INNOVATIVE TECHNOLOGIES
IN LIGHTNING PROTECTION
EUROPEAN TECHNOLOGY
Research, Development and Innovation

• Our product are safe and effective.
• We offer solutions tailored to the needs and demands of our customers.
• We are innovating by incorporating new technologies in Lightning Protection Systems.
• We adapt ourselves to the requirements of our customers.
• We have high knowledge on Lightning Protection Systems.
• We provide high quality care, professionalism, close and personalized.
• Our products and services have an excellent price/quality ratio.
• We are rigorous in meeting our commitments.
• We have highly qualified technical personnel.
• We are highly respectful of the environment.
• We believe in human values.
• You will feel safe with our products.

Aiditec Systems, SL

Is an Innovative Technology Based Company, with a high knowledge of the technique and the market of Lightning Protection, which researches, develops, manufactures and distributes innovative and technologically advanced products. Our main goal is to satisfy the needs and expectations of our customers by offering innovative high-tech solutions tailored to their needs and requirements. We are professional experts in Lightning Protection Systems, with accumulated experience of more than 50 years and with knowledge and proven experience in different areas such as:

• Industrial design
• Engineering
• Marketing
• Quality
• Management and logistics
• Production
Certificate ISO 9001

Certificate ES17/22392

The management system of

AIDITEC SYSTEMS, S.L.

C/ Torres, 7 bajo
46918 Valencia

has been assessed and certified as meeting the requirements of

ISO 9001:2015

Design, manufacturing and commercialization of lightning rods and grounding.

This certificate is valid from 23 October 2017 until 23 October 2020.

Issue 1.

Certification Management

SGS ICS Service, S.A. (Empresa)
C/Trespatines, 26, 28042 Madrid, España.
1 34 91 310 8115  34 91 383 8102  www.sgs.com

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Our services

<table>
<thead>
<tr>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our engineering team is qualified to carry out lightning protection projects. Analysis of the situation and projection of the most suitable solution for providing the most effective protection.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Installations</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have specialized staff in the installation of complete lightning protection system. Even for performing vertical work.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>We conduct of complete lightning protection systems throughout the Spanish territory so the security of the facilities is ensured over time and it also with the UNE 21186 regulation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training courses are held for all professionals who want to acquire knowledge of lightning protection so they can perform installations, revisions, maintenance, distribution, etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk calculator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk calculator are performed. This calculation is what determines whether a building or structure needs or not a lightning protection system according to regulations. It can also be done without cost and at any time by entering in our web.</td>
</tr>
</tbody>
</table>
When a storm is formed, an increase of the atmospheric electrical potential occurs and it can exceed 10 kV/meter quickly. The ESE internal device stores this energy in the electro-atmospherical capacitor, which is formed by the outer metal casing and the earthed shaft.

With this increase of potential two things happen at the same time: the first is that a downwards stream is created from the clouds to the ground, and the second is that an upward artificial stream is created by the lightning rod. This upward stream intercepts the downwards stream, guiding it to the arrester and driving it to the ground safely.

The time that the upward stream of a ESE lightning rod forward to a stream created by any passive element such as a Franklin rod for example, is what determines the radius of protection. This time is what is known as advance time.

This is the reason for the different ESE lightning rods type, with different advance times depending on the meters of protection needed in each case.
Protection Guarantee

The ESE lightning rod ADVANCE has successfully passed the tests based on the UNE 21186, NFC 17102 and NP 4426, for Early Streamer Emission Lightning Rod.

- Dimensional: Ensures that the dimensions are standardized.
- Impulse Withstand Current (100 kA - 10350 µs): Ensures its functioning after several lightning strokes.
- Saline Mist and Humid Sulphurous Atmosphere: Certifies resistance in corrosive environments.
- Advance Time: Guarantees the protection radii.

Security Factor

Radii protection calculated based on the CTE, UNE 21186, NFC 17102 y NP 4426 standards, applying a minimum Security Factor of 10 microseconds.

Incorporation of New Technologies

As a result of investigations made and the R + D projects, the ESE lightning rod ADVANCE incorporates the following new technologies:

- SAT - Stabilization of Advance Time
  It achieves a maximum deviation of 5% in the advance time performed according to Product Certification Regulations, which guarantees the stability of the lightning rod.

- FBD - Forced Blow Deionization
  Allows quick deionization arc chamber, which ensures that the lightning rod is in perfect condition to capture a new discharge.

- IAW - Insulation Assurance Water
  Maintains permanently isolated the electrodes of the lightning rod which have to be at a different potential; ensuring lightning rod operation in extreme wet conditions.

- EOA - Extension of Arc
  Maintains proper tension between the electrodes of the lightning rod that are different potential, ensuring its perfect running.

Guarantee

The ESE lightning rod ADVANCE has 5 years guarantee, extendable to 10 years.

Extendable year to year and subject to revision by an authorized technician and report audited by AIDITEC SYSTEMS, SL.
Operating in rainy conditions

TOTAL ISOLATION GUARANTEE

In lightning rods with PDC’s priming device, it is essential to guarantee the insulation between the armor or electrodes that make it up and which are at different potential.

If in adverse weather conditions (heavy rain) this insulation is lost, the priming device would stop working and therefore the lightning conductor can not offer the specified protection.

The ADVANCE ESE lightning rod ensures operation of triggering device and its effectiveness in protecting thanks to the insulating sleeves “Isolated Rain”, which ensures complete isolation between the electrodes in heavy rain conditions.

