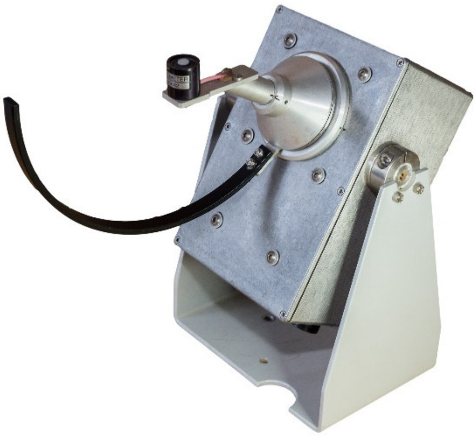
Rotating Shadowband Sensor **HelioScale RSP**



Description

The **HelioScale RSP** rotating shadowband sensor acquires precisely all 3 components of solar irradiance (GHI, DHI, DNI) as well as the meteorological parameters air temperature, relative humidity and barometric pressure.

The rotation shadowband pyranometer (RSP) covers the GHI sensor for a short time every time it sweeps. Based on the measured DHI and GHI the sensor controller calculates DNI. The sensor controller performs internal corrections providing irradiance outputs that are very close to thermopile sensors. Unlike a tracked pyrheliometer that typically requires daily cleaning the RSP is quiet insensitive to soiling. It is therefore suitable for unattended measurements with extended maintenance cycles.

The **HelioScale RSP** features a serial RS485 interface and the standard Modbus-RTU protocol. It is designed to communicate with data loggers or PCs providing this type of interface.

Its low power consumption makes the **HelioScale RSP** ideal for solar powered monitoring stations.

Technical Data

System	
Data output	• Global horizontal irradiance (GHI) • Diffuse horizontal irradiance (DHI) • Direct normal irradiance (DNI) • Air temperature • Relative humidity of the air • Barometric pressure
Communication interface	RS-485 (half-duplex), 1200...115200 Baud
Serial Protocols	Modbus-RTU
Power Requirements	10 ... 30 VDC / 4.1 W (320 mA @ 12.8 V) at 3 sweeps per minute
Operating Conditions	-40...+60 °C, 0...100 %rF

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Protection Class	IP66
Material	Stainless steel, Aluminium, UV-stabilized plastic
Dimensions and Weight	Sensor controller: L x W x H = 300 x 180 x 230 mm, approx. 3.5 kg RSP sensor: L x W x H = 390 x 210 x 320 mm, 4.7 kg
Integrated Sensors	Air temperature, relative humidity, barometric pressure, global irradiance (in RSP)

Sensors

Air Temperature + Air Humidity (TH)	Thermo-hygro sensor in a passive radiation shield mounted below the sensor controller enclosure Measurement range: -40...+60 °C / 0...100 %rF Accuracy: temperature ±0.1 K (+20...+60 °C), ±0.2 K (-40...+20 °C) humidity ±1.5% (0...80 %rF), ±2% (>80 %rF)
Barometric Pressure (p)	Measurement range: 300...1250 hPa Accuracy: ±0.5 hPa (500...1100 hPa)
Global Irradiance (GHI)	Si-based global irradiance sensor integrated in the RSP Spectral range: 400...1100 nm Measurement range: 0...3000 W/m² Response time: <1 µs Accuracy: Linearity error ±1% max., temperature dependence: ±0.15% per K max., cosine corrected uo to 82° zenith angle, azimuth: < ±1% error over 360° at 45° elevation, tilt: No error induced from orientation. The sensor complies to **fast response Class C** according to ISO 9060:2018

Available Models

PartNo. 100020	Integrated sensors for TH, p and GHI, Modbus-RTU output via RS485

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