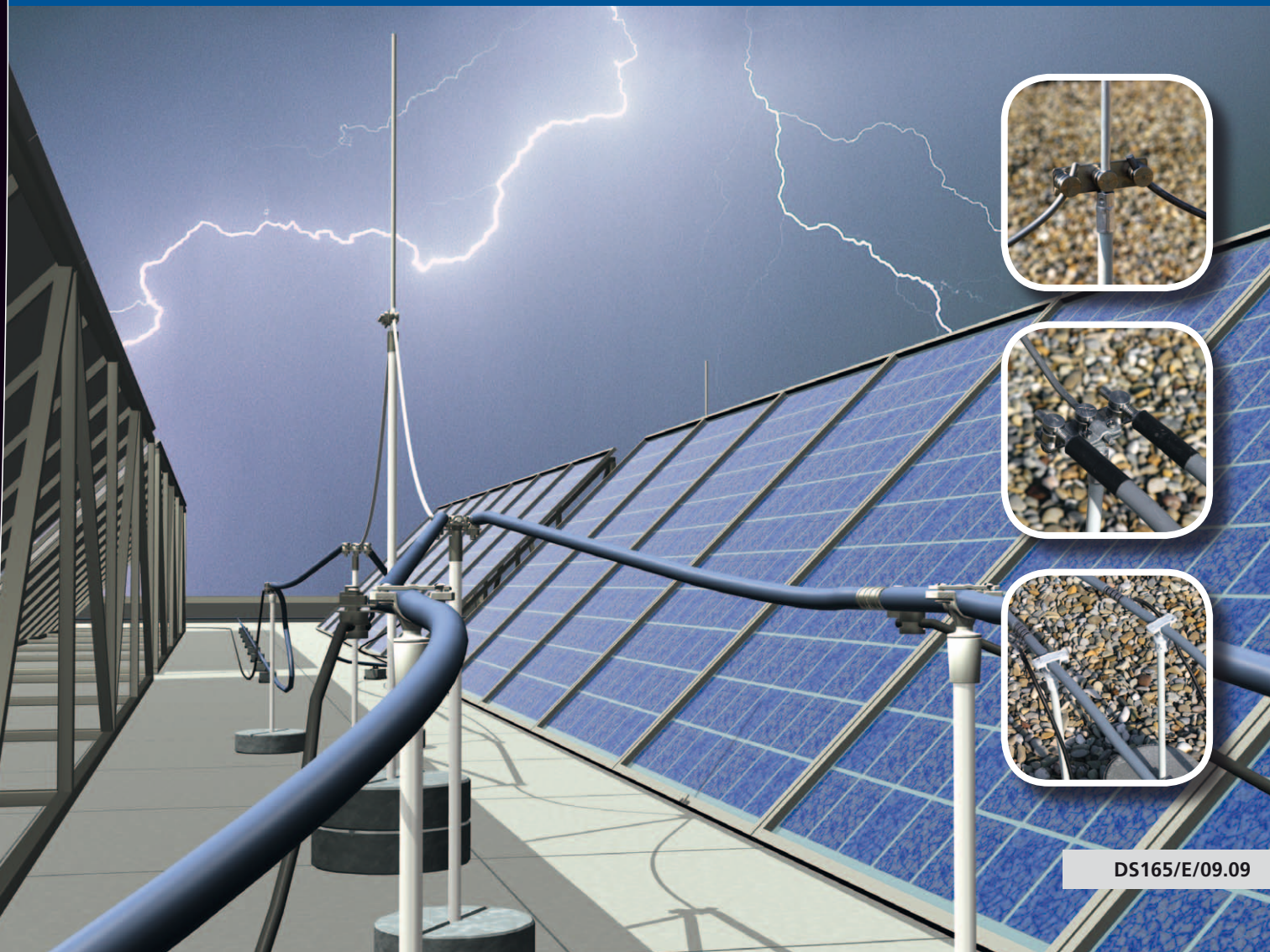
DEHN + SÖHNE

# Isolated Lightning Protection for PV Systems

## Shade-optimised



DS165/E/09.09

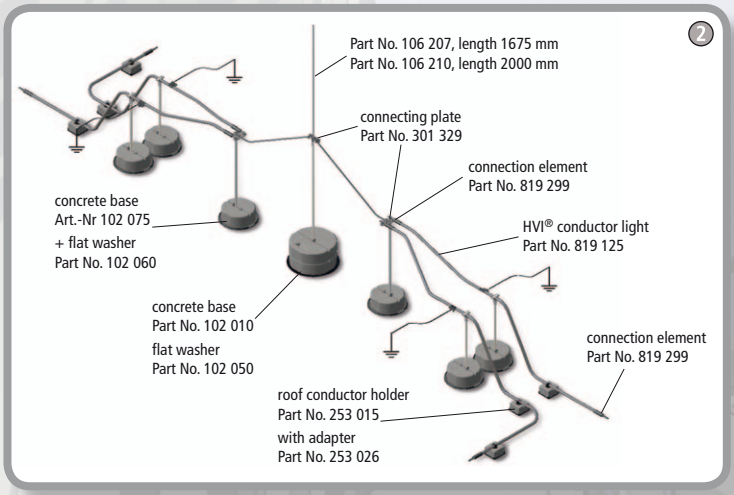
# Isolated Lightning Protection for PV Systems

## Shade-optimised

Precondition for a lasting and safe functioning of the solar system is a well-considered, structurally aligned and adequate planning and design, taking into account also the protection against lightning.

The scope of individual requirements for the photovoltaic and thermal use of solar energy in residental and commercial properties has to be taken into regard already in the early planning phase. Therefore intensive information, coordination and cooperation of the concerned architects, planners and the performing maintenance group is necessary.

Installers of photovoltaic or solar thermal systems and installers of lightning protection systems, however, have a different procedure, approach and intention concerning the use of roofs. Interests of both crafts are colliding in the use of the roof surface and thus interface problems will arise.




*Isolated air-termination system (GRP/Al) with connected HVI®-Light*

Superstructural PV or solar thermal systems have to be integrated into the lightning protection

- in case of buildings or structures with an already existing lightning protection system,
- if the owner wants a lightning protection system to be installed or
- if a lightning protection system is required by regulations.

Therefore cooperation of both crafts is necessary.

Considering the illustrated constellation, the lightning protection system should comply with two requirements:

- No coupling of partial lightning currents. An isolated air-termination system for the lightning protection system is necessary.
- Implementing of a sufficient safety/separation distance between lightning down conductors and the PV/solar thermal systems. This can, for example, be achieved by a high voltage insulated down conductor (HVI® down conductor).