This system guarantees total insulation in extreme rain conditions, provided by the insulating sleeves that surround the electrodes that must permanently maintain the insulation. This prevents the rain from bringing the metallic body of the lightning rod (at atmospheric potential) into contact with the metallic axis (at ground potential).

The isolating system “ISOLATED RAIN” guaranteed the perfect operation under extreme rain:

- WHEN THE ELECTRIC FIELD VARIES DURING STORM
- DURING THE APPROACH OF THE DOWNWARD LEADER

Installation

The ESE lightning rod ADVANCE installation must be performed as described in the Technical Building Code (CTE) and the UNE 21186, NFC 17102 and NP 4426.

ESE lightning rod Advance

<table>
<thead>
<tr>
<th>Reference</th>
<th>Model</th>
<th>Material</th>
<th>Dimensions</th>
<th>Protection Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 011</td>
<td>ADVANCE RP - 40</td>
<td>Stainless steel AISI 316L</td>
<td>Ø 90 x 500 mm</td>
<td>55 60 70 80</td>
</tr>
<tr>
<td>900 012</td>
<td>ADVANCE RP - 50</td>
<td>Stainless steel AISI 316L</td>
<td>Ø 90 x 500 mm</td>
<td>70 75 85 95</td>
</tr>
<tr>
<td>900 013</td>
<td>ADVANCE RP - 60</td>
<td>Stainless steel AISI 316L</td>
<td>Ø 90 x 500 mm</td>
<td>75 80 90 100</td>
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<tr>
<td>900 014</td>
<td>ADVANCE RP - 80</td>
<td>Stainless steel AISI 316L</td>
<td>Ø 90 x 500 mm</td>
<td>80 87 97 107</td>
</tr>
</tbody>
</table>

Radii protection for 6 m height of the lightning rod in relation to the plane to be protected, and based on: CTE SU8, UNE 21186, NFC 17102 y NP 4426.
Pararrayos Advance PDC / Lightning Rod Advance ESE (Mod. RP-60)

Ensayos realizados en base a las normas / Tests performed based on the standards
UNE 21186 / NFC 17102 / NP 4426.

> ENSAYOS MECÁNICOS / MECHANICAL TESTS
> ENSAYOS AMBIENTALES / ENVIRONMENTAL TESTS
> ENSAYOS ELÉCTRICOS / ELECTRICAL TESTS

Resistencia a la energía de la descarga con forma de onda 10/350 µs
Energy resistance of the discharge with waveform factor of 5 µs

H= Altura de la punta con relación al plano a proteger – En metros
H= Height of the lightning rod in relation to the plane to be protected – In meters

Fator de seguridad mínimo de 5 µs / Minimum safety factor of 5µs

Resistencia a la energía de la descarga con forma de onda 10/350 µs
Energy resistance of the discharge with waveform factor of 5 µs

200 kA
60 µs

Resistencia a la energía de la descarga con forma de onda 10/350 µs
Energy resistance of the discharge with waveform factor of 5 µs

200 kA
47 µs

* Garantía de Aislamiento entre Electrodos / Isolation Guarantee between Electrodes

Radios de protección en metros según normas / Radii protection in meters according standards
UNE 21186 / NFC 17102 / NP 4426.
ESE lightning rod made of stainless steel AISI 316 L and test based on the UNE 21186, NFC 17102 and NP 4426.

Technical Specifications

Double triggering device:
- Generator anticipation of the upward leader
- Circuit for storing electrical charges
Operation in any weather condition
guarantee isolation between electrodes
Fully autonomous and maintenance-free

Tests and Certificates

Tests performed at the Technological Institute of Energy (ITE) and based on the UNE 21186, NFC 17102 y NP 4426
- Mechanical
- Environmental
- Electrical
- Advance Time

Benefits and Guarantees

- Security Factor of 5 µs as a minimum in the radii protection
- Efficiency at 100% discharge
- High level of protection
- Electrical continuity
- No resistance to the passage of each download
- Maintains its properties to the passage of each download
- Long-term guarantee

* The ESE lightning rod SIGMA has 5 years guarantee against manufacturing defect

Standards and Installation

According to the requirements of the following standards:
UNE 21186 - UNE EN 62305 - NFC 17102 - NP 4426 - CTE - REB*

* For installations is recommended to follow the guidelines in these standards

ESE lightning rod Sigma

<table>
<thead>
<tr>
<th>Reference</th>
<th>Model</th>
<th>Level 1 Rp</th>
<th>Level 2 Rp</th>
<th>Level 3 Rp</th>
<th>Level 4 Rp</th>
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<tbody>
<tr>
<td>800 005</td>
<td>SIGMA R - 25</td>
<td>40</td>
<td>50</td>
<td>55</td>
<td>65</td>
</tr>
<tr>
<td>800 001</td>
<td>SIGMA R - 40</td>
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<td>55</td>
<td>65</td>
<td>75</td>
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<tr>
<td>800 002</td>
<td>SIGMA R - 55</td>
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<td>90</td>
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<tr>
<td>800 003</td>
<td>SIGMA R - 65</td>
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<td>95</td>
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<tr>
<td>800 004</td>
<td>SIGMA R - 75</td>
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<td>87</td>
<td>97</td>
<td>107</td>
</tr>
</tbody>
</table>

Rp = Radii protection in meters according UNE 21186, NFC 17102 y NP 4426.
Radii protection for 6 m height of the lightning rod in relation to the plane to be protected.
Garantía de Aislamiento entre Electrodos / Isolation Guarantee between Electrodes

Test performed by Energy Technological Institute (ITE)

UNE 21186 / NFC 17102 / NP 4426:

