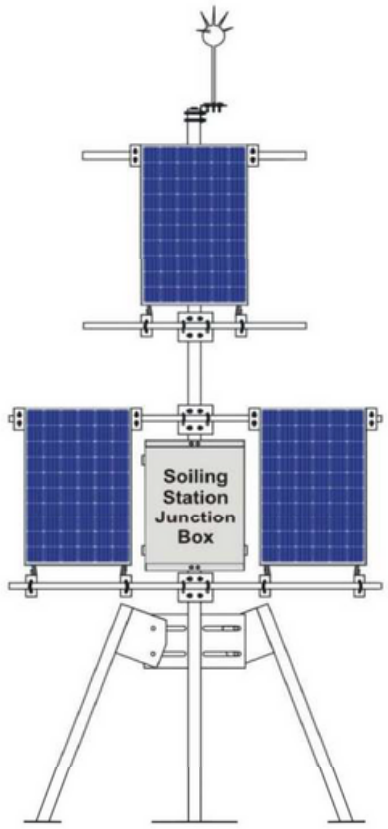
# Soiling Monitoring Station

## Accurate & Reliable Soiling Measurements

## Overview

MBMet-700 Soiling Monitoring Stations provide PV Plant owners with Accurate and Reliable Soiling Measurements. It measures and calculates metrics such as Soiling Loss Index and Soiling Ratio so that PV Plant O&M teams can evaluate and manage the impact of Soiling on PV Plant Performance. These stations can be used in both Prospective and Operational PV Plants. In Prospective plants, they are used to estimate production loss estimates due to Soiling. In Operational plants, they are needed to monitor actual production losses due to Soiling – and make optimal PV Plant cleaning schedules. MBMet-700 Soiling Monitoring Stations calculate Soiling Loss by comparing Short-Circuit Current and Back of Module Temperatures of a Reference PV Module and a Test PV Module.

Both the Reference and Test PV Modules are identical – the Reference Module is kept clean (either manually once a day, or automatically using the Automatic Cleaning version of the Station) while the Test Module is allowed to Soil Naturally (Cleaned only when the PV Plant is Cleaned). The station supports a wide-range of PV Modules – ones used in Utility Grade Solar Plants.




2 Years Standard Warranty

Class A IEC-60751 Compliant

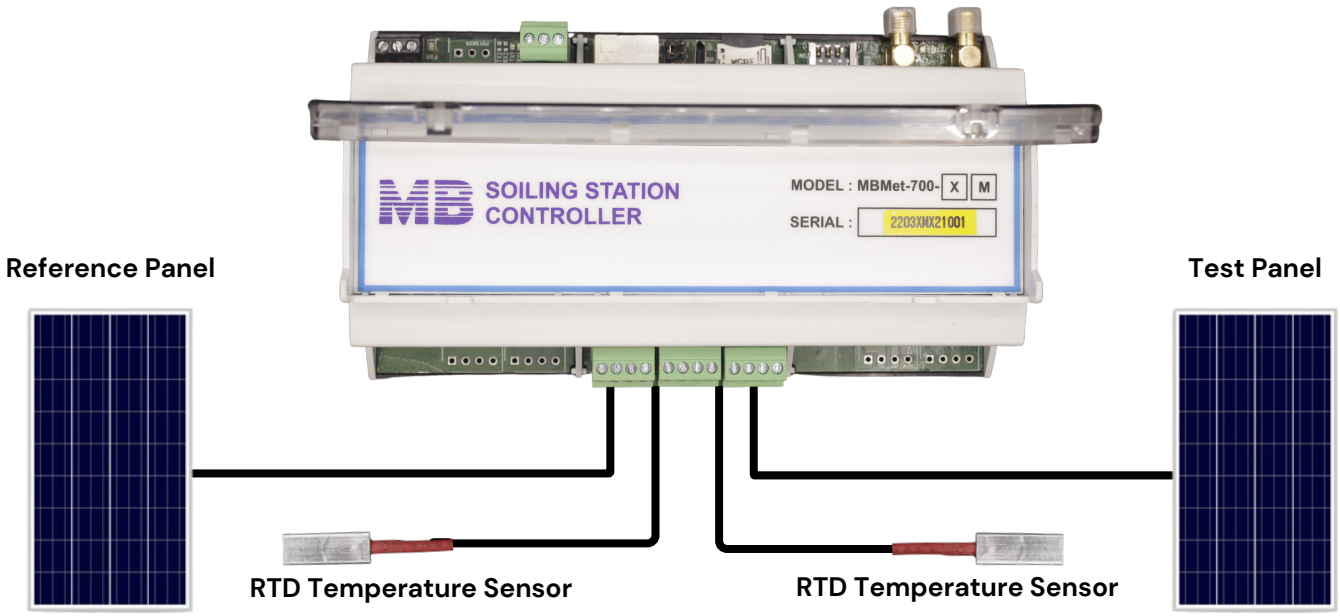
Class A IEC-61724-1 Compliant

## The System comes with the following

- Class A PV Module Temperature Sensors (MBMet-801B: 2 Units)
- Soiling Station Controller, Calibrated and Configured with the required Modules
- IP65 Enclosure, pre-wired with the required components (Surge Protection Devices, Terminals, SMPS, MCBs, etc.)
- Three meters Heavy Duty GI Mounting Pole with Lightning Arrestor
- Battery Backup System (Optional)
- Solar Modules as per Site Requirements
- Cleaning Nozzles and equipment such as Pump, Level Switched, Solenoid Valves, etc. (Only for Stations with Automatic Cleaning option)

