

SR30

Next level digital secondary standard pyranometer

- Heated for best data availability: new RVH™ technology outperforms traditional pyranometer ventilation
- The first pyranometer compliant in its standard configuration with the requirements for Class A PV monitoring systems of the new IEC 61724-1:2017
- Low cost of ownership: remote diagnostics and supported by an efficient worldwide calibration and service organisation
- The right paperwork: instruments are supplied with the ISO 9060 required test certificates



Figure 1 SR30 digital secondary standard pyranometer

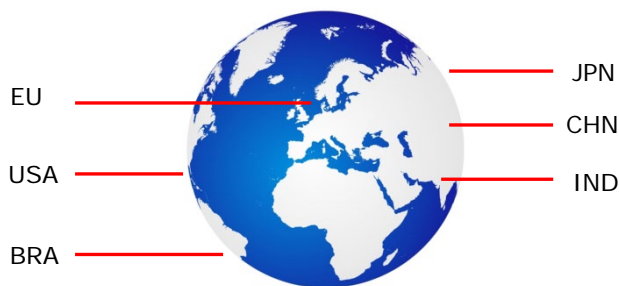


Figure 2 SR30 users are supported by the worldwide Hukseflux calibration and service organisation

Introduction

Welcome to the next level in solar radiation monitoring! The all-digital SR30 offers the highest accuracy and highest data availability: using new Recirculating Ventilation and Heating (RVH™) technology, SR30 outperforms all pyranometers equipped with traditional ventilation systems. SR30 is the ideal instrument for use in PV system performance monitoring and meteorological networks. It measures the solar radiation received by a plane surface, in W/m², from a 180 ° field of view angle. SR30 is an ISO 9060 secondary standard pyranometer. It is employed where the highest measurement accuracy is required. SR30 offers several advantages over competing pyranometers:

Heated for high data availability, featuring new RVH™ technology

High data availability is attained by heating of the outer dome using ventilation between the inner and outer dome. RVH™ - Recirculating Ventilation and Heating - technology, developed by Hukseflux, suppresses dew and frost deposition and is as effective as traditional ventilation systems, without the maintenance hassle and large footprint.

- low power consumption: SR30 requires only 2 W, compared to 10 W for traditional ventilation systems
- low maintenance: SR30 does not require filter cleaning



Figure 3 frost and dew deposition: clear difference between a non-heated pyranometer (back) and SR30 with RVH™ technology (front)

The dome of SR30 pyranometer is heated by ventilating the area between the inner and outer dome. RVH™ is much more efficient than traditional ventilation, where most of the heat is carried away with the ventilation air. Recirculating ventilation is as effective in suppressing dew and frost deposition at 2 W as traditional ventilation is at 10 W. RVH™ technology also leads to a reduction of zero offsets.

Compliant with IEC, Class A and B

IEC 61724-1: Photovoltaic System Performance Monitoring - Guidelines for Measurement, Data Exchange and Analysis - requires ventilation and heating for Class A monitoring.

Only SR30 offers both, without the need for additional accessories. Most competing pyranometers do not even comply with Class B, which requires heating.

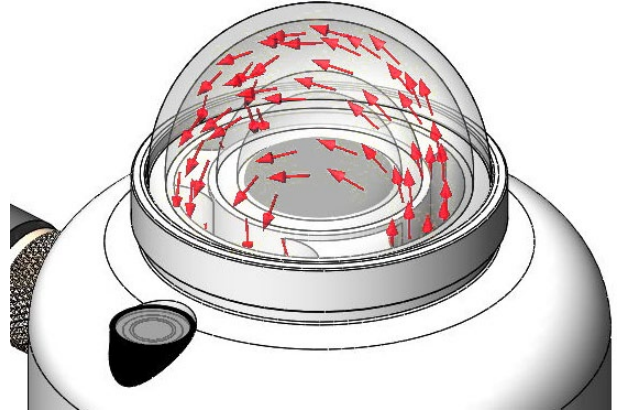


Figure 4 how it's done: recirculating ventilation and heating between the inner- and outer dome is much more power efficient than traditional ventilation systems