Pararrayos Sigma PDC / Lightning Rod Sigma ESE (Mod. R-25)

Ensayos realizados en el Instituto Tecnológico de la Energía (ITE)

* Garantía de Aislamiento entre Electrodes / Isolation Guarantee between Electrodes

Ensayos realizados en base a las normas / Related tests based on the standards

> ENSAYOS AMBIENTALES / ENVIRONMENTAL TESTS

> ENSAYOS MECÁNICOS / MECHANICAL TESTS

> ENSAYOS ELÉCTRICOS / ELECTRICAL TESTS

Resistencia a la energía de la descarga con forma de onda 10/350 µs

Energy resistance of the discharge with waveform factor of 5 µs

Resistencia a la energía de la descarga con forma de onda 200/300 µs

Energy resistance of the discharge with waveform factor of 5 µs

Resistencia a la energía de la descarga con forma de onda 55 µs

Energy resistance of the discharge with waveform factor of 5 µs

Resistencia a la energía de la descarga con forma de onda 35 µs

Energy resistance of the discharge with waveform factor of 5 µs

Resistencia a la energía de la descarga con forma de onda 20 µs

Energy resistance of the discharge with waveform factor of 5 µs

H= Altura de la punta con relación al plano a proteger – En metros

Factor de seguridad mínimo de 5 µs / Minimum safety factor of 5µs

Tiempo de avance en el cebado / Advance time

Radios de protección en metros según normas

Radii protection in meters according standards

Nivel / Level (1) Nivel / Level (2) Nivel / Level (3) Nivel / Level (4)

UNE 21186 / NFC 17102 / NP 4426.
**Technical specifications**

- Made of stainless steel AISI-316 L
- Guarantee isolation between electrodes
- Maintains its properties to the passage of each download
- Operation in any weather condition
- Fully autonomous and maintenance-free
- Dimensions: 300 mm x Ø 60 mm
- Metric thread: M - 16
- Weight: 1.8 kg

**Guarantee**

3 years guarantee against manufacturing defect

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**ESE Lightning Rod Electron**

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>MODEL</th>
<th>PROTECTION LEVEL</th>
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</thead>
<tbody>
<tr>
<td>800 010</td>
<td>Electron</td>
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</tbody>
</table>

<table>
<thead>
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<th></th>
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<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>30</td>
<td>35</td>
<td>45</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Radii protection for 6 m height of the lightning rod in relation to the plane to be protection. According standards: CTE SU8, UNE 21186, NFC 17102 y NP 4426.
Certified ESE Electron

CERTIFICADO DE ENSAYOS / TEST CERTIFICATE

Pararrayos Electron PDC / Lightning Rod Electron ESE (Mod. 15)

Ensayos realizados en base a las normas / Related tests based on the standards
UNE 21186 / NFC 17102 / NP 4426:

> ENSAYOS MECÁNICOS / MECHANICAL TESTS

> ENSAYOS AMBIENTALES / ENVIRONMENTAL TESTS

> ENSAYOS ELÉCTRICOS / ELECTRICAL TESTS

Resistencia a la energía de la descarga con forma de onda 10/350 µs
Energy resistance of the discharge with waveform factor of 5 µs

200 kA

> ENSAYOS DEL AVANCE EN EL CEBADO / ADVANCE TIME TESTS

Tiempo de avance en el cebado / Advance time
Factor de seguridad mínimo de 5 µs / Minimum safety factor of 5µs

15 µs

Ensayos realizados en el Instituto Tecnológico de la Energía (ITE)
Test performed by Energy Technological Institute (ITE)

* Garantía de Aislamiento entre Electrodes / Isolation Guarantee between Electrodes

Radios de Protección / Radi Protection

<table>
<thead>
<tr>
<th>H</th>
<th>Nivel / Level (1)</th>
<th>Nivel / Level (2)</th>
<th>Nivel / Level (3)</th>
<th>Nivel / Level (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>12</td>
<td>15</td>
<td>17</td>
<td>20</td>
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<tr>
<td>3</td>
<td>19</td>
<td>22</td>
<td>25</td>
<td>28</td>
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<tr>
<td>4</td>
<td>25</td>
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<td>40</td>
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<tr>
<td>5</td>
<td>29</td>
<td>33</td>
<td>41</td>
<td>48</td>
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<tr>
<td>6</td>
<td>33</td>
<td>37</td>
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<td>54</td>
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<td>8</td>
<td>38</td>
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<td>63</td>
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<td>10</td>
<td>43</td>
<td>48</td>
<td>58</td>
<td>69</td>
</tr>
<tr>
<td>20</td>
<td>48</td>
<td>54</td>
<td>64</td>
<td>83</td>
</tr>
</tbody>
</table>

Medio / Medium (1)

UNE 21186 / NFC 17102 / NP 4426.

* In the installations in which there is danger or risk of environmental pollution, it will be applied a safety factor of 40% over the radius of protection of this table.

AIDITEC SYSTEMS, S.L. - C/ TORRES 7, BAJO DERECHA - 46018 VALENCIA (SPAIN) - TEL. +34 963 842 957 - www.aiditecsystems.com
MEASURING DEVICES
The AS TESTER device is a test portable high-tech equipment, which makes an automatic and complete testing of the operation of the ESE Lightning rod. It is valid for all models of Lightning rods with triggering device manufactured by AIDITEC SYSTEMS, S.L.

