

- ISO 9060 Secondary Standard + IEC 17025 calibration
- 5-year warranty and re-calibration period
- Fast response time < 1s @ 95%
- Exceptional long-term stability ±0.5 %/5 years
- MS-80 with analog voltage output
- MS-80A with 4 ... 20 mA output
- MS-80M with Modbus RTU output



The MS-80 Secondary Standard pyranometer was inspired by the combination of latest technologies and state-of-the-art thermopile sensors, enabling a breakthrough in unprecedented low zero-offset behaviour and fast sensor response. The compact sensor with single dome, based on an isolated thermopile detector and Quartz diffusor is immune to offsets and integrates all optional value added functions such as a ventilator, heater and different industrial interfaces. The heater and ventilator are recommended, particularly over areas impacted by dew, frost, snow, and dust.

- **MS-80** is designed with **analog voltage output**. The analogue MS-80 pyranometer can be used as a reference sensor to measure the global broad-band solar radiation with a high accuracy. With excellent temperature response and non-linearity characteristics, it provides optimal performance throughout the year.
- **MS-80A** is designed with a built-in **4 ... 20 mA converter** compatible to industrial output standards. Due to ultra-low temperature dependency and non-linearity characteristics, the converter guarantees optimal sensor performance throughout the year. The output by the integrated converter is set to 4 ... 20 mA | 0 ... 1600 W/m² (default setting).
- **MS-80M** is designed with a built-in **Modbus RTU 485 converter** compatible to industrial output standards, also compatible to the industrial photovoltaic system power conditioner input. Due to ultra-low temperature dependency and exceptional non-linearity characteristics, the converter guarantees optimal sensor performance under any environmental conditions throughout the year. The digital signal from MS-80M can be converted to irradiance 0 ... 1600 W/m² (default setting).

The MS-80 pyranometers are manufactured in a consistent way followed by strict quality inspection and performance evaluation. EKO provides a unique calibration compliant to the international standards defined by ISO/IEC17025/9847. The sensor has a 5 years warranty with a 5 years re-calibration interval recommended and it is no longer necessary to change the desiccant.

Calculation of Solar Irradiance for M-80

$$E [W/m^2] = \frac{U (\mu V)}{S (\mu V/W \cdot m^2)}$$

E [W/m²] = Solar Irradiance

U [μV] = Voltage Output

S [μV/W·m⁻²] = Sensitivity

The sensitivity **S** for for for the pyranometer is stated on the calibration certificate and the product label.

Calculation of Solar Irradiance for M-80A

$$E [W/m^2] = (I [mA] - 4) \times 100$$

E [W/m²] = Solar Irradiance

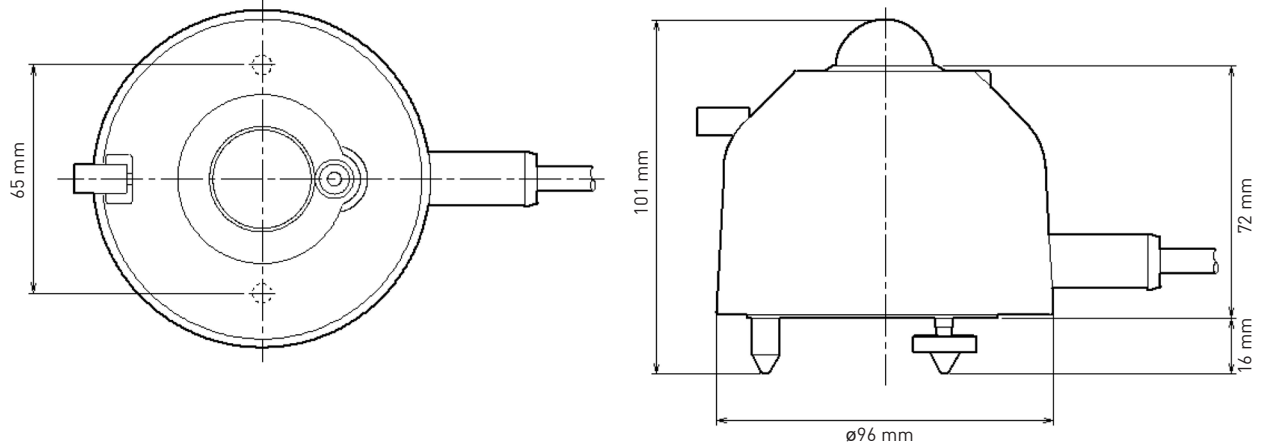
I [mA] = Solar Irradiance Current Value

MS-80A output is set as 1 mA = 100 W/m (default setting).

