub> | In   | Up      | Code     | Part number |
|---------------------|-----------------|-------|-------|------------------|------|---------|----------|-------------|
| 1                   | 1               | 6 V   | 7 V   | 10 kA            | 5 kA | < 10 V  | 77840905 | DIN 6V-2C   |
|                     | 1               | 12 V  | 16 V  | 10 kA            | 5 kA | < 20 V  | 77840910 | DIN 12V-2C  |
|                     | 1               | 24 V  | 27 V  | 10 kA            | 5 kA | < 40 V  | 77840915 | DIN 24V-2C  |
|                     | 1               | 48 V  | 56 V  | 10 kA            | 5 kA | < 70 V  | 77840920 | DIN 48V-2C  |
|                     | 1               | 150 V | 180 V | 10 kA            | 5 kA | < 200 V | 77840925 | DIN 150V-2C |

DIN 12V-2C



### Protection of lines of 2 pairs of wires



| No. Protected Wires | Un   | Uc   | I <sub>max</sub> | In   | Up                          | Code     | Part number |
|---------------------|------|------|------------------|------|-----------------------------|----------|-------------|
| 4                   | 24 V | 30 V | 10 kA            | 5 kA | ≤ 60 V (L-PE) ≤ 120 V (L-L) | 77840545 | DIN 24V-4G1 |
| 2 pairs of wires    | 24 V | 30 V | 10 kA            | 5 kA | ≤ 600 V (L-PE) ≤ 60 V (L-L) | 77840565 | DIN 24V-2G2 |

DIN 24V-4G1



### Protection of modular terminal blocks with integrated disconnection



| No. Protected Wires | Un    | Uc    | I <sub>max</sub> | In   | Up            | Code     | Part number |
|---------------------|-------|-------|------------------|------|---------------|----------|-------------|
| 2                   | 24 V  | 30 V  | 5 kA             | 5 kA | ≤ 45 V (L-PE) | 77850655 | BNV 30      |
| 2                   | 110 V | 130 V | 5 kA             | 5 kA | ≤ 260 V       | 77850660 | BNV 110     |

BNV 110





### Protection of RS 485 communications



| No. Protected Wires | No. DIN modules | Un   | Uc   | Imax  | In   | Up                         | Code     | Part number |
|---------------------|-----------------|------|------|-------|------|----------------------------|----------|-------------|
| 1                   | 2               | 12 V | 16 V | 10 kA | 5 kA | < 20 V                     | 77840805 | DIN 485-2C  |
| 2+GND               | 2               | 12 V | 16 V | 10 kA | 5 kA | < 45 V (L-PE) < 27 V (L-L) | 77840810 | DIN 485-3   |
| 4+GND               | 2               | 12 V | 16 V | 10 kA | 5 kA | < 45 V (L-PE) < 27 V (L-L) | 77840816 | DIN 485-5N  |

DIN 485-3



### Protection of RS 232 communications



| No. Protected Wires | Un   | Uc   | Imax   | In     | Up                            | Code     | Part number   |
|---------------------|------|------|--------|--------|-------------------------------|----------|---------------|
| 7+GND               | 12 V | 16 V | 0,5 kA | 0,5 kA | < 100 V (L-PE) < 25 V (L-GND) | 77820135 | DB25-232/8HS  |
| 23+GND              | 12 V | 16 V | 0,5 kA | 0,5 kA | < 100 V (L-PE) < 25 V (L-GND) | 77820140 | DB25-12V/25HS |
| 7+GND               | 12 V | 16 V | 0,5 kA | 0,5 kA | < 500 V (L-PE) < 25 V (L-GND) | 77820145 | DB9-12V/9HS   |
| 2+GND               | 5 V  | 6 V  | 5 kA   | 2 kA   | < 20 V (L-L) < 50 V (L-PE)    | 77820153 | DB9-PFB/2HS   |
| 17+GND              | 12 V | 16 V | 0,5 kA | 0,5 kA | < 100 V (L-PE) < 25 V (L-GND) | 77820160 | DB25-V24HS    |
| 14+GND              | 12V  | 16V  | 0,5kA  | 0,5kA  | < 100V (L-PE) < 25V (L-GND)   | 77820800 | DB15-12V/15HS |

DB25-12V/25HS

## Radiofrequency



### Protection of coaxial cables



| Uc    | Imax  | In     | Up      | Type of connector (I/O) | Code     | Part number |
|-------|-------|--------|---------|-------------------------|----------|-------------|
| 24 V  | 2 kA  | 1,5 kA | < 45 V  | BNC (Male-Female)       | 77801671 | CT 05 CCTV* |
| 120 V | 20 kA | 10 kA  | < 600 V | TNC (Male-Female)       | 77801680 | CT 10 TNC   |
| 230 V | 20 kA | 10 kA  | < 600 V | N (Male-Female)         | 77801650 | CT 10 N     |
|       | 20 kA | 10 kA  | < 600 V | BNC (Male-Female)       | 77801655 | CT 10 BNC   |
|       | 20 kA | 10 kA  | < 600 V | F (Female-Female)       | 77801660 | CT 10 F     |
|       | 20 kA | 10 kA  | < 600 V | TV (Male-Female)        | 77801665 | CT 10 TV    |
|       | 20 kA | 10 kA  | < 600 V | N (Female-Female)       | 77801685 | CT 10 NW    |
|       | 20 kA | 10 kA  | < 600 V | UHF (Male-Female)       | 77801690 | CT 10 UHF   |

CT 05 CCTV

\*See page 43 for identification of the exact ordering code and part number of the replacement surge module of CT05 CCTV.

