

WhitePaper

Protection against Mains Lightning-hits ver. 1.0

“preventing high-power electric surges from entering your home”

Lightnings hitting the energy distribution-network nearby your house are highly unlikely ... but not impossible. That is why Van Welleman Villas® takes numerous precautions to protect you -as well as your sensitive electronics- against the lethal consequences of this powerful act of nature. Minimal three consecutive barriers protect our customers against lightnings within close proximity.

Ensuring an effective barrier against Direct-hit Lightnings on the Power Network requires much, much more than just a small filter in a power rail. The reason therefore is that surges represents thousands of Volts leading to shorts of up to 150.000 Amps (!) or more. Such a massive force of nature can not be stopped with simple filters you buy in the store around the corner. That is why Van Welleman Villas® uses -by default- three consecutive barriers against power surges ... on top of an already exceptional electrical system (note: surge-protected power rails with 7 modules in the power cabinet are optional).

Carrier-Class Surge Protection Modules

The first and most important barrier protects against direct lightning impacts in close proximity (i.e. next to your house). To ensure continuous operation under the heaviest conditions we use the very best systems available. In fact, our surge protection module is the same heavy-duty, non-destructive (they continue working after a direct hit) Raycap® surge protection as used in power plants around the world.

For maximal performance we only use the “direct” or “Kelvin” connection instead of the conventional “T” connection. As an example whereas “traditional” DIN surge arrestors have a weight of approximately 100g, the Raycap® surge protection modules have a weight exceeding 20Kg (!). Also, Raycap® surge modules do not explode upon a lightning impact (compared to traditional surge arrestors).

Industrial Surge Arrestors

The second barrier consists out of a series of DIN-rail surge protectors (one per phase) protecting against secondary (or inductive) medium-energy surges.

NEOZED Circuit-Breakers

Last but not least, NEOZED based circuit-beakers are used as an ultimate protection should all other measures fail to protect. The NEOZED fuses are housed in modular enclosures that are mounted on traditional DIN-rail systems in the electrical cabinet. They are easily replaced without any risk for electrocution.

All of the above is done with one purpose only, and that is to provide our customers with the highest degree of electrical safety available.