**Features**

- Manufactured with high quality materials
- Maximum output voltage: 5000V
- Test priming Lightning Rod: 0.3mA ± 2%
- Battery: 1 x 6LR61 - 9V
- Battery life: 1000 test
- Operating temperature: -20 °C ... + 50°C
- Dimensions: 270 x 230 x 80 mm
- Weight: 900 gr.
Performing a measurement

Instructions

1. Plug the cables into the connection terminals of the tester.
2. Connect the clamps on the lightning rod in a position to test, as indicated in connection diagram.
3. Press the power button.
4. Select "New Test".
5. Press simultaneously the two TEST buttons to start the cycle.
6. Wait a few seconds while the tester makes testing.

Connection

The measurement should always be made between the 2 existing potential in all lightning rods with triggering device (ESE):
1. ATMOSPHERIC POTENTIAL. Tip and metal housing.
2. GROUND POTENTIAL. Axis.

* If the measurement is affected with the lightning rod installed, connection to ground potential can be done on the mast or the itself downconductor, since both elements must be joined to the axis of the lightning rod.

Messages on display

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Operating voltage (Discharge)</td>
<td>OK</td>
<td>NOK</td>
</tr>
<tr>
<td>2. Capacitive value (Charge)</td>
<td>OK</td>
<td>NOK</td>
</tr>
<tr>
<td>3. Pulse generator (Trafo)</td>
<td>OK</td>
<td>NOK</td>
</tr>
</tbody>
</table>

If in any of the measurements appears NOK, the next measurement is not made, as the triggering device has lost its initial characteristics and cannot assure its 100% effectiveness, and it should be changed as soon as possible.

OTHERS MESSAGES ON DISPLAY

1. "ABNORMAL VOLTAGE" - Check connections and avoid checking during possible storms.
2. "SHORT CIRCUTED" - Triggering device short circuited >> Replace the Lightning Rod.
3. "ANOMALOUS LOAD" - Possible assumptions:
   ESE not compatible / Battery low / Device deteriored >> Replace the Lightning Rod.
4. "LOW BATTERY. Replace it!!" - Replace the battery

WARNING

The AS TESTER device only ensures the proper operation of the triggering device, but not the physical integrity of the lightning rod, so a positive result in a lightning rod who has suffered physical damage does not mean that it maintains its coverage level since this depends not only on triggering device but also to physical parameters, so to ensure the level of coverage is also required visual inspection of the physical integrity of the lightning rod.

Security

- Do not touch the lightning rod at the time of testing.
- This device produces high voltage: handle connection cables correctly.
- To measure it is necessary to press the two TEST buttons with both hands.
- Avoid the realization of testing with the lightning rod installed in storm conditions.
ADT COUNTER

Lightning Event Counter - ADT Counter

It counts and records the direct impacts, as well as the surges protection of a lightning protection system.

It is a device that does not intervene in the operation of the protection system, but that is undoubtedly a very important element, because it is the only way to know that the system has suffered a lightning strike and then a review of the system must be carried out to verify that everything is still in correct condition and remain protected.

Technical characteristics

- Undercurrent threshold (Itc 8/20 µs) - 1 kA.
- Current supported and counted (Imcw 10/350 µs) - 100 kA.
- Valid for plate up to 60 x 10 mm
- Valid for round up to Ø 15 mm
- Operating temperature: de -20ºC a +65ºC
- Weight: 285 gr.
- Dimensions: 82 x 69 x 45 mm
- Conforms to: EN 62561-6 / EN 50164-6 / UTE C 17-106

Benefits

- Quick and easy installation
- No need to disconnect or sectioning the downconductor
- Can be installed in any type of downconductor
- It can be used to count and record impact direct and surges

<table>
<thead>
<tr>
<th>Reference</th>
<th>Material</th>
<th>Dimensions</th>
<th>Rank</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 920</td>
<td>Plastic</td>
<td>82 x 69 x 45 mm</td>
<td>0 - 9999</td>
<td>-20º C/+65º C</td>
</tr>
</tbody>
</table>

Meets with: EN 62561-1, 50164-6 y UTE C 17-106.

Recommended by the standards of Lightning Protection. It is inserted into the downconductor with less ohmic resistance or the straightest and most direct at ground.
Certificate Lightning Event Counter

CERTIFICADO DE ENSAYOS / TEST CERTIFICATED

Contador de Rayos ADT Counter / Lightning Event Counter ADT Counter

El contador de impactos de rayos ADT Counter, referencia 600 920, ha superado con éxito los ensayos eléctricos conforme a la norma UNE EN 62561-6, de acuerdo con los tests consecutivos de mínima corriente umbral, corriente de no detección y corriente soportada y contada.

The lightning event counter ADT Counter, reference 600 920, has successfully passed the electrical test according to UNE EN 62561-6, according to the consecutive tests of minimum current threshold, no current detection and withstand current and counted.

Organismo que realiza los ensayos / Institution performing the tests

Instituto Tecnológico de la Energía ITE - Red de Institutos Tecnológicos de la Generalitat Valenciana.
Informe IE-ITE 140055-EN, de acuerdo con la norma UNE EN 62561-6.
“Requisitos para los contadores de impactos de rayos”

Enery Technological Institute ITE - Network of Technological Institutes of the Valencian.
Report IE-ITE 140055-EN, according to standard EN 62561-6.
“Requierements for lightning event counters”

CLASIFICACIÓN / CLASSIFICATION

Para conexión con conductores de un SPCR / To connect with conductors of a LPS
Para conexión con conductores de SPD / To connect with SPD conductors

Características eléctricas / Electrical characteristics (UNE EN 62561-2)

- Mínima corriente umbral (IUm) con onda 8/20: 1 kA
- No detección con IUm/2 con onda 8/20: 0,5 kA
- Corriente soportada contada (Imcw) con onda 10/350: 100 kA

Datos técnicos / Technical data

- Dimensiones / Dimensions: 82 x 69 x 45 mm
- Para conductor plano / For flat conductor: Hasta / Up to 60 x 10 mm
- Para conductor redondo / For round conductor: Hasta / Up to Ø 15 mm
- Código IP / IP code: IP-43
- Peso / Weight: 320 gr.
- Temperatura de funcionamiento / Operating temperature: -20ºC ... +65ºC
SURGE PROTECTION
Why install surge suppressors?