Low cost of ownership

SR30 is an affordable secondary standard instrument and is designed for low cost of ownership, which is mainly determined by costs of installation, on-site inspections, servicing and calibration:

- low demand on infrastructure: SR30's RVH requires only 2 W power, compared to 10 W for traditional ventilation systems
- reduction of unnecessary on-site inspection by remote diagnostics
- designed for efficient servicing; easy local diagnostics.
- supported by an efficient calibration and maintenance organisation. Hukseflux offers local support in the main global economies: USA, EU, China, India, Japan and Brazil. Recalibration is recommended every 2 years, which is good practice in the industry.

Remote sensor diagnostics

In addition to solar irradiance, SR30 outputs sensor diagnostics such as:

- tilt angle
- internal ventilator speed (RPM)
- internal humidity
- heater current

Remote diagnostics permits real-time status monitoring, reducing the need for (un)scheduled field inspections.

Liabilities covered: test certificates

As required by ISO 9060 for secondary standard classification, each SR30 is supplied with test results for the individual instrument:

- sensitivity
- directional response
- temperature response
- tilt angle measurement

SR30 design

SR30 pyranometer employs a state-of-the-art thermopile sensor with black coated surface, two domes and an anodised aluminium body. It offers a digital output via Modbus RTU over 2-wire RS-485. The pyranometer dome is heated by ventilating the area between the inner and outer dome using RVH™ - Recirculating Ventilation and Heating - technology.

Diffuse radiation measurement

With its outstanding zero offset specifications, SR30 is also the instrument of choice for high-accuracy diffuse radiation measurement.

Operation in low power mode

Heater and ventilation may be remotely switched on and off; operation at < 0.1 W is possible by switching both the internal ventilator and heater off. Although zero offset will then increase slightly, overall performance will still comply with the secondary standard classification.

Hukseflux Sensor Manager software

For communication between a PC and SR30, the Hukseflux Sensor Manager software is included. It allows the user to plot and export data, and change the SR30 Modbus address and communication settings. Also, the digital outputs may be viewed for sensor diagnostics.



Figure 5 user interface of the Sensor Manager, showing sensor diagnostics



Figure 6 SR30 secondary standard pyranometers with digital output for GHI (global horizontal irradiance) and POA (plane of array) measurement applications

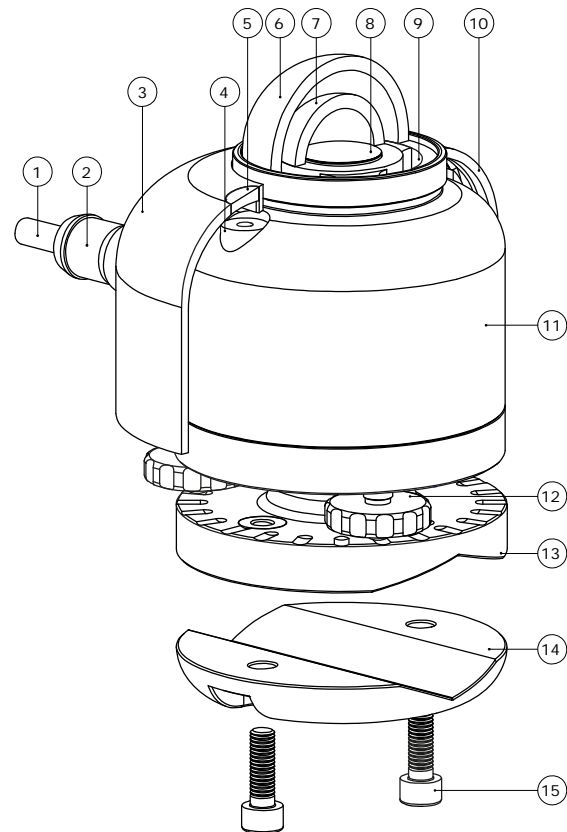


Figure 7 overview of SR30: (1) cable, (2) connector, (3) sun screen, (4) bubble level, (5) bubble level window, (6) outer dome, (7) inner dome, (8) thermal sensor with black coating, (9) internal ventilation vents, (10) quick release system of sun screen, (11) instrument body, (12) levelling feet, (13) optional spring-loaded levelling mount, (14) optional tube mount, (15) screws included with tube mount

Levelling mount

There are 2 mounting options available for SR30. They allow for simplified mounting, levelling and instrument exchange on a flat surface or a tube.



