MBMET

M B Control & Systems Pvt. Ltd.

MBMET Alpha Meteorological Station

Overview

The MBMET Alpha Weather Monitoring Station is a complete, standardized, and modular meteorological monitoring solution specifically designed for solar photovoltaic (PV) plants. Engineered in accordance with IEC-61724-1 standards, it ensures accurate, reliable, and continuous environmental monitoring to support optimized plant performance and precise Performance Ratio (PR) evaluation.

The system is built with a modular architecture that allows easy installation and future expansion, making it suitable for a wide range of solar applications. It is designed for 24×7 long-term operation, ensuring consistent data collection under varying environmental conditions. With its plug-and-play setup and remote diagnostics capability, the station helps reduce installation complexity and maintenance time.

Additionally, it features secure encrypted data communication, enhancing data safety and system reliability. Each station is delivered as a complete solution, including mounting structures, enclosures, cabling, and detailed architectural, general arrangement (GA), electrical, and connection diagrams, ensuring seamless deployment and operation.

The flexible and scalable design also enables future upgrades and the addition of new sensors, communication modules, and monitoring functionalities without major system modifications.

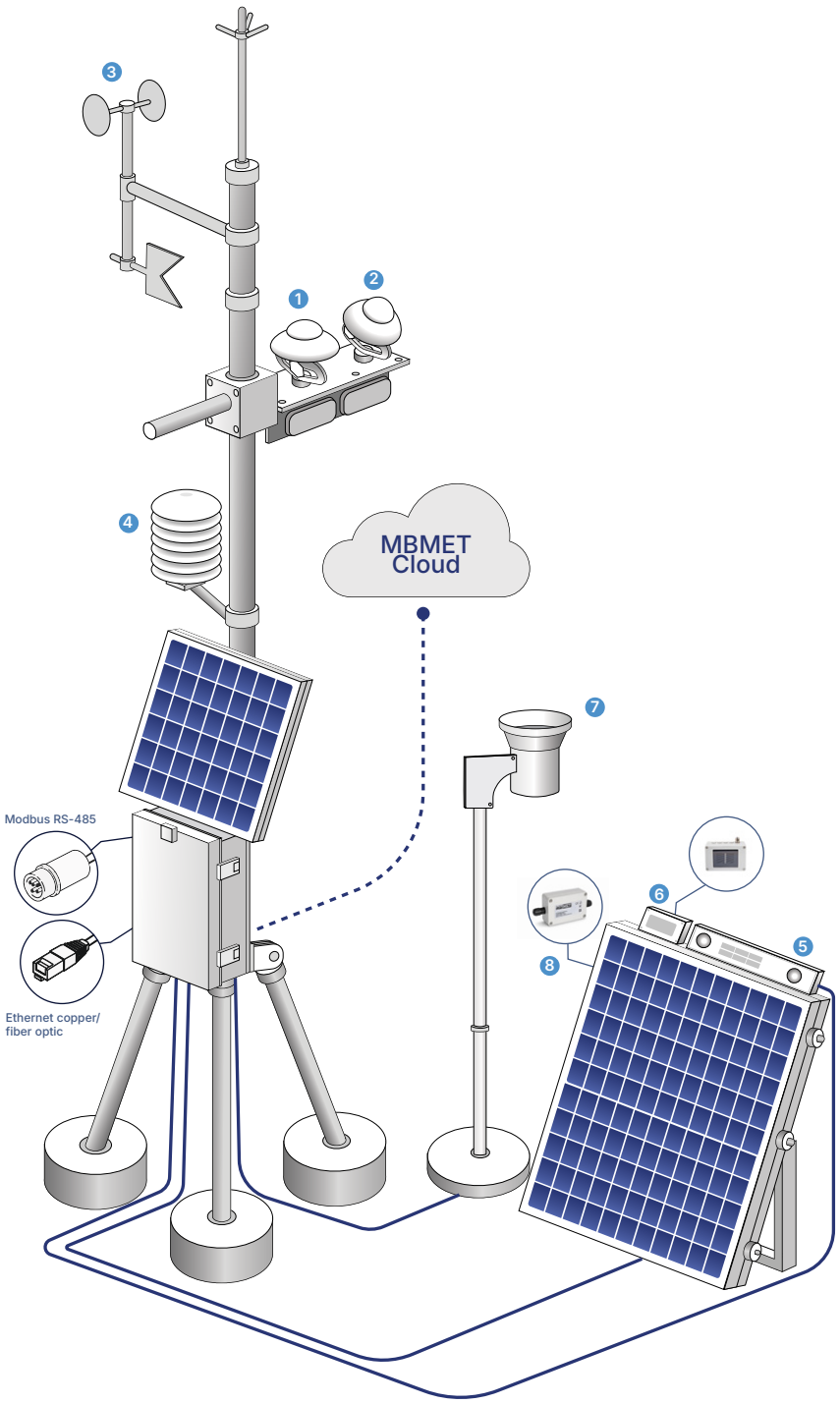


Key Highlights

- Complete, standardized system with modular architecture
- Designed for 24 × 7 long-term operation
- Plug & Play installation
- Remote diagnostics for reduced maintenance time
- Secure encrypted data communication
- Future expandable design

Feature Diagram

1. **Pyranometer**
   GHI
2. **Pyranometer**
   GII
3. **Wind Speed & Direction Sensor**
4. **Radiation Shield + Ambient Air Temperature, Humidity & Barometric Pressure Sensor**
5. **Soiling Sensor**
   DustIQ
6. **Reference Solar Cell**
7. **Rain Gauge**
8. **PV Module Temperature Sensor**