1. Installations with lightning rods

In installations equipped with a lightning rod it is necessary to install surge suppressors at least in the main electric panel, though it is recommended to install them in all panels of the installation and especially in those nearest to the lightning rod.

In the case of high resistivity of the terrain, the need for installing overvoltage protections is even more crucial because earth potential differences will be higher and will lead overvoltages with a higher energetic impact.

REASONS TO INSTALL WITH LIGHTNING RODS

- **Not insulation**: Due to a lack of insulation, atmospheric discharges may enter into the installations at the moment the lightning strikes the lightning rod which makes the energy discharge into the ground.
- **Electromagnetic fields**: Strong currents generated by lightning will generate a magnetic field which causes the induction of currents in every near conductor, such as electric, coaxial, data, etc., cables.

2. INSTALLATIONS IN LARGE-SCALE FACILITIES

In large-scale facilities with cables that run long distances, currents may be induced when a lightning strikes the ground. **Surge suppressors have to be installed at both ends of the cables used to connect the loads of the installation to avoid damage, as they may be affected by induced surges.**

The higher the resistivity of the terrain the greater the voltage gradients, therefore the greater the need to protect both ends of the cable.

REASONS TO INSTALL SURGE SUPPRESSORS

- **Inductions**: When a lightning strikes the earth, an electrical potential funnel is generated causing potential differences in the terrain. Consequently, if an electric, coaxial, data, etc., cable runs between two different potential curves, a current will be induced thereon which will affect the loads fed by this cable.
The transient overvoltages transmitted by the distribution networks have their origin in the manoeuvres carried out by the electrical distributors, line faults and fundamentally in the atmospheric discharges that strike High-Voltage lines.

Furthermore we can not obviate the transient surges caused by the users of the network or the surroundings, since the discharge lamps, variable speed drives, connections and disconnections of generators cause surges and short-term currents of high peak values.

For this kind of installations it is necessary to install surge suppressors, at least in the main board and in those electrical panels with a higher risk of suffering the consequences of surges, in order to reduce incidences and avoid damage users, facilities and equipment and to guarantee the continuity of operation.

REASONS TO INSTALL SURGE SUPPRESSORS

- **Induced atmospheric discharges on High-Voltage lines:** An atmospheric discharge is the most damaging problem that you can find in an installation. Most of the time it will reach the installation through the electricity supply, as High-Voltage power lines are the most attractive places for a lightning to strike.

- **Surges originated in the electrical network:** The manoeuvres carried out in the electrical network, mainly the switching of the electric substations, cause micro-interruptions which are associated with transient voltage peaks that will be transmitted throughout the whole electrical network, thus affecting all the consumers by reaching their facilities through the electrical supply. Sometimes the value of voltage supplied by the electricity companies is higher than the maximum supported by the electronic devices and consequently damaging them.

- **Influence of power loads over electronics:** The starting or stopping of engines and generators, the variable speed drives, etc., may produce surges in the electronic equipment. According to the magnitude of the surge, these actions may damage the electronic equipment of the installation gradually or quickly.
MODULAR PROTECTION SYSTEMS (SPD)

**Surge arresters Type 1**

The surge arresters type 1 are recommended for installations where there is a high probability of atmospheric discharges.

**Compact surge arresters**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>llimp</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD4-400/240</td>
<td>Tetrapolar protector</td>
<td>255 V</td>
<td>100 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>AD2-400/240</td>
<td>Bipolar protector</td>
<td>255 V</td>
<td>100 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>AD1-200/240</td>
<td>Unipolar protector for F-N</td>
<td>255 V</td>
<td>50 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>AD1-400/240</td>
<td>Unipolar protector for N-T</td>
<td>255 V</td>
<td>100 kA</td>
<td>1,2 kV</td>
</tr>
</tbody>
</table>

Available for all types of grounding systems; TT, IT, TN-S y TN-C.
Standards: IEC 61643-1  /  EN 61643-11  /  UL 1449

**Pluggable surge arresters**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>limp (F-N / N-T)</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA1-25/240</td>
<td>Unipolar protector for F-N</td>
<td>255 V</td>
<td>25 kA</td>
<td>1,5 kV</td>
</tr>
<tr>
<td>AA1-100/240</td>
<td>Unipolar protector for N-T (*)</td>
<td>255 V</td>
<td>100 kA</td>
<td>1,5 kV</td>
</tr>
<tr>
<td>AA2-H100/240</td>
<td>Bipolar protector (*)</td>
<td>255 V</td>
<td>25/100 kA</td>
<td>1,5 kV</td>
</tr>
<tr>
<td>AD1-400/240</td>
<td>Tetrapolar protector (*)</td>
<td>255 V</td>
<td>25/100 kA</td>
<td>1,5 kV</td>
</tr>
</tbody>
</table>

(*) N-T protectors NOT pluggable.
For remote signaling please consult price and reference.
Available for all types of grounding system; TT, IT, TN-S y TN-C.
Standards: IEC 61643-1  /  EN 61643-11  /  UL 1449

**Cartridges for pluggable surge arresters**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>llimp</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>A25/240</td>
<td>F-N cartridges</td>
<td>255 V</td>
<td>25 kA</td>
<td>1,5 kV</td>
</tr>
</tbody>
</table>

(*) N-T protectors NOT pluggable.
For remote signaling please consult price and reference.
Available for all types of grounding system; TT, IT, TN-S y TN-C.
Standards: IEC 61643-1  /  EN 61643-11  /  UL 1449
Surge arresters Type 1 + 2

The surge arresters Type 1 + 2 are installed at the head of installations to protect and it is combined the characteristics of Type 1 and Type 2.

