

SPD01

Surge Protection Device

Give your pyranometers the protection they deserve! SPD01 is a surge protection device for digital pyranometers. The SPD01 reduces the risk of costly instrument damage and data loss for connected devices, by serving as an additional layer of external protection against high-impulse currents and voltages - surges. For example, seasonal lightning and inductive switching are common sources of surges in PV power plants. SPD01 features are:

- increased protection of digital pyranometers, communicating over RS-485
- protection of up to 3 connected instruments
- up to 4 kV surge protection (IEC 61000-4-5 Level 4)
- passive device: no power required for protective functionality
- rugged, weatherproof (IP66) housing
- designed for Hukseflux-brand "industrial pyranometer" series

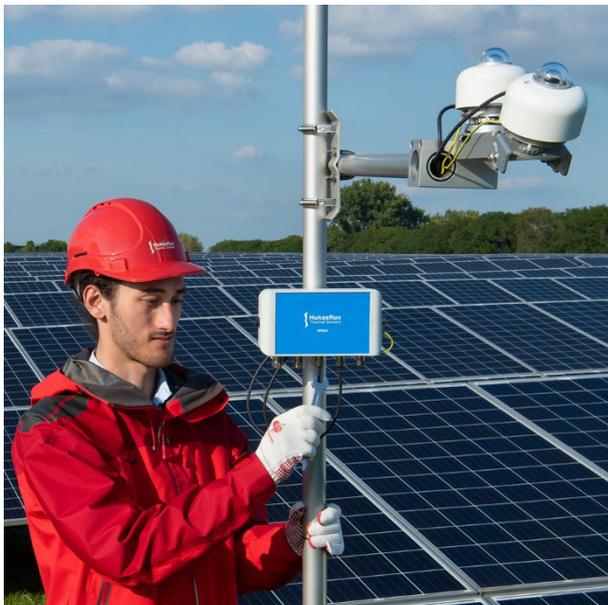


Figure 1 Surge protection upgraded to Level 4. One SPD01 Surge Protection Device can protect up to 3 pyranometers.



Figure 2 The SPD01 Surge Protection Device.

Immunity to high voltages and currents - surges

SPD01 is a surge protection device for digital pyranometers. It is designed for use with the Hukseflux-brand "industrial pyranometer" series of instruments. The device combines and coordinates the protection of the power supply and the RS-485 serial communication lines. Protection of the pyranometer against electrical surges is very important to guarantee reliable operation in harsh "industry grade" outdoor environments such as solar (PV) power plants and meteorological stations. Hukseflux industrial pyranometers are tested and classified 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 attain 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. Adding the Surge Protection Device SPD01, the immunity is 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

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 Hukseflux industrial pyranometer, assures that voltages and currents reaching the sensor are strongly suppressed.

System design

Provided that instruments are in close proximity to the SPD, up to 3 instruments can be protected by a single SPD01.

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

Depending on the system design and instrument location, multiple SPD01's may be used.

In some cases, for example on-array installation of pyranometers, it is beneficial to isolate the instruments from the mounting platform. Hukseflux supplies an optional accessory for this, the PID01 Pyranometer Isolation Disc.

More information

- see [SPD01](#) product manual and connected device manual
- consult Hukseflux engineering on your system design

Options

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

See also

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

SPD01 specifications

Surge immunity*

Surge Immunity (EN-IEC 61000-4-5:2014)	Level 4
Maximum line-to-line surge**	2 kV, 1 kA
Maximum line-to-ground surge**	4 kV, 2 kA
Number of protected instruments	up to 3

Data Lines

Common mode signal voltage range	± 12 V
Differential mode signal voltage range	± 12 V
Maximum line-to-earth voltage	12 V

Mechanical

Housing material	ASA/PC UL94 V0-1.5mm
Cable glands	M12 (protected)
Cable diameter	(3 to 6) mm
Optional SMF01: rated pole mount diameter	(40 to 60) mm
Weight	0.7 kg

DC power lines

Rated operating DC input voltage range	± 30 V
Maximum DC input current	5 A
Total DC output current	5 A

Rated operating conditions

Required over-current protection	≤ 5 A slow blow fuse
Rated operating temperature range	(-40 to +80) °C

* tested with all Hukseflux Industrial pyranometers

** all lines tested as DC power lines

Optional SMF01

SMF01 is a practical metal bracket that helps mounting a surge protection device on a vertical mast.



Figure 3 The SMF01, set of parts.

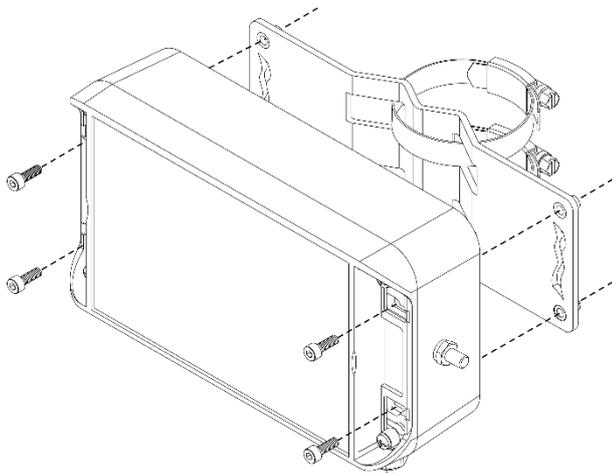


Figure 4 The SMF01 enables mounting of a SPD01 on a tube.

About Hukseflux

Hukseflux is the leading expert in measurement of energy transfer. We design and manufacture sensors and measuring systems that support the energy transition. We are market leaders in solar radiation- and heat flux measurement. Customers are served through our headquarters in the Netherlands, and locally owned representative sales offices in the USA, Brazil, India, China, Southeast Asia and Japan.

Are you interested in this product?
E-mail us at: info@hukseflux.com