Specifications

	Pyranometer MS-80	Pyranometer MS-80A	Pyranometer MS-80M
Order No.	S64170	S64150	S64160
Classification	ISO 9060 Secondary Standard	ISO 9060 Secondary Standard	ISO 9060 Secondary Standard
Output	Voltage (mV)	Current (4 ... 20 mA)	Modbus RTU
Sensitivity	~ 10 $\mu\text{V}/\text{W}/\text{m}^2$	~ 10 $\mu\text{V}/\text{W}/\text{m}^2$	~ 10 $\mu\text{V}/\text{W}/\text{m}^2$
Resolution	-	< 0.5 W/m^2	< 0.5 W/m^2
Wavelength range	285 ... 3000 nm		
Max. operational irradiance	4000 W/m^2		
Response time (95%)	< 0.5 s	< 1.5 s	< 1 s
Response time (99%)	< 1 s	< 2 s	< 1 s
Zero offset (a) thermal radiation (200 W/m^2) (b) temperature change (5k/hr)	1 W/m^2 \pm 1 W/m^2		
Non-linearity	\pm 0.2 %		
Long-term stability	\pm 0.5 % / 5 years		
Direction response	\pm 10 W/m^2		
Temperature response (-20 ... +50°C)	< 1 %	< 0.5 %	< 0.5 %
Tilt response @ 1000 W/m^2	\pm 0.2 %		
Impedance	approx. 45 k Ω	-	-
Operating temperature	-40 ... +80 °C		
Power supply		12 ... 24 V DC \pm 10 %	12 ... 24 V DC \pm 10 %
Power consumption		0.08 ... 0.75 W	< 1.25 W
Cable length	10 m		
Weight	0.4 kg	0.43 kg	
Protection class	IP67		
Warranty	5 years		
Manufacturer	EKO Instruments		
Accessory	Thies Universal Amplifier (Order-No. S05000)	M83572	M83750
	MV-01 ventilator / heater (Order-No. S64060)		

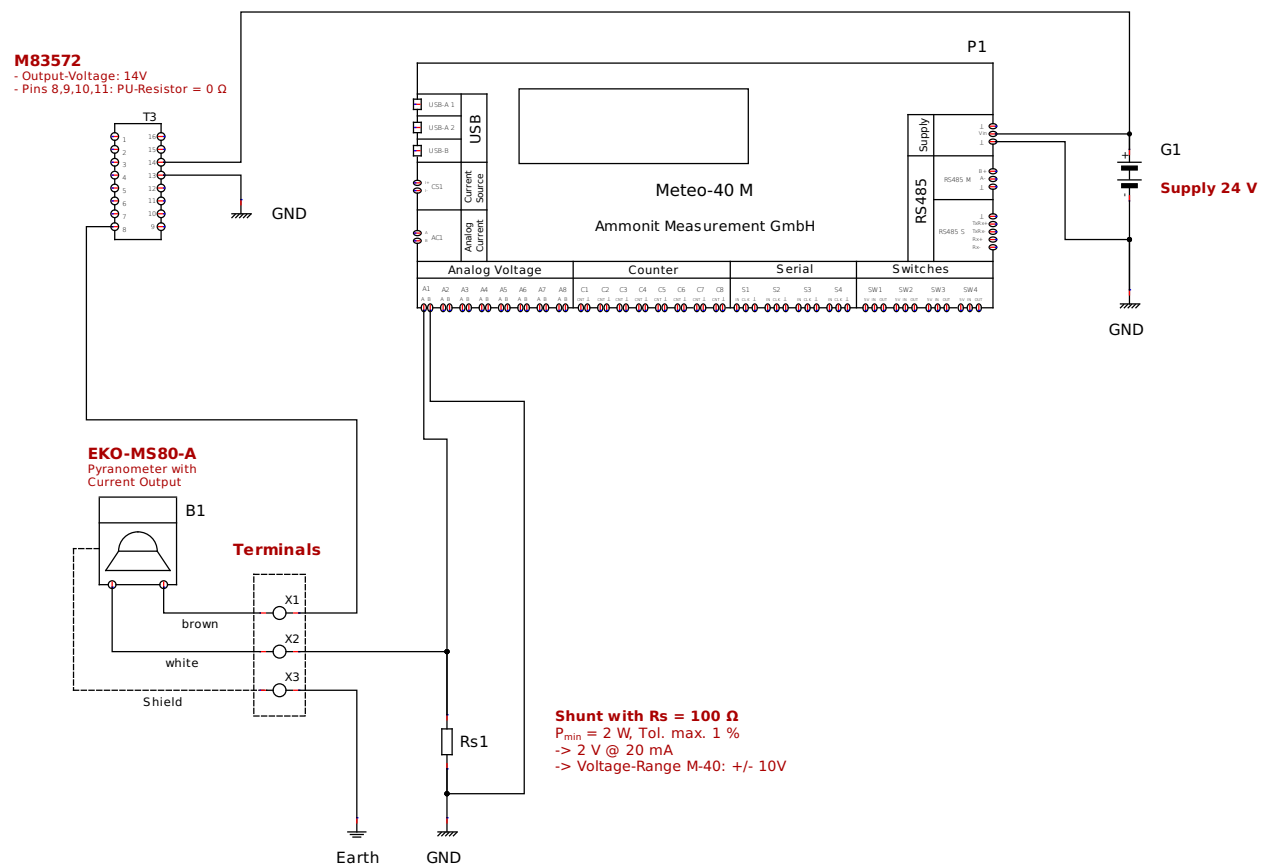
Delivery includes IEC 17025 calibration certificate.

Dimensional drawing

Connecting EKO MS-80A to Ammonit Meteo-40 data loggers

MS-80A

Sensor	Wire Colour (EKO)	Meteo-40 Analog Voltage	Supply Sensor
Solar irradiance Output voltage	white	Ax	
GND		Bx	
Supply	brown		14 V DC
	shield	Earth	



Connecting EKO MS-80M to Ammonit Meteo-40 data loggers

MS-80M

Sensor	EKO Wire Color	Meteo-40 RS485 Master	Sensor Supply
Data (+)	blue	B+	
Data (-)	black	A-	
RS485 G	grey		GND
Supply	brown		12 V DC
GND	white		GND