The biggest challenge for an integrated solution is to avoid shading of the PV modules by the isolated lightning protection as far as possible. Depending on the structure of the PV modules, their shading can be interfering and even have a reducing effect on the efficiency.

DEHN + SÖHNE solves this problem by an isolated air-termination system which is slim, variable in height and connected by the HVI® (High Voltage Insulated Line) conductor.

The graphics show examples of possible designs with this variable and shade optimised system.

**Application**

The following two examples are supposed to illustrate how to solve the problem that PV modules are shaded by air-termination systems. Large-scale systems on flat roofs, which can often be found on public buildings (e.g. schools) and industrial facilities, are used in these examples.

**Example 1**

This building constellation has an electrically interconnected reinforcement or metal facade. A so-called ± zero level is established on the roof due to this constellation.

The illustrated air-termination rods (1) can be directly connected to the reinforcement of the attic. The isolated air-termination system/air-termination rod (2) in the middle of the roof between the module frames is directly connected to the reinforcement of the attic by means of the high-voltage-resistant HVI® conductor of the DEHNconductor product range.

The HVI® conductor is used to maintain the required separation distance s in accordance with VDE 0185-305-3, section 6.3, from module frames, PV cables etc.

**Example 2**

The two examples differ by the type of building. In example 2 no electrically interconnected reinforcement or facade is used. Thus, the air-termination systems (1) and (2) have to be connected to the earth-termination system via down conductors.

An adjustment range has to be considered at the connection point of the attic when connecting the air-termination system (3) to the HVI® conductor.