Figure 8 optional spring-loaded levelling and tube mount for SR30

Suggested use

- PV system performance monitoring
- scientific meteorological observations

See also

- **SR05**, an economical solution often used for monitoring small scale PV systems
- consult our pyranometer selection guide
- view our complete [range of solar sensors](#)

About Hukseflux

Hukseflux Thermal Sensors offers measurement solutions for the most challenging applications. We design and supply sensors as well as test & measuring systems, and offer related services such as calibration, engineering and consultancy. Our main area of expertise is measurement of heat transfer and thermal quantities such as solar radiation, heat flux and thermal conductivity. Hukseflux is ISO 9001:2008 certified. Hukseflux sensors, systems and services are offered worldwide via our office in Delft, the Netherlands and local distributors.

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

SR30 specifications

Measurand	hemispherical solar radiation
ISO classification	secondary standard pyranometer
IEC 61724-1 compliance	meets Class A and B PV monitoring system requirements
Calibration uncertainty	< 1.2 % (k = 2)
Measurand	sensor tilt angle
Tilt measurement uncertainty	$\pm 1^\circ$ (0 to 90 °)
Heating	included
Ventilation	included
Technology employed	Recirculating Ventilation and Heating (RVH™)
Standard operating mode	heated and ventilated
Power consumption	< 2.3 W at 12 VDC
Zero offset a	< 2 W/m ²
Calibration traceability	to WRR
Calibration registers	accessible to users
Spectral range	285 to 3000 x 10 ⁻⁹ m
Rated operating temperature range	-40 to +80 °C
Temperature response	< ± 0.4 % (-30 to +50 °C)
Temperature response test of individual instrument	report included
Directional response test of individual instrument	report included
Tilt sensor test of individual instrument	report included
Standard cable length	5 m
Rated operating voltage range	5 to 30 VDC

Optional operation in low power mode

Operating condition	heater and ventilator [OFF]
Zero offset a	5 W/m ² (unventilated)
Power consumption	< 0.1 W at 12 VDC

Digital output

Output	<ul style="list-style-type: none"> - irradiance in W/m² - instrument body temperature in °C - tilt angle in ° - internal humidity in % - ventilator speed in RPM
Communication protocol	Modbus / over 2-wire RS-485
Transmission mode	RTU

Options

- spring-loaded levelling; a practical mount for easy mounting, levelling and instrument exchange on flat surfaces
- tube levelling mount with set of bolts
- longer cable; 10 and 20 metres
- 20 metres extension cable with 2 connectors

SR30 next level digital secondary standard pyranometer

Nowadays, the best pyranometers are made by Hukseflux Thermal Sensors. This overview of features and benefits of SR30 gives you some of the reasons why! Whatever your application is, Hukseflux offers the highest accuracy in every class at the most attractive price level.



Best compliance with standards

- first pyranometer to comply with IEC 61724-1 Class A requirements
- heated domes, new Recirculating Ventilation and Heating (RVH™) technology
- tilt measurement

Best paperwork

- all ISO required reports with every individual sensor
 - temperature response testing -30 to 50 °C
 - full directional response testing
 - tilt sensor testing



Best accuracy and data availability

- suppresses dew and frost deposition
- lowest zero offsets
- no external ventilator required
- low power consumption

Best diagnostics

- tilt angle
- humidity
- temperature
- ventilator speed (RPM)



Best levelling

- window for visible bubble level
- with optional spring-loaded levelling mount
- easy mounting, levelling and instrument exchange

Best worldwide support

- efficient calibration support
- fast servicing organisation
- local stock of spare parts

