

- ISO 9060 First Class Pyrheliometer
- IEC 17025 / 9059 calibrated pyrheliometer
- Lowest measurement uncertainty
- Ultra-fast < 0.2 s response time
- Excellent thermal stability
- Accurate temperature compensation
- Window heater to prevent dew and frost



The MS-57 pyrheliometer was inspired by the latest development of the MS-80 pyranometer, enabling a breakthrough in unprecedented low thermal offset behavior and fast thermopile response (< 0.2 s / 95 %). MS-57 First Class is a direct normal incidence (DNI) solar irradiance sensor. Also known as a pyrheliometer, it is used as a reference sensor for routine operation on a sun tracker. The all-weather MS-57 is responsive to solar irradiance in the spectral range from 200 ... 4000 nm and works under the most extreme conditions in a temperature range from -40 ... 80°C. The integrated low power window heater prevents dew deposition or frost on the outside window.

Each MS-57 is calibrated outdoors and tested at EKO upon manufacture against EKO's reference sensors, which are fully traceable to the WRR (World Radiometric Reference). The recommended period of recalibration can be extended to 5 years, which is typically 2 years for other sensor models in the market. The long-term stability of the sensor responsivity is less than 0.5 % in a period of 5 years which makes it unique.

The MS-57 pyrheliometers are manufactured in a consistent way followed by strict quality inspection and performance evaluation. For each sensor the temperature dependency are measured and validated through a measurement report that comes with the sensor. EKO provides a unique outdoors calibration compliant to the international standards defined by ISO/IEC17025/9059.

Calculation of irradiance

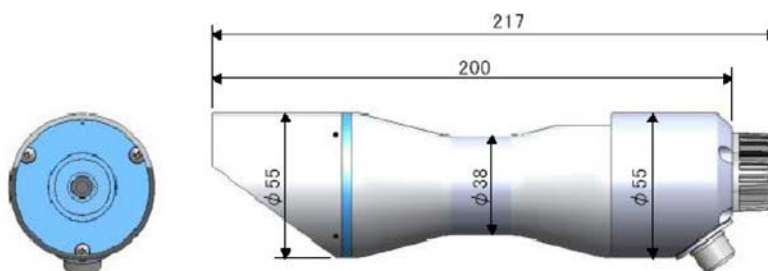
$$E = U / S$$

E [W/m²] = Irradiance

U [μV] = Output Voltage

S [μV/W/m²] = Sensitivity

Dimensional drawing



Specifications

Characteristic	Description
Classification	ISO 9060 First Class
Sensitivity	approx. 7 $\mu\text{V}/\text{W}/\text{m}^2$ (see calibration protocol)
Spectral range	200 ... 4000 nm
Maximum irradiance	4000 W/m^2
Typical signal output for atmospheric applications	0 ... 10 mV
Response time 95%	< 0.2 s
Zero offset - Thermal radiation (200 W/m^2)	0 W/m^2
Zero offset - Temperature change (5K/hr)	< 1 W/m^2
Non-stability (change/1 year)	-
Non-stability (change/5 year)	< 0.5 %
Non-linearity @ 1000 W/m^2	< 0.2 %
Temperature dependence of sensitivity (-20 ... +50°C / @ 20°C)	< ± 0.5 %
Impedance (@25°C)	~ 15 k Ω
Expected daily uncertainty	< ± 1 %
Full operating view angle	5°
Slope angle	1°
Pt100	Class A, IEC 751 Compliance
Operating temperature	-40 ... +80 °C
Power supply for optional window heater	12 V DC (0.5 W)
Protection	IP67
Dimension / Weight (without cable)	217 x 55 mm / 0.6 kg
Cable length	10 m
Warranty	5 years
Manufacturer	EKO Instruments
Accessory	Modules Ammonit M83572, EKO MC 11
Fitted with 10K thermistor and Pt100 temperature sensor as standard (thermistor not connected with Meteo-40)	

Delivery includes IEC 17025 calibration certificate and temperature dependency test report.