### Compact surge arresters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Max (F-N / N-T)</th>
<th>limp (L-N) (F-N / N-T)</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD4-100/240</td>
<td>Tetrapolar protector</td>
<td>255 V / 255 V</td>
<td>12,5 / 25 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BD2-100/240</td>
<td>Bipolar protector</td>
<td>250 V / 255 V</td>
<td>12,5 / 25 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BD1-100/240</td>
<td>Unipolar protector</td>
<td>255 V</td>
<td>25 kA</td>
<td>1,2 kV</td>
</tr>
</tbody>
</table>

For remote signaling please consult price and reference. Available for all types of grounding system; TT, IT, TN-S y TN-C. Standards: IEC 61643-1 / EN 61643-11 / UL 1449
The surge arresters Type 2 are installed at the head of electrical installations and at secondary power panels. Protect electronic and electrical equipment against transient overvoltages of origin industrial, atmospheric and maneuvering.

### Surge arresters Type 2

Surge arresters Type 2 are designed to protect against transient overvoltages of industrial, atmospheric, and maneuvering origin. They are installed at the head of electrical installations and at secondary power panels.

#### Pluggable surge arresters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In</th>
<th>I Máx</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV1-25/240</td>
<td>Unipolar protector</td>
<td>250 V</td>
<td>10 kA</td>
<td>25 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BV1-40/240</td>
<td>Unipolar protector</td>
<td>250 V</td>
<td>20 kA</td>
<td>40 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BV1-60/240</td>
<td>Unipolar protector</td>
<td>250 V</td>
<td>30 kA</td>
<td>60 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BD2-25/240</td>
<td>Bipolar protector</td>
<td>250 / 255V</td>
<td>10 kA</td>
<td>25 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BD2-40/240</td>
<td>Bipolar protector</td>
<td>250 / 255V</td>
<td>20 kA</td>
<td>40 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BD2-60/240</td>
<td>Bipolar protector</td>
<td>250 / 255V</td>
<td>30 kA</td>
<td>60 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BD4-25/240</td>
<td>Tetrapolar protector</td>
<td>250 / 255V</td>
<td>10 kA</td>
<td>25 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BD4-40/240</td>
<td>Tetrapolar protector</td>
<td>250 / 255V</td>
<td>20 kA</td>
<td>40 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>BD4-60/240</td>
<td>Tetrapolar protector</td>
<td>250 / 255V</td>
<td>30 kA</td>
<td>60 kA</td>
<td>1,2 kV</td>
</tr>
</tbody>
</table>


#### Cartridges for pluggable surge arresters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In</th>
<th>I Máx</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>V25/240</td>
<td>F - N Cartridge</td>
<td>250 V</td>
<td>10 kA</td>
<td>25 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>V40/240</td>
<td>F - N Cartridge</td>
<td>250 V</td>
<td>20 kA</td>
<td>40 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>V60/240</td>
<td>F - N Cartridge</td>
<td>250 V</td>
<td>30 kA</td>
<td>60 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>D30/240</td>
<td>F - N Cartridge</td>
<td>255 V</td>
<td>10 kA</td>
<td>30 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>D40/240</td>
<td>F - N Cartridge</td>
<td>255 V</td>
<td>20 kA</td>
<td>40 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>D60/240</td>
<td>F - N Cartridge</td>
<td>255 V</td>
<td>30 kA</td>
<td>60 kA</td>
<td>1,2 kV</td>
</tr>
</tbody>
</table>

Surge arresters Type 3

Surge protectors Type 3 are installed in the power supply of the final receivers and coordinated with Type 2 protectors.

### Compact surge arresters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In (F-N / N-T)</th>
<th>I Máx (F-N / N-T)</th>
<th>Up (F-N / N-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV2-10/240</td>
<td>Bipolar protector</td>
<td>250 V</td>
<td>5/10 kA</td>
<td>10/20 kA</td>
<td>1,2/1,5 kV</td>
</tr>
</tbody>
</table>

Includes LED signaling of the equipment status. Available for all types of grounding system; TT, IT, TN-S y TN-C.
Standards: IEC 61643-1 / EN 61643-11 / UL 1449

### Pluggable surge arresters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In</th>
<th>I Máx</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV1-15/240</td>
<td>Unipolar protector</td>
<td>250 V</td>
<td>7 kA</td>
<td>15 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>CV2-15/240</td>
<td>Bipolar protector</td>
<td>250 V</td>
<td>7 kA</td>
<td>15 kA</td>
<td>1,2 kV</td>
</tr>
<tr>
<td>CV4-15/240</td>
<td>Tetrapolar protector</td>
<td>250 V</td>
<td>7 kA</td>
<td>15 kA</td>
<td>1,2 kV</td>
</tr>
</tbody>
</table>

For remote signaling please consult price and reference. Available for all types of grounding system; TT, IT, TN-S y TN-C.
Standards: IEC 61643-1 / EN 61643-11 / UL 1449

### Cartridges for pluggable surge arresters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In</th>
<th>I Máx</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>V15/240</td>
<td>Cartridge</td>
<td>250 V</td>
<td>7 kA</td>
<td>15 kA</td>
<td>1,2 kV</td>
</tr>
</tbody>
</table>

www.aiditecsystems.com
Surge Protection devices for photovoltaic installations

Surge arresters Type 2 for protection devices working on continuous current.

