

## Pyranometer EKO MS-60 /-60A /-60M

S64131 / S64133 / S64135

سنسور تشعشع تولید EKO سری ۶۰

کد های سفارش

- ISO 9060 First Class
- IEC 17025 calibration
- 5-year warranty
- MS-60 with analog voltage output
- MS-60A with 4 ... 20 mA current output
- MS-60M with Modbus RTU output



- **MS-60** First Class pyranometer is designed with **analog voltage output**.
- **MS-60A** First Class pyranometer is a MS-60 with a built-in **4-20 mA converter** which is compatible to industrial output standards.
- **MS-60M** First Class pyranometer is a MS-60 with built-in **Modbus 485 RTU converter** which is compatible to industrial output standards.

The new double dome constructions provides lower offsets and cosine errors. The MS-60/-60A/-60M can be used with the optional MV-01 ventilator / heater.

The MS-60 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 2 years re-calibration interval recommended and it is no longer necessary to change the desiccant.

### Calculation of Solar Irradiance for M-40

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

E [W/m<sup>2</sup>] = Solar Irradiance

U [μV] = Voltage Output

S [μV/W·m<sup>-2</sup>] = Sensitivity

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

### Calculation of Solar Irradiance for M-40A

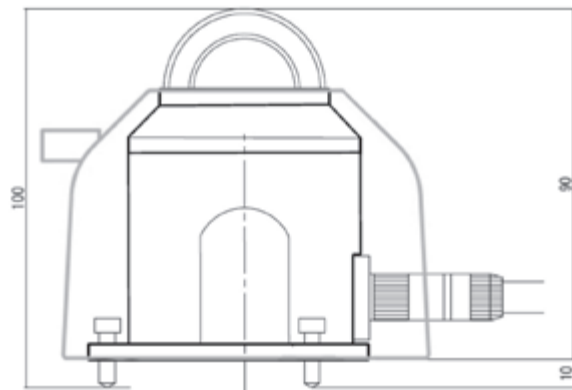
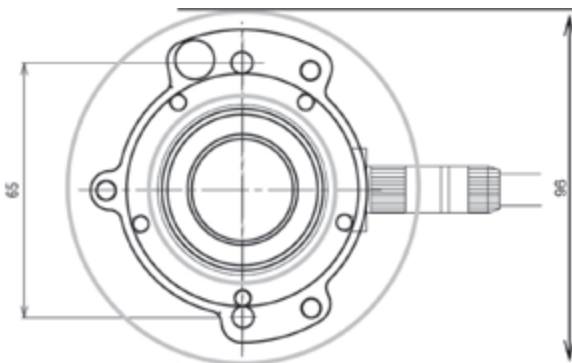
$$E [W/m^2] = (I [mA] - 4) \times 100$$

E [W/m<sup>2</sup>] = Solar Irradiance

I [mA] = Solar Irradiance Current Value

MS-40A output is set as 1 mA = 100 W/m (default setting).

### Dimensional drawing



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### Specifications

	Pyranometer MS-60	Pyranometer MS-60A	Pyranometer MS-60M
Order No.	S64131	S64133	S64135
Classification	ISO 9060 First Class	ISO 9060 First Class	ISO 9060 First Class
Output	Voltage (mV)	Current (4 ... 20 mA)	Modbus RTU
Sensitivity	7 ... 16 $\mu\text{V}/\text{W}/\text{m}^2$	7 ... 16 $\mu\text{V}/\text{W}/\text{m}^2$	7 ... 16 $\mu\text{V}/\text{W}/\text{m}^2$
Resolution	-	< 0.5 W/m <sup>2</sup>	< 0.5 W/m <sup>2</sup>
Wavelength range	285 ... 3000 nm		
Max. irradiance	2000 W/m <sup>2</sup>		
Response time (95%)	< 18 s		
Zero offset			
(a) thermal radiation (200 W/m <sup>2</sup> )	< 5 W/m <sup>2</sup>		
(b) temperature change (5k/hr)	$\pm 2$ W/m <sup>2</sup>		
Non-linearity @ 1000 W/m <sup>2</sup>	$\pm 1$ %		
Non-stability change/1 year	$\pm 1.5$ %		
Direction response @ 1000 W/m <sup>2</sup>	$\pm 18$ W/m <sup>2</sup>		
Temperature response (-10 ... +40°C)	< 3 %		
Temperature response (-20 ... +50°C)	< 4 %		
Tilt response @ 1000 W/m <sup>2</sup>	$\pm 1$ %		
Impedance @ 25°C	60 ... 100 $\Omega$	-	-
Operating temperature	-40 ... +80 °C		
Power supply		12 ... 24 V DC $\pm 10\%$	12 ... 24 V DC $\pm 10\%$
Power consumption		0.08 ... 0.5 W	< 0.3 W
Cable length	10 m		
Weight	0.35 kg	0.38 kg	
Protection class	IP67		
Warranty	5 years		
Manufacturer	EKO Instruments		
Accessory		Module M83572	Module M83570
	MV-01 ventilator / heater (Order-No. S64060)		

