Life Is On | Schneider Electric

How to prevent the destruction of

sensitive devices

in your home during a storm?

Customer needs

Each year, lightning is the cause of a great deal of dammage. It is the main cause of the destruction of household appliances. Moreover, it causes nuisance tripping and the sudden stopping of loads.
During a storm, lightning can at any moment cut off the supply to your sensitive electronic devices and cause dammage that entails the replacement of equipment and can place your intrusion alarm out of operation.
These types of phenomena often occur during the summer, when you are on holiday.

To overcome this problem we offer you a simple solution for the **protection** of your **LV electric installation** and your **loads**.

Environment

- This house built in a traditional manner is located in a open flat area
- This home does not have a lightning conductor and is supplied via a low voltage overhead single-phase line
- It has a TN earthing system
- In this region the local lightning density, which correspodents to the number of lightning impacts per km^2, is low to medium is high ($Ng \geq 1.6$)
- Electric equipment to be protected has:
  - a high cost (> 4 000 Euros),
  - a reduced impulse withstand voltage ($Uchoc \geq 1.5$ kV)
- The house has:
  - various household appliances: freezer, washer, dishwasher, ovens, heating system, etc.,
  - a home cinema system with satellite reception and hifi equipment,
  - a multimedia room with a PC, modem, printer fax, video games,
  - a fire alarm,
  - an intrusion alarm,
  - a remote controlled electric gate,
  - electric blinds and awnings.

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Proposed solution

Sensitive electronic equipment is being installed more and more in residential buildings, and requires protection against atmospheric voltage surges. Moreover, these loads, which are supplied with (230 V) power and via communication networks (telephone, video, etc.) must be followed by a surge arrester that is specific to each network.

Customer benefits

- Simplicity
- Savings
- Wiring ease
- Conform to regulations
- Protection of the entire installation
- Reinforced safety of persons and equipment
- Protection against nuisance tripping

Incoming protection prevents disturbances from penetrating into the home and causing the destruction of very sensitive electric devices or the pre-mature ageing of cable insulation.

Recommendations

Wiring recommendations

- Equipotential bonding of frames and earths:
  - as in IEC 60364 all exposed conductive parts must be connected
- Single earth connector network:
  - a single earth connector for all electrical, computer and communication equipment
- Reduce loop surfaces
- Keep incoming surge arrester wires and installation outgoing wires seperated at a distance.

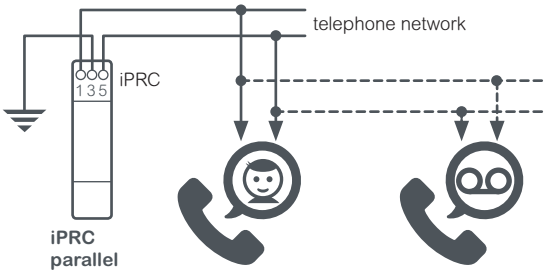
Installation recommendations

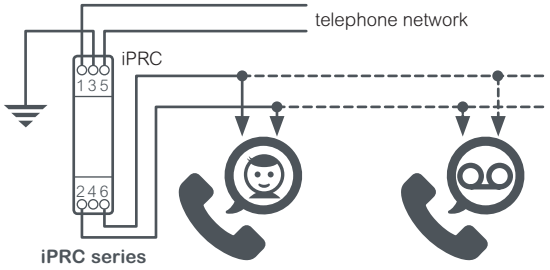
- Place a Type 2 surge arrester iPFK/iPRD20, with a level of protection Up: 1.2 kV in the main enclosure of your installation
- Use a circuit-breaker with protection adapted to the surge arrester, here a iK60N/iC60N with a 20 A, C curve
- Install a surge arrester type iPRC series to protect: fax, modem, telephone, etc
- Install a surge arrester type iPRI 12 - 48 V to protect the system for the protection against fire and other PLCs in the residence.

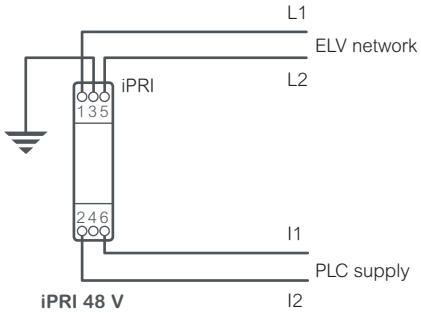
Warning

- If home has lightning conductor, you need to use Type 1+2 surge arrester iPRF1 12.5
- If the distance between main switchboard and SPD is more than 10 m, additional protection (Type 3) is needed.