Sensor Connection to Ammonit Meteo-40 Data Logger
Radiation

Function	EKO MS-57 Wire Colour	EKO MC11		Meteo-40 Analog Voltage	Ammonit M83572 Supply Sensor
		Input	Output		
Solar Irradiance Output Voltage	brown	PIN 2	PIN 5	Ax, Shunt	
	red	PIN 1	PIN 6		PIN 10
				Bx, Shunt	GND
Shield (Housing)	yellow / green				Earth

werasdf

Internal Temperature

Function	EKO MS-57 Wire Colour	Meteo-40 Current Source	Meteo-40 Analog Voltage
Pt-100 Internal Temperature	grey	I+	Ay
	white	I-	By
Shield (Housing)	yellow / green		Earth

XASDFASD

Heater (12 V DC)

Function	EKO MS-57 Wire Colour	Supply Heater 12 V DC
Heater Input (+)	yellow	Supply Heater
Heater Input (-)	green	GND
Shield (Housing)	yellow / green	Earth

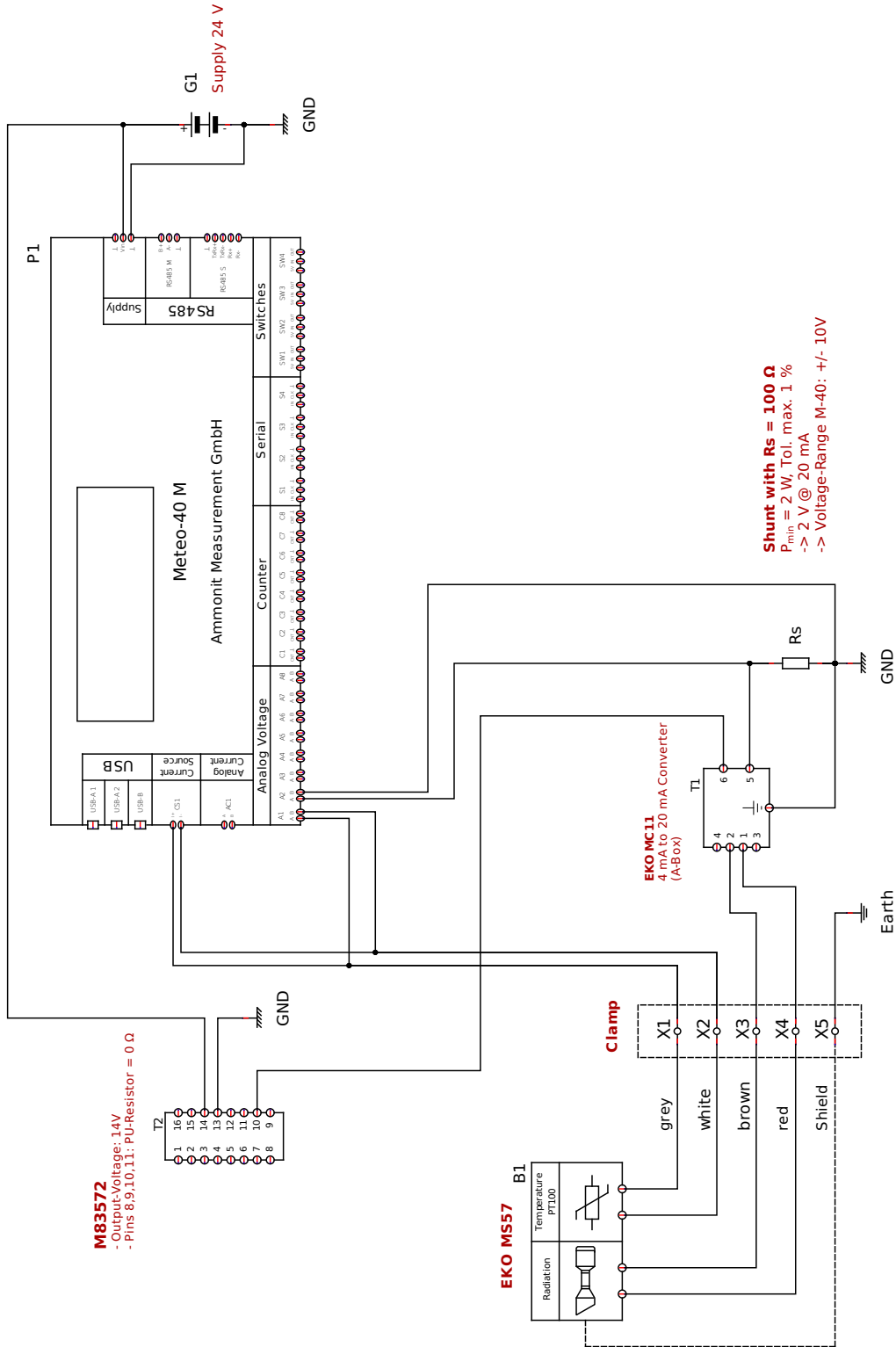
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Important

The system must be supplied with **24V!** If the **heating** is required, the system must be supplied with **further 12V**.

Please refer to the connection diagrams on the following pages.

Sensor Connection Diagram to Ammonit Meteo-40 Data Logger - without Heater!



Sensor Connection Diagram to Ammonit Meteo-40 Data Logger - with Heater!