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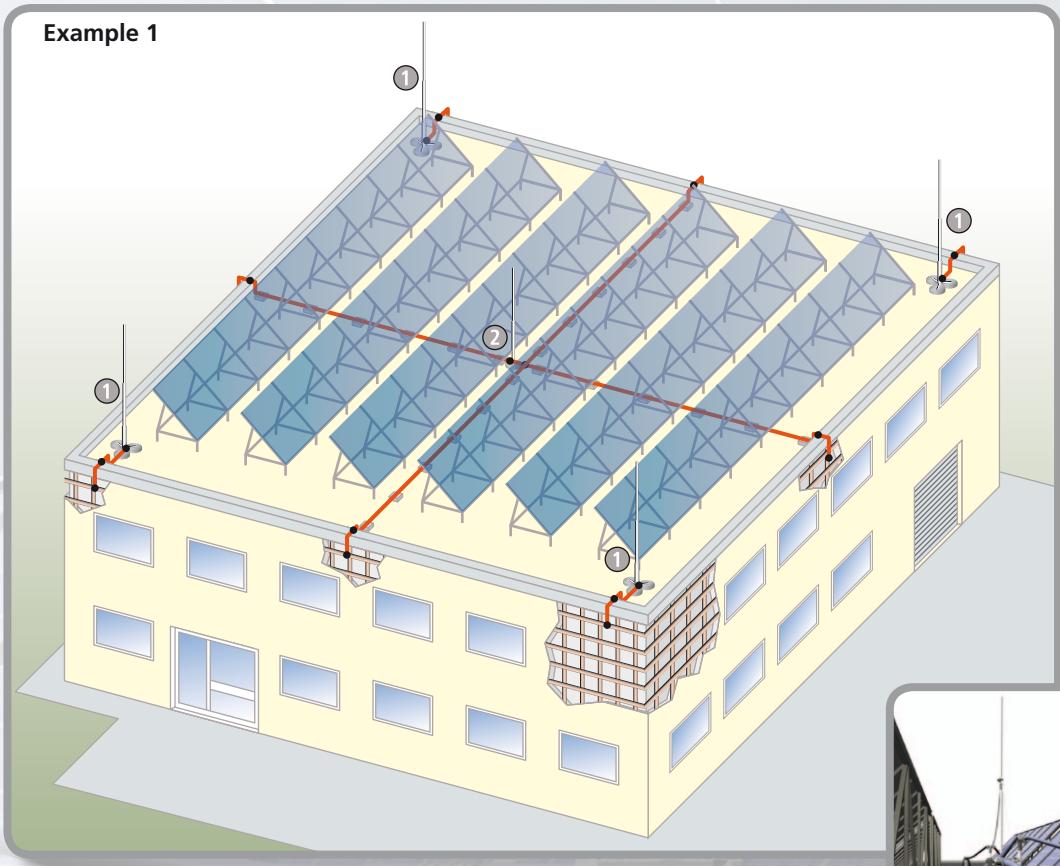
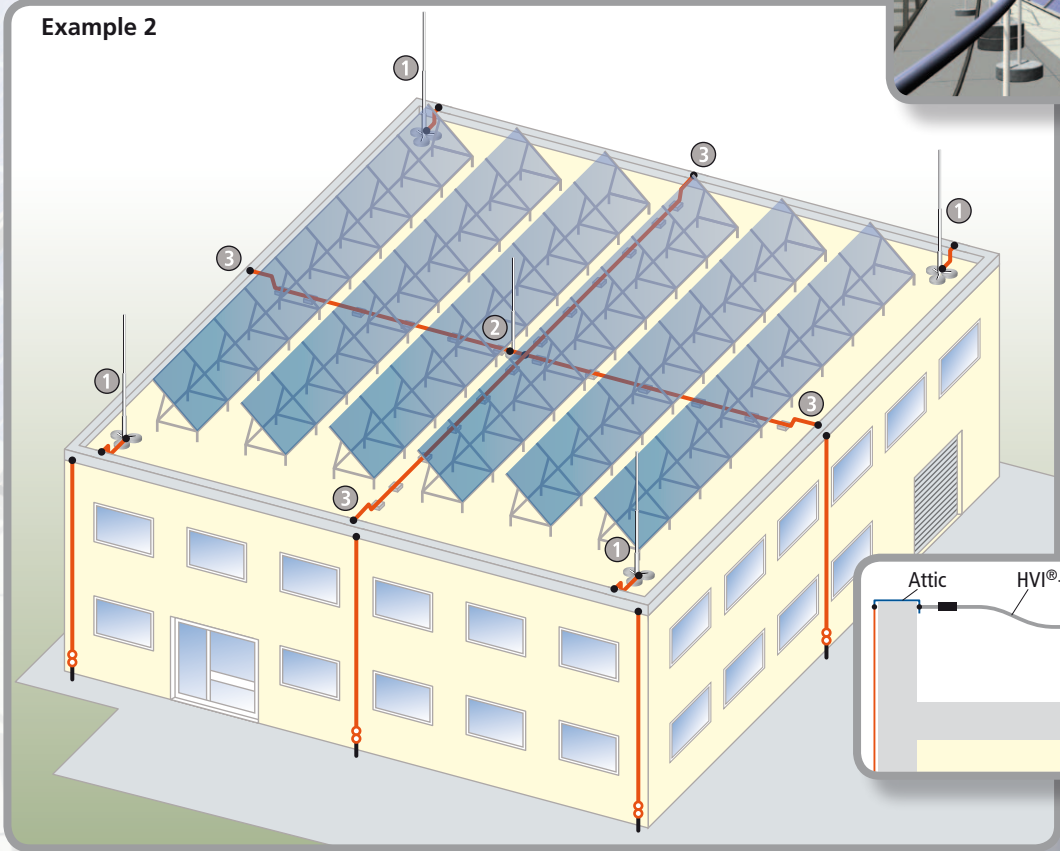
Example 1