   (Under Solar Panel)



MBSCADA Solar Cloud Monitoring

- Automated PR Calculation
- User Centric Alarms and Notification
- Automated and Advanced Report Generation
- Data Export & API Gateway

MBSCADA Met Cloud Monitoring

- Real-time weather data Visualization
- Custom Alerts & Event Triggers
- Data API for Integration
- Automated and Advanced Report Generation
- Geo-Targeted Station Management

Remote User Interface

- Maintenance and configuration
- Software Update
- Real-time Remote Diagnostics

Renewable Plant Monitoring and Control

- Photovoltaic Plant Control
- Event and Fault Logging
- Scalable and Secure Platform
- Asset Wise KPI Analytics

Key Highlights

Comprehensive Solar & Weather Monitoring

Provides high-quality data for:

- Global Horizontal Irradiation (GHI)
- Global Inclined / POA Irradiation
- Albedo / Rear Irradiation
- PV Module Temperature
- Ambient Temperature
- Relative Humidity
- Atmospheric Pressure
- Wind Speed & Direction
- Rainfall

Industry-Leading Sensor Integration

Integrated with globally trusted brands:

- Kipp & Zonen
- EKO Instruments
- Lufft
- Davis Instruments
- Barani Design

Delivering rugged and reliable solutions for all solar applications.

High-Performance Data Logging

Powered by MBLogger series for reliable and accurate data acquisition:

- High-speed processing
- Onboard statistical calculations
- Secure data storage
- SCADA & cloud integration

Advanced Communication

Supports multiple protocols:

- Modbus TCP/IP
- MQTT
- FTP
- SFTP
- REST APIs

Compatible with all MBMet sensors, third-party equipment, and major data services.

Secure & Smart Operation

- Encrypted data transmission
- Remote diagnostics
- Reduced downtime
- Improved operational efficiency

Flexible Power Options

- 220/230 VAC
- 12 VDC
- Solar Powered System
- Solar + AC Redundant System

Future-Ready & Expandable

- Additional connection points available
- Scalable modular architecture
- Suitable for utility-scale, rooftop, and C&I solar plants