## Benefits and Features:

- **IEC-61724 compliant Technology**
- **High Soiling Accuracy of 1%**
- **Automatic Cleaning of Panels**
- **Multiple communication options –**
  **RS-485 Modbus, Modbus TCP/IP, FTP, SNTP, Cellular to connect with PV Plant Monitoring Systems.**
- **Built-in Webserver for Data Retrieval and configuration – no additional software needed.**
- **Real-time Data and Daily Average Soiling Loss**
- **Data Filtering to remove unqualified Data and maximise accuracy**
- **Back up of Historical Data**
- **Supports a Wide Range of PV Modules – up to Full Sized Ones**
- **Complete, Turnkey Solution**




## Technical Specifications

| | |
|---|---|
| Micro-Processor | 32 bits ARM Processor |
| Input Voltage | 9-32 VDC |

### DataLogging

| | |
|---|---|
| Logging Interval | Site Configurable |
| Data Storage | Via SD Card (FAT32) up-to 16 GB |
| Data Retrieval | FTP via Modem and ETH port |

### Soiling Measurement

| | |
|---|---|
| Solar Panels | 35W, 50W, 100W and above |
| Panel Temperature Sensor | RTD PT1000 |
| Temperature measurement range | -40 to + 90 C |
| Temperature Accuracy | ±0.2 C |
| Panel Parameters | Voltage, short circuit current, temperature, and irradiation |
| Soiling Parameters | Soiling Ratio Soiling Index |
| Soling accuracy | ±1.0% |

### Ports

| | |
|---|---|
| Serial Port-1 | RS-485 Port |
| Configurable Baud Rate | 9,600 and 19,200 bps |
| Optical Isolation | 2.5KV RMS |
| Protocols Supported | MODBUS RTU Master- Read parameters from Smart Charger |
| Ethernet Port | 1 |
| Protocols Supported | MODBUS TCP Slave, SNTP Client and FTP |
| Datalogger Configuration | Via in-built web server |

### Inbuilt Modem (Optional)

| | |
|---|---|
| Network | Quad Band 4G Modem with Antenna |
| Frequency Band<br>Data Retrieval | TDD LTE: B40/B41 |
| | GSM: 900/1800 |

## Electrical

| | |
|---|---|
| Power Consumption | With Cellular Modem: 9 Watt at 12VDC |
| | Without Cellular Modem: 4 Watt at 12VDC |

## Environmental

| | |
|---|---|
| Operating Temperature | -5°C to +70°C |
| Storage Temperature | -20°C to +80°C |
| Humidity | 95% max noncondensing |
| RTC | Temperature compensated RTC |

# Models

| Serial No. | Features | MBMet-700-X-X | MBMet-700-X-M | MBMet 700-C-X | MBMet 700-C-M |
|---|---|---|---|---|---|
| 1 | Port Serial Port -1 RS-485 | ✓ | ✓ | ✓ | ✓ |
| 2 | Port ETH | ✓ | ✓ | ✓ | ✓ |
| 3 | MMC SD Card (16GB) | ✓ | ✓ | ✓ | ✓ |
| 4 | Maximum number of MODBUS TCP Slave clients | 4 | 4 | 4 | 4 |
| 5 | SNTP Client | 1 | 1 | 1 | 1 |
| 6 | File Transfer Clients | 2 | 2 | 2 | 2 |
| 7 | RTC (Battery Backed Up) | ✓ | ✓ | ✓ | ✓ |
| 8 | Digital Inputs (optically isolated) for water level monitoring | × | × | 2 | 2 |
| 9 | Digital Outputs for water pump control | × | × | 1 | 1 |
| 10 | Digital Outputs for water output control for cleaning PV modules | × | × | 2 | 2 |
| 11 | Cellular Modem | × | ✓ | × | ✓ |

Our extensive lineup of "MBMet" Sensors forms the cornerstone of advanced Weather Monitoring. With unwavering accuracy and cutting-edge technology, these sensors empower industries such as solar, meteorology, and agriculture to make informed decisions. From Solar Irradiation to Atmospheric Data, each sensor offers precise insights crucial for optimizing performance, enhancing safety, and ensuring efficiency in the face of ever-changing weather conditions

## SEE ALSO

MBMet 500 Solar Irradiance Sensor

MBMet 702 Series Radiation Shield

MBMet 800 Series PV Module Temperature Sensor

MBMet 901 Series Air Temperature, Humidity & Pressure Sensor

MBLogger Nano and 1000 Series Dataloggers