Protect photovoltaic equipment against transient overvoltages of atmospheric origin and maneuvering.

### Pluggable surge arresters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In</th>
<th>I Máx</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF3-40/600</td>
<td>Tripolar protector</td>
<td>600 Vcc</td>
<td>20 kA</td>
<td>40 kA</td>
<td>1,8 kV</td>
</tr>
<tr>
<td>BF3-40/1000</td>
<td>Tripolar protector</td>
<td>1060 Vcc</td>
<td>20 kA</td>
<td>40 kA</td>
<td>3,2 kV</td>
</tr>
</tbody>
</table>

For remote signaling please consult price and reference. Standards: IEC 61643-1 / EN 61643-11 / UL 1449

### Cartridges for pluggable surge arresters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In</th>
<th>I Máx</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>V40/320</td>
<td>Cartridges</td>
<td>320 Vcc</td>
<td>20 kA</td>
<td>40 kA</td>
<td>1,0 kV</td>
</tr>
<tr>
<td>V40/530</td>
<td>Cartridges</td>
<td>530 Vcc</td>
<td>20 kA</td>
<td>40 kA</td>
<td>1,6 kV</td>
</tr>
</tbody>
</table>
Surge Protection devices for data lines

Surge arresters for data lines protect the electronic equipment in the network of communication against any overvoltage induced on the data lines.

These arresters must be installed as close as possible to the equipment to protect.

### Pluggable surge arresters for data lines

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In</th>
<th>I Máx</th>
<th>Up (L-L / L-T)</th>
<th>IL</th>
</tr>
</thead>
<tbody>
<tr>
<td>U/TD-B0</td>
<td>Base for nominal voltages of 5 V, 12 V, 24 V and 48 V.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D/5-B0</td>
<td>Protection 1 pair (Cartridge) 6 Vcc</td>
<td>5 kA</td>
<td>10 kA</td>
<td>80/350 V</td>
<td>500 mA</td>
<td></td>
</tr>
<tr>
<td>D/12-B0</td>
<td>Protection 1 pair (Cartridge) 15 Vcc</td>
<td>5 kA</td>
<td>10 kA</td>
<td>150/350 V</td>
<td>500 mA</td>
<td></td>
</tr>
<tr>
<td>D/24-B0</td>
<td>Protection 1 pair (Cartridge) 28 Vcc</td>
<td>5 kA</td>
<td>10 kA</td>
<td>200/500 V</td>
<td>500 mA</td>
<td></td>
</tr>
<tr>
<td>D/48-B0</td>
<td>Protection 1 pair (Cartridge) 60 Vcc</td>
<td>5 kA</td>
<td>10 kA</td>
<td>250/500 V</td>
<td>500 mA</td>
<td></td>
</tr>
<tr>
<td>U/TD-A0</td>
<td>Base for nominal voltages of 110 V and 250 V.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D/110-A0</td>
<td>Protection 1 pair (Cartridge) 180 Vcc</td>
<td>5 kA</td>
<td>10 kA</td>
<td>1/0.75 kV</td>
<td>500 mA</td>
<td></td>
</tr>
<tr>
<td>D/250-A0</td>
<td>Protection 1 pair (Cartridge) 28 Vcc</td>
<td>5 kA</td>
<td>10 kA</td>
<td>0.5 kV</td>
<td>500 mA</td>
<td></td>
</tr>
</tbody>
</table>


### Surge arresters for telephone lines, ADSL and Ethernet

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>In (L-L / L-T)</th>
<th>I Máx (L-L / L-T)</th>
<th>Up (L-L / L-T)</th>
<th>IL</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD/110-RJ11-4</td>
<td>Protector for telephone lines with RJ11 connector</td>
<td>180 Vcc</td>
<td>2 kA</td>
<td>5 kA</td>
<td>200/500 V</td>
<td>0.5 A</td>
</tr>
<tr>
<td>TD/5-RJ45-H-8-CAT 5</td>
<td>Protector for Ethernet with RJ45 connector, Cat 5</td>
<td>6 Vcc</td>
<td>0.1/1 kA</td>
<td>0.3/2 kA</td>
<td>15/800 V</td>
<td>1 A</td>
</tr>
<tr>
<td>TD/5-RJ45-H-8-CAT 6</td>
<td>Protector for Ethernet with RJ45 connector, Cat 6</td>
<td>6 Vcc</td>
<td>0.1/2 kA</td>
<td>0.3/4 kA</td>
<td>30/800 V</td>
<td>1 A</td>
</tr>
</tbody>
</table>

Surge Protection devices for coaxial cables

Surge arresters for coaxial cables protect electronic equipment associated with the coaxial installation against any overvoltage induced on coaxial cables.