Included Sensors & Devices

Item	Model	Quantity
Class A Pyranometers (for GHI & GII / POA)	Kipp & Zonen SMP-10x / EKO Instruments MS80SH	2
Class A PV Module Temperature Sensor (Mono & Bifacial)	MBMet-803	1
Ambient Temperature + RH + Pressure Sensor with Radiation Shield	MBMet-901A	1
Wind Speed & Direction Sensor	Davis Instruments 6410 / Barani Design MeteoWind Compact / Lufft WS200	1
Rainfall Sensor	Davis 6466 / Barani MeteoRain 200 / Lufft WTB-100	1
Datalogger	MBLogger Nano Series / MBLogger 1000 Pro	1

Optional Sensors

Item	Model
Class A Pyranometer For Albedo, Rear Irradiance	Kipp & Zonen SMP-10x, EKO Instruments MS80SH
All-in-One DNI + DHI Measurement System	Kipp & Zonen Razon+, EKO Instruments MS80SH Plus
Soiling Monitoring Station	Kipp & Zonen, DustIQ
Reference Cell	MBMet-500A

Technical Specifications

Power

Parameter	Specification
AC (Mains Power)	220 / 230 VAC, 50–60 Hz
External DC Input	12 VDC
Solar Panel	75W / 12V (Approx. 775 × 665 × 35 mm)
Battery	42Ah, Sealed Maintenance Free
Battery Backup	3–5 Days (Complete Cloudy Conditions)

Mounting Mast & Accessories

Feature	Specification
Mast Height	3m Tripod For Main Mast 1m Monopole for Rain Gauge
Boom Rod	1.2 Meter
Structure Material	Hot Dip Galvanised Iron 80 / 120 Micron Paint Thickness
Mounting Equipment	SS316
Corrosion Category	C5

Enclosure for Datalogger and Battery

Feature	Specification
Material	Polycarbonate / FRP
IP Rating	IP65 / IP66
Datalogger Enclosure Size	450 × 300 × 180 mm
Battery Enclosure Size	300 × 300 × 180 mm
Weight	< 20 kg

Environmental

Parameter	Specification
Operating Temperature	-40°C to +60°C
Storage Temperature	-60°C to +70°C
Operating Humidity	0 – 100%
Use in Wet & Coastal Regions	Yes

Ordering String

Order Code	A	B	C	D	E	F
MBMet Alpha						

Class A Pyranometers	A
2 x Kipp & Zonen SMP-10x	K
2 x EKO Instruments MS80SH	E
No Pyranometer	X

Rain Gauge	C
Davis Instruments 6466	D
Barani Design MeteoRain 200	B
Lufft WTB-100	L
No Rain Sensor	X

Power Supply	E
220 / 230 VAC	0
12 VDC	1
Solar	2
Solar + AC Fallback	3

Wind Sensors	B
Davis Instruments 6410	D
Barani Design MeteoWind Compact	B
Lufft WS-200	L
No Wind Sensor	X

Datalogger	D
MBLogger Nano Pro	PX
MBLogger Nano Pro-M	PM
MBLogger Nano K	NX
MBLogger Nano K-M	NM
MBLogger 1000 Pro	P

+Optional Items	F
PV Module Temperature Sensor MBMet - 800	MT
Albedometer Kipp & Zonen SMP10x	AS
Albedometer EKO Instruments MS80SH	AE
Reference Cell MBMet-500A	RC
Soiling Monitoring MBMet-701	MS
Soiling Monitoring Kipp & Zonen DUSTIQ (*)	KD
Cloud Cover Sensor PCCD	CP
All in One Station Kipp & Zonen Razon+ (*)	KR
All in One Station EKO Instruments MS80SH+ (*)	EM

*: These Sensors cannot be connected to Solar Power Backup due to it's High Power Requirements

Example: MBMet Alpha-K-B-D-P-0-AS-KD
Description: Standard MBMet Alpha Meteorological Station with 2 x Kipp & Zonen SMP-10X Pyranometers, 1 x Barani Design MeteoWind Compact Wind Sensor, 1 x Davis 6466 Rain Gauge, 1 x Datalogger 1000 Pro, Suitable for 220 / 230 VAC Power Supply.
Additional Sensors: 1 x Kipp & Zonen SMP-10X Albedometer, 1 x Kipp & Zonen DustIQ Soiling Sensor

INSTALLATION IMAGES







