



## Silicon Irradiance Sensor

### Measurement of Solar Irradiance

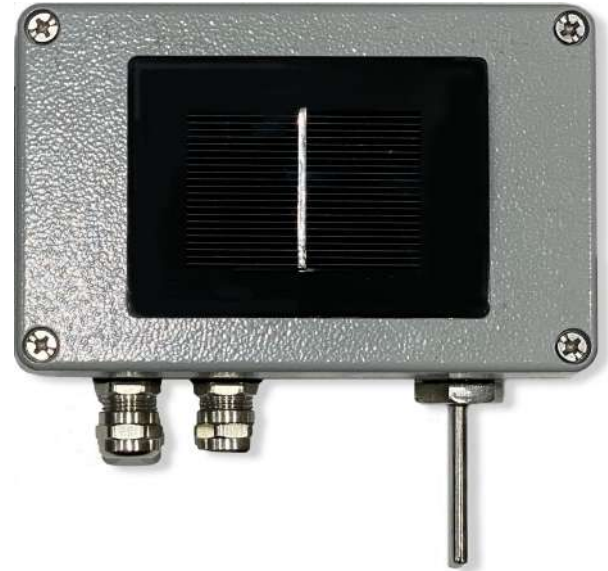
#### OVERVIEW

MBMet-500 series provides cost effective and accurate measurement of Solar Irradiation. The sensor provides multiple measurement options and is ideal for monitoring Photovoltaic (PV) Systems – Rooftop or Ground Mounted.

The sensors are used to monitor and analyze performance of PV arrays. Spectral response of MBMet-500 series is comparable to PV arrays. Options are provided for measurement signal outputs as analog (4-20mA) or digital (RS485).

#### BENEFITS AND FEATURES

- ▶ Accurate and repeatable measurements
- ▶ Temperature compensated Solar Irradiation measurement
- ▶ Measures Cell Temperature
- ▶ Option for external Air or PV Module Temperature measurement
- ▶ Site configurable temperature units – °C, °F or °K
- ▶ Housed in robust cast-aluminium IP65 enclosure
- ▶ Each sensor is individually calibrated
- ▶ Sensor mounting clamp is provided along with the sensor



MBMet 500 series with Integrated Cell and Ambient Temperature Measurement

#### TECHNICAL DESCRIPTION

Model Parameters	MBMet-500A		MBMet-500B		MBMet-500C		MBMet-500D	
	-A	-B	-A	-B	-A	-B	-A	-B
Communication Output	4-20mA	RS-485 Modbus	4-20mA	RS-485 Modbus	4-20mA	RS-485 Modbus	4-20mA	RS-485 Modbus
Sensor Type	Monocrystalline Silicon (85mm x 64mm)							
Input Voltage	9-32 VDC							
Power Consumption	50mW	100mW	50mW	100mW	50mW	100mW	50mW	100mW

#### Solar Irradiation

Measuring Range	0-1500 W/m <sup>2</sup>
Accuracy	±5 W/m <sup>2</sup> ±3% of reading
Resolution	1
Response Time	2-3 seconds
Stability	0.5% per annum

#### Cell Temperature

Measuring Range	-40°C to 90°C
Accuracy	±0.3% FS
Resolution	0.1
Response Time	2-3 seconds



## TECHNICAL DESCRIPTION *(Cont.)*

Model Parameters	MBMet-500A	MBMet-500B	MBMet-500C	MBMet-500D
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### Ambient Air Temperature (Integrated Sensor)

	-A	-B	-A	-B	-A	-B	-A	-B
Sensor Type	-	-	RTD PT100		-	-	-	-
Measuring Range	-	-	-40°C to 90°C		-	-	-	-
Accuracy	-	-	±0.3% FS		-	-	-	-
Resolution	-	-	0.1		-	-	-	-
Response Time	-	-	3-5 seconds		-	-	-	-

### Ambient Air Temperature (External Sensor with three meters Silicon cable)

	-A	-B	-A	-B	-A	-B	-A	-B
Sensor Type	-	-	-	-	RTD PT1000		-	-
Measuring Range	-	-	-	-	-40°C to 90°C		-	-
Accuracy	-	-	-	-	±0.3% FS		-	-
Resolution	-	-	-	-	0.1		-	-
Response Time	-	-	-	-	3-5 seconds		-	-

### PV Module Temperature (External Sensor with three meters Silicon cable)

	-A	-B	-A	-B	-A	-B	-A	-B
Sensor Type	-	-	-	-	-	-	RTD PT1000	
Measuring Range	-	-	-	-	-	-	-40°C to 90°C	
Accuracy	-	-	-	-	-	-	±0.3% FS	
Resolution	-	-	-	-	-	-	0.1	
Response Time	-	-	-	-	-	-	4-6 seconds	

## GENERAL SPECIFICATIONS

Parameter	Specification
Irradiation Sensor Enclosure	Cast Aluminum
Ingress Protection	IP65
Irradiation Sensor Enclosure Size	120 (L) x 76 (W) x 65 (H) mm
Weight	300 grams
Mounting Clamp (suitable for mounting on PV module side)	SS 304
Cable Terminals	1.5 sq. mm. copper
Integrated Ambient Temperature Sensor	40mm x 4mm (SS304)
Cable Glands	M12x1.5mm
Ambient Operating Temperature	-30°C to 70°C
Ambient Operating Humidity	0 to 99% RH

## COMMUNICATION PARAMETERS (ONLY FOR MODELS WITH RS-485 COMMUNICATION PORT)

Parameter	Specification
Communication Port	RS485
Isolation	1.5KV
Protocol	MODBUS RTU
Baud rates	4600, 9200 or 19200 (site configurable)
Parity	Odd, Even or None
Device ID	1 to 247

## ODERING SHEET

Model	Parameter	Output	Features
MBMet-500	A		Solar Irradiation with Cell temperature
	B		Solar Irradiation with Cell temperature + Integrated Ambient Temperature Sensor
	C		Solar Irradiation with Cell temperature + External Ambient Temperature Sensor with three meters Silicon cable
	D		Solar Irradiation with Cell temperature + External PV Module Temperature Sensor with three meters Silicon cable (MBMet-801B)
		A	Analog (4-20mA)
		B	RS-485 (MODBUS RTU)

For example: MBMet-500-CB

Measured Parameters: Solar Irradiation + Cell Temperature + External Ambient Temperature with three meters Silicon cable  
Output: RS-485 with MODBUS RTU protocol

**M. B. Control & Systems** with experience of 35+ years are the leading manufacturer and solution provider in Electrical Automation and Instrumentation sector. Our weather station "SURYA" and sensors "MBMet series" are assembled and manufactured in Kolkata, West Bengal, India, where we have our R&D, manufacturing, testing, and support team ensuring high quality design, production, and customer support. Every sensor has been designed to provide high accuracy. These are tested rigorously in-house before shipping. The experienced R&D team puts in best efforts refining and upgrading the sensors to ensure sensor long life and minimal maintenance.

## SEE ALSO

- MBMet 140H Series Ultrasonic Wind Speed & Direction Sensors
- MBMet 800 Series PV Module Temperature Sensors
- MBMet 901 Series Air Temperature, Humidity & Pressure Sensor
- MBLogger 900 and 1000 Series Dataloggers
- PM130 Series Multifunction meters
- PM180 Series Power Quality meters

**\*\*Specifications are subject to change without notice.**

