

# MS-80SH Plus+

All-in-one DHI, GHI and DNI Measurements



## Overview

The MS-80SH Plus+ system features the top-tier EKO MS-80SH ISO 9060:2018 Class A Spectrally Flat & Fast Response Pyranometer, equipped with integrated dome heating. Combined with a Rotating Shadow Band (RSB) setup, it delivers precise Global, Diffuse, and Direct irradiance data. This system offers a cost-effective, low-maintenance solution tailored for the expanding variety of solar power plant locations and Photovoltaic (PV) applications. The RSB-02 Rotating Shadow Band features a motorized rotating band that periodically shades and unshades the stationary MS-80SH pyranometer while operating in **RSB mode**<sup>(1)</sup>.

This design allows for the measurement of all three irradiance components with a single sensor. The system leverages the pyranometer's fast response and spectrally flat thermopile technology to deliver accurate irradiance data, even under varying sky and spectral conditions. Additionally, using an ISO 9060 Class A pyranometer simplifies calibrations by enabling ISO 9847 standardized calibration procedures to reduce uncertainties and associated costs.

## Features



DHI, GHI, and DNI measurements in one compact solution



Inbuilt GPS for quick accurate setup



Cost-effective, low maintenance requirements



Low power consumption



Easy integration with any DAQ system



<1.4W Total power consumption with high efficiency dome heating for dew & frost resistance



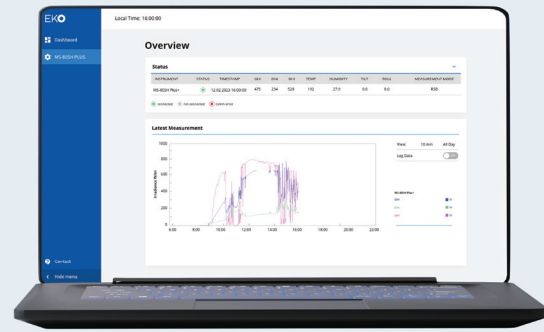
Level A EMI/EMC electronics surge filter & protection



Internal diagnostics for temperature, tilt, roll, and relative humidity

Coupling the MS-80SH Plus+ with an additional pyranometer allows for the determination of further irradiance parameters, such as ground-reflected irradiance and albedo. For applications like monitoring bifacial PV systems and complying with the IEC 61724-1 Class A monitoring standard, where diffuse irradiance measurements require higher accuracy, the system offers an additional operation mode: the **Tracking Shadow Band (TSB) mode**<sup>(2)</sup>. In TSB mode, the band actively tracks the sun to provide constant and precise diffuse irradiance measurements.

The control unit C-Box includes GPS to accurately determine the sun's position and adjust the RSB band accordingly. It features RS-485 Modbus RTU output, enabling seamless connection to various devices, such as dataloggers and SCADA systems, for delivering irradiance and sensor diagnostics data. To further complement this solution, EKO has developed Obi, a Windows software for sensor communication and data acquisition.



**1 MS-80SH Pyranometer**

ISO 9060 Class A Spectrally Flat & Fast Response With Integrated Dome Heating and on board sensor diagnostics

**2 Rotating Shadow Band**

Motorised rotating band to periodically shade and unshade, or constantly shade, the MS-80SH pyranometer

**3 Control Unit C-Box**

Control unit equipped with GPS RS-485 Modbus RTU Output for easy installation & seamless Data Acquisition system integration

**4 OBI Software**

A Windows software for sensor communication data visualization and acquisition Compatible with MS-80SH Plus+ & MS-90 Plus+

MS-80SH Plus+	Measurements		Measurement Interval
	MS-80SH Plus+	MS-80SH Plus+ with an additional pyranometer	
RSB mode <sup>(1)</sup>	GHI, DHI, DNI	RHI, Albedo	15 sec / 5 sec
TSB mode <sup>(2)</sup>	DHI	GHI, DNI	1 sec

**Specifications**

ISO 9060:2018	Class A Spectrally Flat & Fast response
Output	Modbus 485 RTU
Logging values	Irradiance: GHI, DHI, DNI Meta data: T, RH, Tilt, Time, Long, Lat, solar elevation & azimuth
Operation temperature range	-20°C to +70°C
Wavelength range	285 nm to 3000 nm (MS-80SH)
Power supply	12 to 24 VDC
Power consumption	<6 W
Weight	4,5 kg
Ingress protection	IP65
Cable length	10m (Optional lengths: 20m, 30m or 50m)
Measurement interval	15s (RSB mode) / 1s (TSB)
Warranty terms	2 years

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