Delivery includes IEC 17025 calibration certificate.

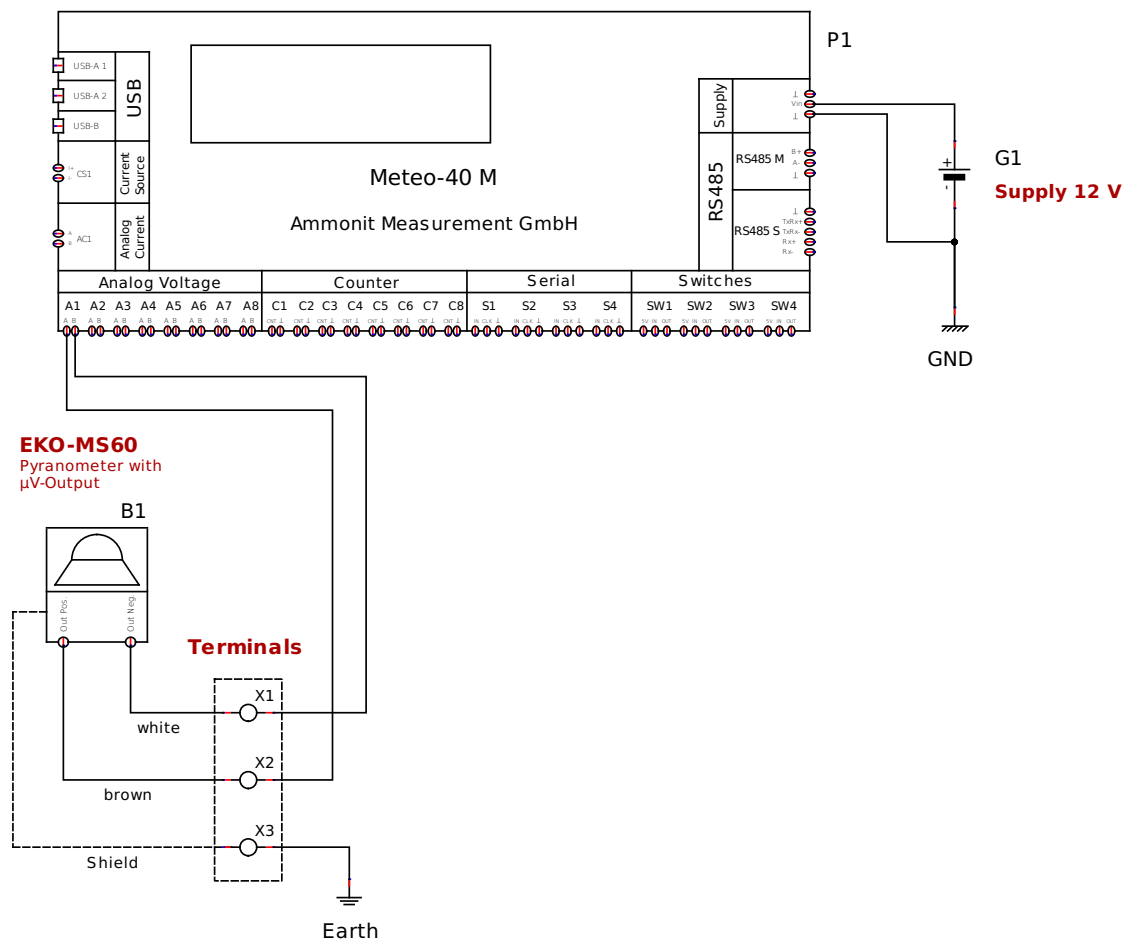
# Pyranometer EKO MS-60 /-60A /-60M

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## Connecting EKO MS-60 to Ammonit Meteo-40 data loggers

### MS-60

Sensor	Wire Colour (EK0)	Meteo-40 Analog Voltage
Solar irradiance	brown (+)	Ax
Output voltage	white (-)	Bx
	shield	Earth