## Replacement Cartridges for PS surge protectors | Class I+II; II



### PS Range | Plug-in Cartridges

|   | Range | No. DIN modules | PS cartridge Identification code * | Code     | Part number      |
|---|-------|-----------------|------------------------------------|----------|------------------|
|   | PSC   | 1               | C01                                | 77738600 | PSC 12,5/120     |
|   |       | 1               | C02                                | 77738601 | PSC 12,5/230     |
|   |       | 1               | C03                                | 77738602 | PSC 12,5/400     |
|   |       | 2               | C04                                | 77738610 | PSC 25/120       |
|   |       | 2               | C05                                | 77738611 | PSC 25/230       |
|   |       | 1               | C06                                | 77738612 | PSC 25/400       |
|   |       | 1               | C07                                | 77738613 | PSC 25N          |
|   |       | 1               | C08                                | 77738614 | PSC 50N          |
|   |       | 2               | C09                                | 77738619 | PSC 100N         |
|   |       | 1               | C10                                | 77738630 | PSC 12,5/600 PV  |
|   |       | 1               | C11                                | 77738631 | PSC 12,5/1000 PV |
|   | PSM   | 1               | M01                                | 77707650 | PSM-20/120       |
|   |       | 1               | M02                                | 77707651 | PSM-20/230       |
|   |       | 1               | M03                                | 77707652 | PSM-20/400       |
|   |       | 1               | M04                                | 77707653 | PSM-40/120       |
|   |       | 1               | M05                                | 77707654 | PSM-40/230       |
|   |       | 1               | M06                                | 77707655 | PSM-40/400       |
|   |       | 1               | M07                                | 77707656 | PSM-40/600 PV    |
|   |       | 1               | M08                                | 77707657 | PSM-40/1000 PV   |
|   |       | 1               | M09                                | 77707668 | PSM-30/750       |
|   |       | 1               | M10                                | 77707663 | PSM-20N          |
|   |       | 1               | M11                                | 77707664 | PSM-40N          |
|   |       | 1               | M12                                | 77707670 | PSM-20/230 PLC   |
|   | PSL   | 1               | L01                                | 77708100 | PSL-8/230        |
| 1 |       | L02             | 77708105                           | PSM-8N   |                  |

\* These short codes are referred to on pages 22-24, 27 of the present catalogue to identify what cartridges are used in each PSC, PSM and PSL surge protector.

## Replacement Blocks for TVSS Modular Panels | UL 1449 3rd Ed

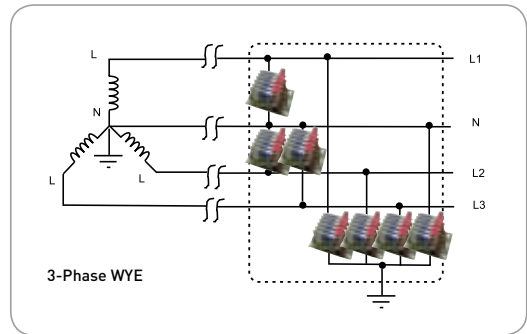


### CPS BLOCK Range | Surge Suppression Modules (per mode)

77797 5 Y Z

| Y | I <sub>max</sub> /Phase |
|---|-------------------------|
| 1 | 40 kA                   |
| 2 | 80 kA                   |
| 3 | 100 kA                  |
| 4 | 160 kA                  |
| 5 | 200 kA                  |
| 6 | 240 kA                  |

| Z | Network        | VLN   |
|---|----------------|-------|
| 1 | 1-Phase        | 120 V |
| 2 | 1-Phase        | 230 V |
| 3 | Split Phase    | 120 V |
| 4 | 3-Phase WYE    | 120 V |
| 5 | 3-Phase WYE    | 230 V |
| 6 | 3-Phase WYE    | 277 V |
| 7 | 3-Phase Delta  | 240 V |
| 8 | 3-Phase Delta  | 400 V |
| 9 | 3-Phase Delta  | 480 V |
| 0 | High Leg Delta | 120 V |



**Example:**

For product code 77797265 with part number CPS BLOCK Plus 3-Phase WYE 240 kA 230 V, the replacement surge module would have: code 77797565 and part number CPS BLOCK Rpt 3-Phase WYE 240 kA 230 V.

## Replacement Module for CCTV Coaxial SPD | Fine Protection



### CT05 CCTV | Surge Module

| Full product* |             | Spare    |                 |
|---------------|-------------|----------|-----------------|
| Code          | Part number | Code     | Part number     |
| 77801671      | CT05 CCTV   | 77801641 | PROT-MODULE CT2 |

\* PROT-MODULE CT2 is the replacement surge module of CT05 CCTV.

Check our full  
Catalogue



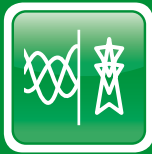
Scan this QR code  
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Specialists in comprehensive lightning and overvoltage protection. Specific solutions for all types of application.



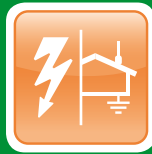
Surge Protection  
(Electrical Supply)



POP Power frequency  
Overvoltage  
Protection  
(Electrical Supply)



Surge Protection  
(Telecom and Signalling  
Networks)



External  
Lightning  
Protection



Monitoring  
of Grounding  
Systems



Insulation  
Monitoring



Beacon  
Systems

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