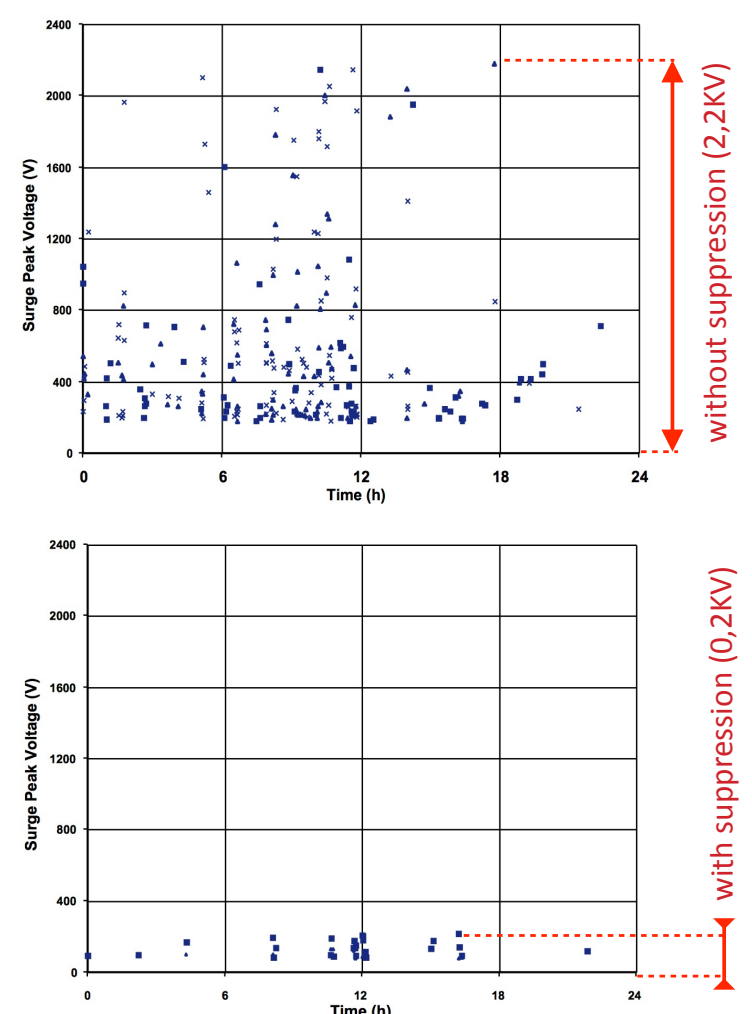
Surge Protection Modules

Heavy-duty, non-destructive surge arrestors for industrial electrical installations.



Surge Suppression

Surge protection modules significantly reduce the impact of lightning impacts (see below, ref: Rayvoss).



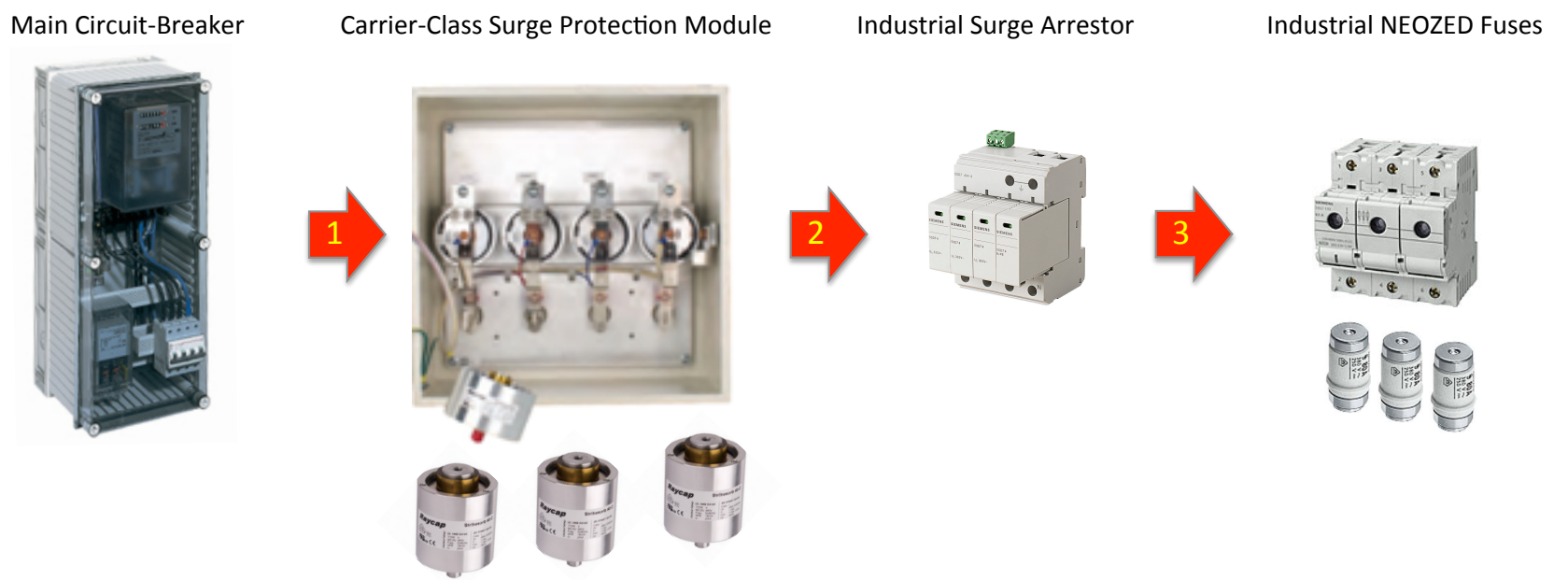


fig 1. 3-stage mains protection against direct lightning-hits.
(standard)