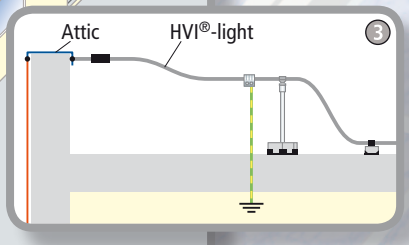


*Air-termination rod (Al) in a tripod*

*Isolated air-termination system (GRP/Al) with connected HVI®-Light*

Example 2




*Adjustment range*

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# More Information

I would like to have more information about the following topics:

☐ Main Catalogue Lightning Protection

☐ Lightning Protection Guide

☐ Please arrange for a visit of one of our Sales Engineers (by appointment)

Name

Company

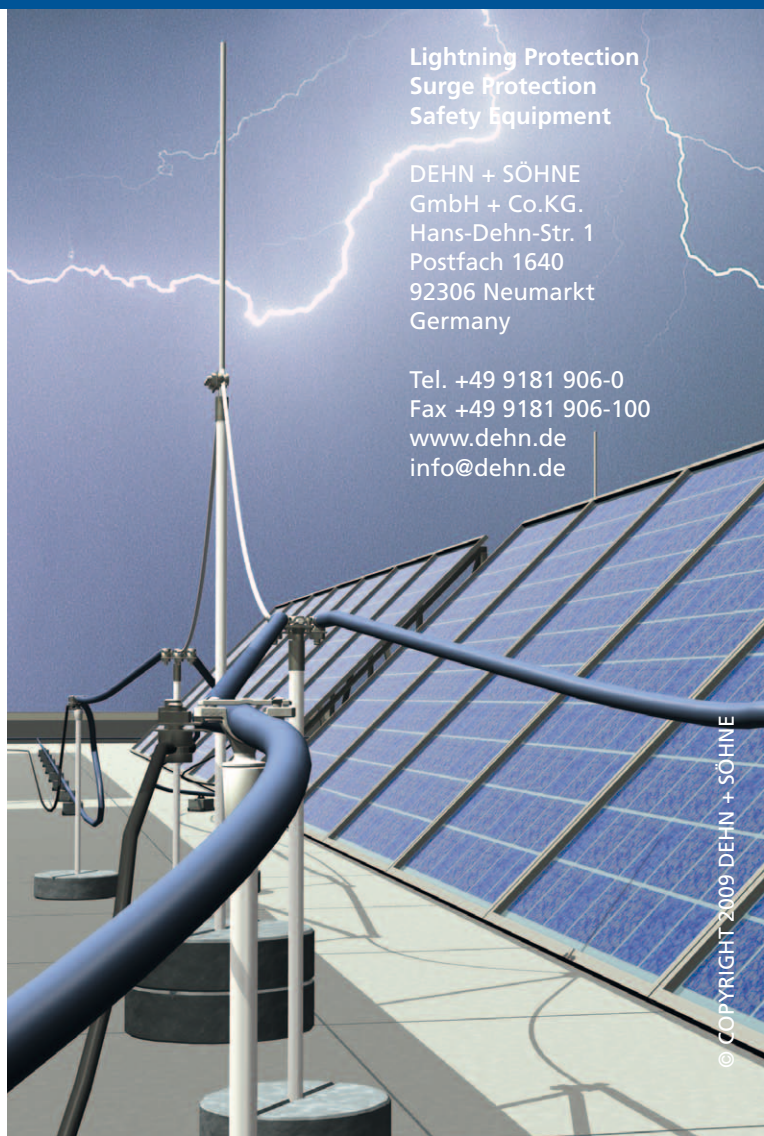
Address

Country

Phone/Fax

E-mail

Please fill in this form and return it to us.

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