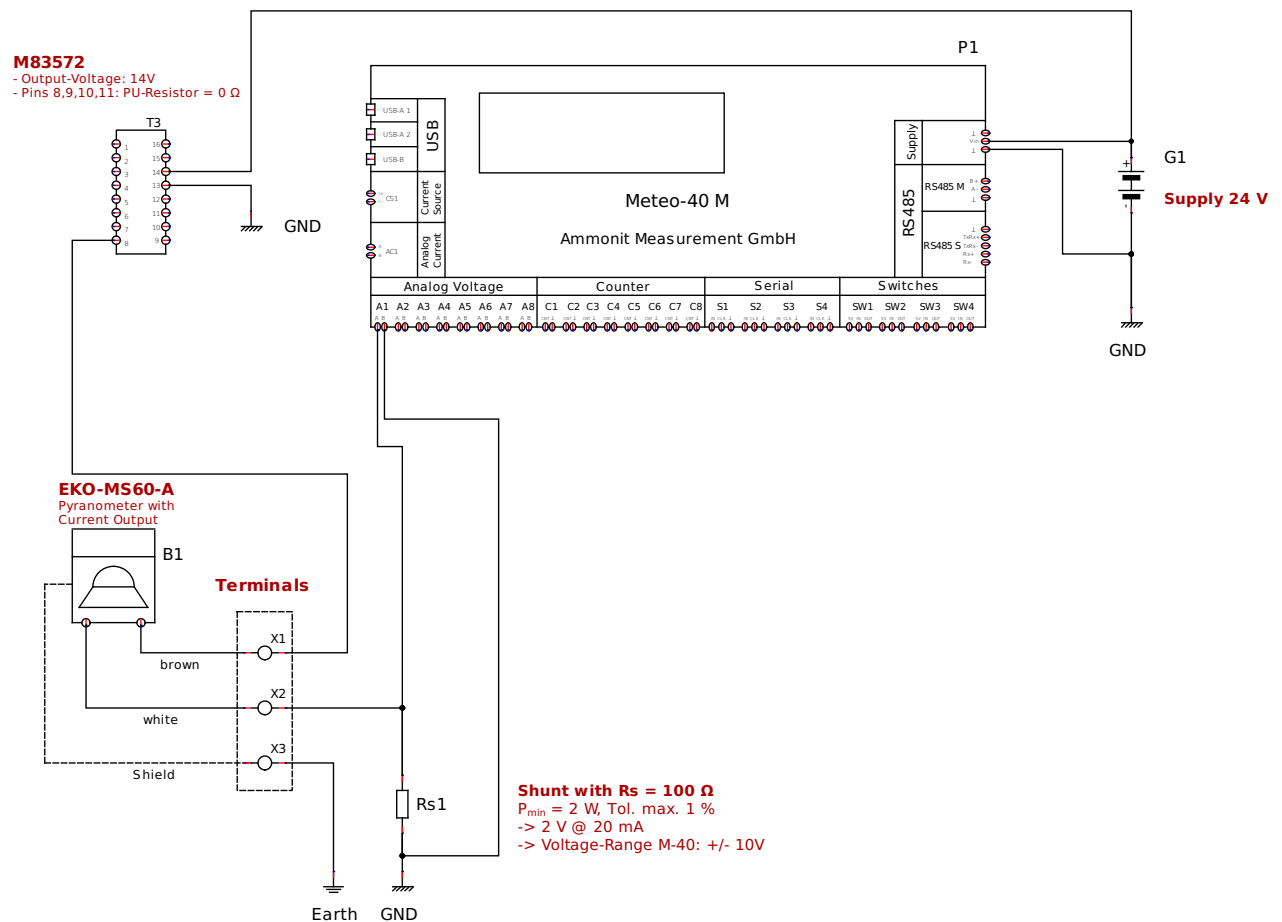
# Pyranometer EKO MS-60 /-60A /-60M

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## Connecting EKO MS-60A to Ammonit Meteo-40 data loggers

### MS-60A

Sensor	Wire Colour (EK0)	Meteo-40 Analog Voltage	Supply Sensor
Solar irradiance	white	Ax	
Output voltage			
GND		Bx	
Supply	brown		14 V DC
	shield	Earth	



# Pyranometer EKO MS-60 /-60A /-60M

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## Connecting EKO MS-60M to Ammonit Meteo-40 data loggers

### MS-60M

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