These arresters must be installed as close as possible to the equipment to protect.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Uc. Máx</th>
<th>I Máx</th>
<th>Impedancia</th>
<th>Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-90-B-HH-75</td>
<td>Protector BNC type</td>
<td>70 Vcc</td>
<td>20 kA</td>
<td>75 ohm</td>
<td>700 V</td>
</tr>
<tr>
<td></td>
<td>Female - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-250-B-HH-75</td>
<td>Protector BNC type</td>
<td>200 Vcc</td>
<td>20 kA</td>
<td>75 ohm</td>
<td>750 V</td>
</tr>
<tr>
<td></td>
<td>Female - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-90-B-MH-75</td>
<td>Protector BNC type</td>
<td>70 Vcc</td>
<td>20 kA</td>
<td>75 ohm</td>
<td>700 V</td>
</tr>
<tr>
<td></td>
<td>Male - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-250-B-MH-75</td>
<td>Protector BNC type</td>
<td>200 Vcc</td>
<td>20 kA</td>
<td>75 ohm</td>
<td>750 V</td>
</tr>
<tr>
<td></td>
<td>Male - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-90-F-HH-75</td>
<td>Protector F type</td>
<td>70 Vcc</td>
<td>20 kA</td>
<td>75 ohm</td>
<td>700 V</td>
</tr>
<tr>
<td></td>
<td>Male - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-250-F-HH-75</td>
<td>Protector F type</td>
<td>200 Vcc</td>
<td>20 kA</td>
<td>75 ohm</td>
<td>750 V</td>
</tr>
<tr>
<td></td>
<td>Male - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-90-F-MH-75</td>
<td>Protector F type</td>
<td>70 Vcc</td>
<td>20 kA</td>
<td>75 ohm</td>
<td>700 V</td>
</tr>
<tr>
<td></td>
<td>Male - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-250-F-MH-75</td>
<td>Protector F type</td>
<td>200 Vcc</td>
<td>20 kA</td>
<td>75 ohm</td>
<td>750 V</td>
</tr>
<tr>
<td></td>
<td>Male - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Available in other types of connection and impedance.

NOTE:
In this catalog are contemplated the most common protectors. If you need a protector with different characteristics to those contained in this catalog, contact us and our technical department will advise you in choosing the most appropriate protector.

Tlf. - 0034 963 842 957
info@aiditecsystems.com
UNIFIED PROTECTION SYSTEM (SPU)

SPU - Unified Protection System

Unified Protection Systems (SPUs) are surge protection devices consisting of several redundant and coordinated protection groups, conceived under criteria of maximum discharge capacity and minimum voltage residual. Its design allows the implementation of accessory modules, as well as its adaptation to the needs of each installation, putting the security and the proper functioning of it.

The SPUs have been designed to guarantee the protection of the installations protected by them against any type of transient overvoltage, both of atmospheric and industrial origin, MF / AF harmonics and peaks associated with the micro-cutouts.

In addition, by means of the addition (optional) of the PTR4, the system will protect the installation against permanent overvoltages, undervoltages and phase asymmetry, this set being programmable in time and voltage.

Technical characteristics

- High discharge capacity for 8/20 and 10/350 μs waveforms.
- Residual values close to the voltage of the protected installation.
- Frequency filtering.
- They have 3 or 4 coordinated and effective protection sets each by itself.
- They eliminate the overvoltages between phases, phases-earth, phases-neutral, neutral-earth.
- They have a response speed of 0.025 μs.
- They eliminate micro-cuts of the order of milliseconds in low power installations.
- They are repairable.

Main features of the different series

<table>
<thead>
<tr>
<th>Type of installation</th>
<th>4D SERIES</th>
<th>2D SERIES</th>
<th>4S SERIES</th>
<th>2S SERIES</th>
<th>DK SERIES</th>
<th>TC SERIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage (v)</td>
<td>230/240</td>
<td>230</td>
<td>230/240</td>
<td>230</td>
<td>&gt; 1000</td>
<td>communication voltage</td>
</tr>
</tbody>
</table>

| Protection against industrial transient surge 8/20 | * | * | * | * | * | * |
| Protection against transient lightning surge 10/350 (2) | * | * | * | * | - | - |
| Permanent surge protection (3) | * | * | * | * | - | - |
| Undervoltage protection (3) | * | * | * | * | - | - |
| Protection of phase asymmetry (3) | * | * | * | * | - | - |
| MF / AF harmonic protection | * | * | * | * | - | - |

(1) Available in other voltages upon request.
(2) According to models.
(3) Requires addition of the PTR4 set.
Because not all installations are the same and to protect them effectively, it is necessary to adapt to their characteristics as well as to the demands of our customers, in MD we offer the possibility to modify the performance of our products to suit their needs. Thus, any equipment developed by MD can:

- Set to special supply voltages, 500V, 690V, etc.
- Modify the IP rating in installations that require it.
- Increase the capacity of energy dissipation in installations subject to very energetic discharges.
- Increase the filtering capacity in frequency.
- Adapt them to any network topology: biphasic, three-phase lines without neutral, IT, TT, etc.
- Incorporate acoustic alarms.
We are specialists in the design and manufacture of protections for the railway sector. Our protection systems are designed according to criteria of robustness and maximum reliability. We collaborate with engineers in the search of solutions to specific problems by developing custom equipment. Among the products designed and developed we can highlight:

- Protection of substation rectifier groups against surges.
- Protection of electrical and electronic equipment of auxiliary services against surges and harmonics MF / AF.
- Protection of interlocking cabins against surges, MF / AF harmonics and overcurrents.
- Protection of signaling circuits against surges.
- Polarized protection devices (DPPo).
- Interval gaps.
- Devices for protection against electrolytic corrosion.
- Outdoor auto-valves.
- Indoor auto-valves with remote signaling.
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GENERAL CONDITIONS

• Standards packaging is included.
• All products are guaranteed a minimum of 2 years against manufacturing defects.

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