Solution diagram for communication networks







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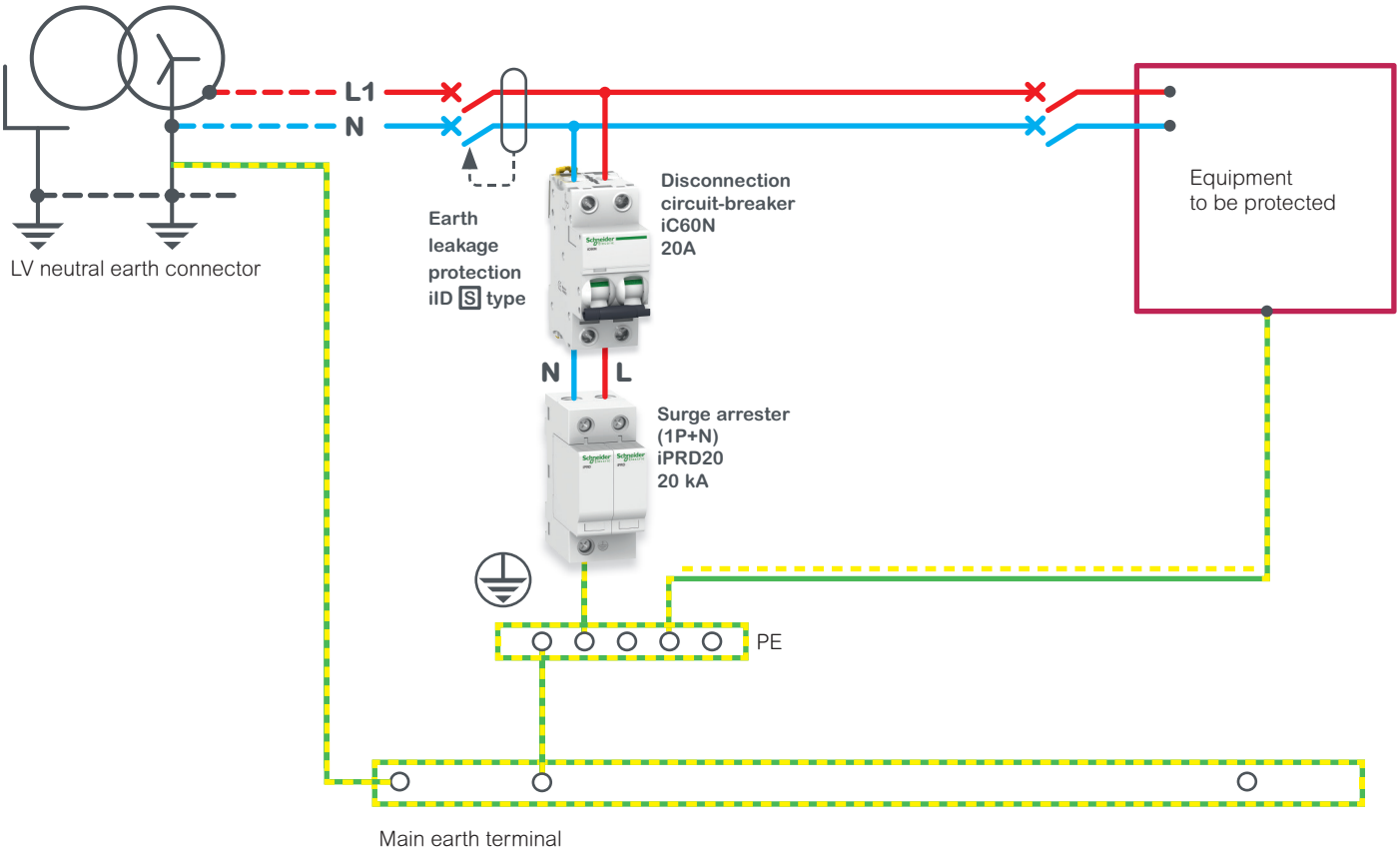
Solution diagram



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Standards

- International installation standard IEC 60364-4-443 and 5-443 (09/2015)
- Electrical installation of buildings NF C 15 100 of 2002
- SPD are mandatory:
  - in case of overheadlines and if lightning density is Ng ⩾ 2.5
  - in case of presence of lightning rod (risk of direct impact).

Products used

Product	Description	Unity	Cat. no.
iPFK/iPRD20	Type 2 surge protection device 20 kA	1	-
iK60N/iC60N	Miniature circuit breaker 20 A	1	-
iPRC	Surge protection device for communication network	1	-
iID S type	Residual current device, selective type	1	-

Note: number of poles of MCB should be the same as SPD.

iPF K 20 or **iPRD 20**

iK60 /iC60

iPRC parallel **iPRC series** **iPRI**

Communication networks protection

More information:
For information concerning the protection of your electrical installation against lightning, please check our website or contact your local Schneider Electric office.

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