

**HUKX**

Sensor  
Technology

Brochure

**SPD01**

# SPD01

## Surge Protection Device

for digital pyranometers and diffusometers

Give your solar radiation sensors the protection they deserve! SPD01 is an industrial-grade surge protection device for digital pyranometers and diffusometers. It reduces the risk of costly instrument damage and data loss by protecting up to three connected devices against high-impulse currents and voltages: surges. For example, seasonal lightning and inductive switching are common sources of surges in PV power plants.

- enhanced protection: increased protection of digital pyranometers, communicating over RS-485
- multi-instrument coverage: protection of up to three connected instruments by a single SPD
- level 4 surge immunity: up to 4 kV surge protection (IEC 61000-4-5 level 4)
- passive device: no power required for protective functionality
- reliable in harsh conditions: rugged, weatherproof (IP66) housing for outdoor environments
- industrial-grade: designed for Hukx-brand “industrial pyranometer and diffusometer” series

Figure 1 The SPD01 Surge Protection Device.



## Level 4 Surge Immunity : High Impulse voltages and currents

**SPD01** is a surge protection device for digital pyranometers and diffusometers. The device combines and coordinates the protection of the power supply and the RS-485 serial communication lines. Protecting the pyranometer against electrical surges is very important to guarantee reliable operation in harsh "industry-grade" outdoor environments, such as solar photovoltaic (PV) power plants and meteorological stations. SPD01 is designed for use with Hukx's industrial pyranometers and diffusometers, which are tested and classified (with and without **SPD01**) for Industrial Environments according to IEC 61326-1 and IEC 61000-6-2.

## Why add an SPD?

When designing a measurement system, pyranometer users may reach several levels of immunity. For example, the surge immunity of the **SR300-D1** industrial pyranometer is level 2 (up to 1 kV surges), according to IEC 61000-4-5. With the optional Surge Protection Device **SPD01**, the immunity can be increased to 4 kV.

To attain the required level of immunity for a given installation, some general system components should be included, such as:

- lightning protection system
- earthing and grounding network
- external surge protection, in addition to the native on-board sensor protection



Figure 2 Surge protection upgraded to level 4. One SPD 1 Surge Protection Device can protect up to three instruments.

## SPD01 properties

In the electrically-harsh environment of PV power plants, [SPD01](#) protects connected instruments from lightning- and power-switching-induced surge events. At the same time, it allows for a flexible system design. Properly installing the SPD01 near a Hukx industrial pyranometer or diffusometer ensures that voltages and currents reaching the sensor are strongly suppressed.

## Flexible system design

Provided that instruments are in close proximity to the SPD, up to three instruments can be protected by a single [SPD01](#).

- The instruments are protected from surges in the earthing and grounding network
- The distance between the instrument and SCADA system may be increased significantly.

Depending on the system design and instrument location, multiple SPD01s may be used. In some cases, for example, with on-array installation of pyranometers, it is beneficial to isolate the instruments from the mounting platform. Hukx supplies an optional accessory for this, the [PID01](#) Pyranometer Insulation Disk.

## More information

- View the [SPD01](#) product manual and connected device manual.
- Consult Hukx's engineering team on your system design.

## Options

- [SMF01](#) SPD mounting fixture ( tube mounting fixture with 2 x 40-60 mm tube clamp)
- [PID01](#) Pyranometer Insulation Disk

### See also

- View our complete [range of solar sensors](#).

## Optional SMF01 for mounting on a vertical mast

[SMF01](#) is a practical metal bracket that helps with mounting a surge protection device on a mast.



Figure 3 Components included in SMF01 SPD mounting fixture.

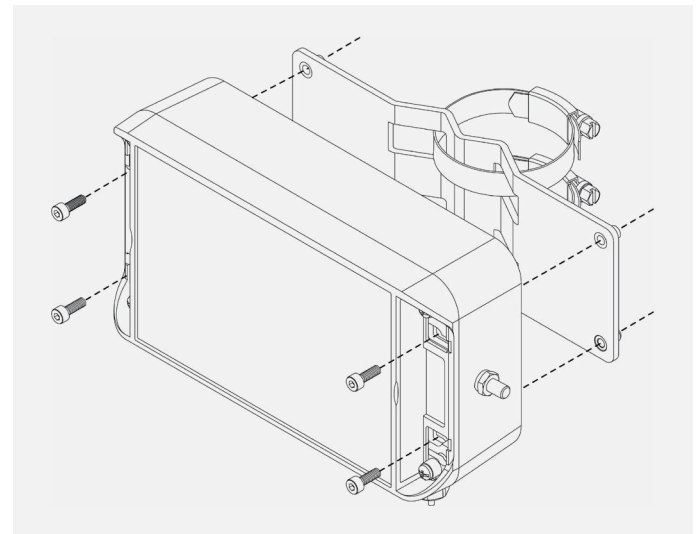


Figure 4 The SMF01 enables SPD01 to be mounted on a vertical mast.

# SPD01 specifications

## Surge immunity\*

surge immunity (EN-IEC 61000-4-5:2014)	level 4
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maximum line-to-line surge**	2 kV, 1 kA
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maximum line-to-ground surge**	4 kV, 2 kA
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number of protected instruments	up to 3
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## Data lines

common mode signal voltage range	± 12 V
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differential mode signal voltage range	± 12 V
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maximum line-to-earth voltage	12 V
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## Mechanical

housing material	ASA/PC UL94 V0-1.5mm
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cable glands	M12 (protected)
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cable diameter	(3 to 6) mm
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optional SMF01: rated pole mount diameter	(40 to 60) mm
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weight	0.7 kg
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## DC power lines

rated operating DC input voltage range	± 30 V
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maximum DC input current	5 A
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total DC output current	5 A
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## Rated operating conditions

required over-current protection	≤ 5 A slow blow fuse
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rated operating temperature range	(-40 to +80) °C
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\* tested with all Hukx industrial pyranometers

\*\* all lines tested as DC power lines

## About Hukx

Hukx is the leading innovator in solar radiation and heat flux sensor technology. We are proud to set the standard in high-accuracy measurement, and to be working at the heart of the energy transition.

Customers worldwide rely on our bestselling pyranometers and heat flux sensors. From sensor design and selection to supply and recalibration, we support you across the entire lifecycle.

Hukx is headquartered in the Netherlands, with locally owned representative sales offices in the USA, Brazil, India, China, Southeast Asia, and Japan.

Let us help you select the best sensor for your application. Get in touch with our experts today via: [info@hukx.com](mailto:info@hukx.com)

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