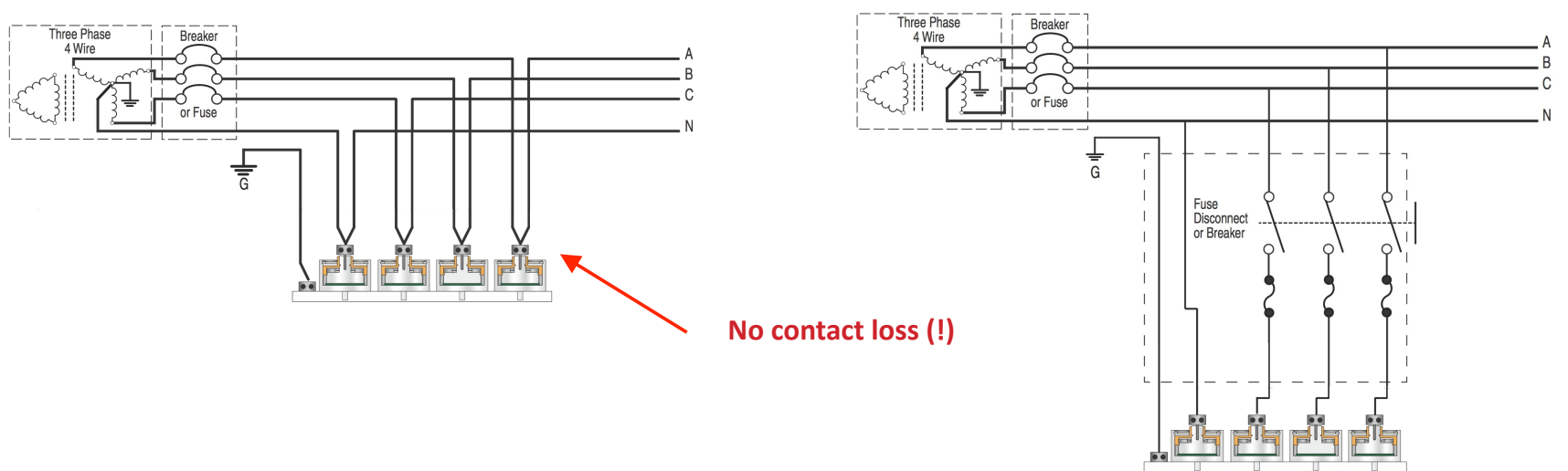


fig 2. "Kelvin" setup (left) versus "T" setup (right).
(source Rayvoss)

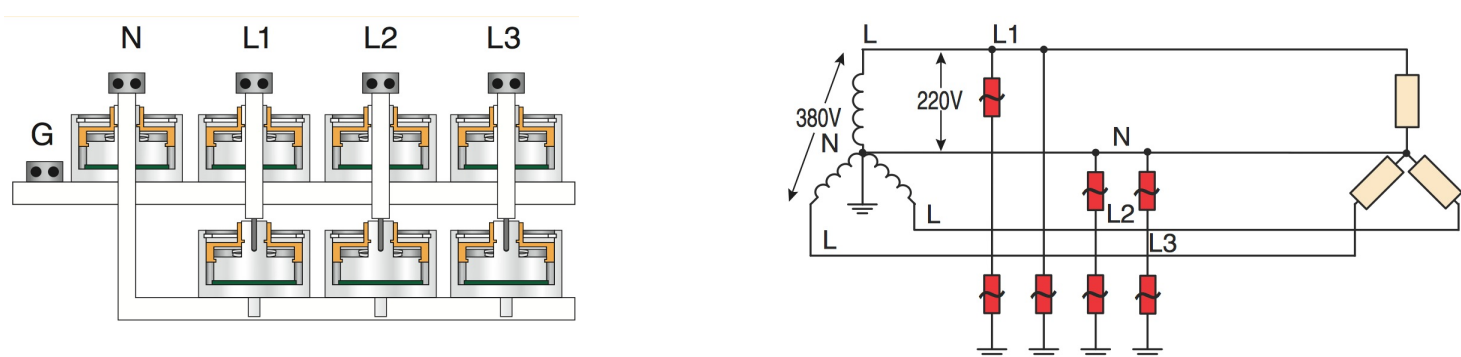


fig 3. Physical (left) & circuit (right) presentation of a 7-module setup.
(optional)