M B Control & Systems Pvt. Ltd.

Innovative Electronics For You

Actual installation in a 5 MW Solar Plant located in West Bengal

WEATHER MONITORING STATION (WMS) - SURYA
HIGH ACCURACY AND RELIABLE ALL-IN-ONE WMS SOLUTIONS

Precise weather monitoring systems are essential and mandatory requirements for assessment and operation of Renewable plants, Substations and other Industrial applications. In Solar plants, weather monitoring sensors are the key for initial assessment on finding optimal locations for solar radiation and improving plant efficiency.

MBCS "SURYA" offers entire range of weather sensors depending on the plant size from market leading sensor manufacturers along with our in-house weather sensors under MBMet series.

WMS SURYA MEASURMENT RANGE

Solar Irradiation in   - Second Class   - Secondary Standard
Ambient Temperature
Ambient Humidity
Ambient Barometric Pressure
Ambient Dew Point
Ambient Frost Point
Wind Speed
Wind Direction
PV Module Temperature
Rain Precipitation
Datalogger with in-built GSM Modem

PYRANOMETER

Secondary Standard SR20 Series

- Detector type : Thermopile
- Response time (95%) : 3s
- Calibration uncertainty : <1.2 %
- Zero offset a : 5 W/m² unventilated, 2.5 W/m² ventilated
- Zero offset b : <±2 W/m²
- Spectral range : 285 to 3000 nm
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- IP Protection rating : IP 67
- Calibration traceability : to WRR
- Output signal options : Analog 4-20mA, Analog 0-50mV and Digital RS-485 Modbus

Make : **Hukseflux**
Class : **Secondary Standard**
Model : **SR20 Series**

Secondary Standard CMP10, CMP11, SMP10 and SMP11 Series

- Detector type : Thermopile
- Response time (95%) : <5s (CMP10 and CMP11), <2s (SMP10 and SMP11)
- Calibration uncertainty : +/-2%
- Zero offset a : <7 W/m² unventilated
- Zero offset b : <2 W/m²
- Spectral range : 285 to 3000 nm
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- IP Protection rating : IP 67
- Calibration traceability : to WRR
- Output signal options : Analog 4-20mA, Analog 0-1V and Digital RS-485 Modbus (SMP10 and SMP11)
  Analog 0-20mV (CMP10 and CMP11)

Make : **Kipp & Zonen**
Class : **Secondary Standard**
Models : **CMP10, CMP11, SMP10 and SMP11 Series**

Second Class SR05 Series

- Detector type : Thermopile
- Response time (95%) : 18s
- Calibration uncertainty : <1.8% (K=2)
- Zero offset a : <15 W/m² unventilated
- Zero offset b : <±4 W/m²
- Spectral range : 285 to 3000 nm
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- IP Protection rating : IP 67
- Calibration traceability : to WRR
- Output signal options : Analog 4-20mA, Analog 0-1V and Digital RS-485 Modbus

Make : **Hukseflux**
Class : **Second Class**
Model : **SR05 Series**

Second Class CMP3 and SMP3 Series

- Detector type : Thermopile
- Response time (95%) : <18s (CMP3), <12s (SMP3)
- Calibration uncertainty : +/-10%
- Zero offset a : <15 W/m² unventilated
- Zero offset b : <5W/m²
- Spectral range : 285 to 3000 nm
- Rated operating temperature range : -40°C to +80°C
- Supply voltage : 5 to 30 VDC
- IP Protection rating : IP 67
- Calibration traceability : to WRR
- Output signal options : Analog 4-20mA, Analog 0-1V and Digital RS-485 Modbus (SMP3)
  Analog 0-30mV (CMP3)

Make : **Kipp & Zonen**
Class : **Second Class**
Model : **CMP3 and SMP3 Series**

Si Series
- Detector type: Silicon
- Response time (99%) : 0.15s (4-20mA Output), 1s (RS-485 Modbus Output)
- Calibration uncertainty : ±2.5%
- Offset : 2.2W/m^2 (4-20mA Output), 1W/m^2 (RS485 Modbus Output)
- Measurement range : 0 to 1500 W/m^2
- Rated operating temperature range : -35°C to +80°C
- Supply voltage : 12 to 28 VDC
- IP Protection rating : IP 65
- Output signal options : Analog 4-20mA & Digital RS-485 Modbus

Make : **Ingenieurburo M & T**
Model : **Si Series**

WIND SPEED AND DIRECTION SENSOR

MeteoWind
- Wind Speed Range : 0-80 m/s
- Wind Speed Accuracy : <1% of measured value (0.3-50 m/s) with MEASNET Calibration.
- Wind Direction Range : 0 - 360°
- Wind Direction Accuracy : 2°
- Starting Wind Speed : <0.3 m/s
- Operating temperature : -40°C to +80°C
- IP Protection rating : IP65
- Supply Voltage : 5-24VDC
- Output signal option : Digital RS-485 Modbus

Make : **Barani Design**
Model : **MeteoWind**

MBMet 120 Series
- Wind Speed Range : 0-60 m/s
- Wind Speed Accuracy : ±2%FS
- Wind Direction Range : 0 - 360°
- Wind Direction Accuracy : <±3°
- Acquisition cycle : 3s
- Operating temperature : -40°C to +70°C
- IP Protection rating : IP 65
- Supply Voltage : 12 - 24VDC
- Output signal options : Analog 4-20mA and Digital RS-485 Modbus

Make : **MBCS**
Model : **MBMet 120 Series**

MBMet 100 Series
- Wind Speed Range : 0-60 m/s
- Wind Speed Accuracy : ±2%FS (RS-485 Modbus Output), ±3%FS (4-20mA, 0-5V and 0-10V Output)
- Starting Wind Speed : <0.8m/s
- Operating temperature : -30°C to +70°C
- IP Protection rating : IP 65
- Supply Voltage : 12 - 24VDC
- Output signal options : Analog 4-20mA, Digital RS-485 Modbus, Analog 0-5V and Analog 0-10V

Make : **MBCS**
Model : **MBMet 100 Series**

MBMet 110 Series
- Wind Direction Range : 0 - 360°
- Wind Direction Accuracy : ±3°
- Starting Wind Speed : <0.5m/s
- Operating temperature : -30°C to +70°C
- IP Protection rating : IP 65
- Supply Voltage : 12 - 24VDC
- Output signal options : Analog 4-20mA, Digital RS-485 Modbus, Analog 0-5V and Analog 0-10V

Make : **MBCS**
Model : **MBMet 110 Series**

AIR TEMPERATURE, HUMIDITY & PRESSURE SENSOR

MBMet 901 Series

- Temperature Accuracy : ±0.2°C
- Temperature Measuring Range : -40°C to +125°C
- Relative Humidity Accuracy : ±2% RH
- Relative Humidity Measuring Range : 0-100% RH
- Barometric Pressure Accuracy : ±1 hPa
- Barometric Pressure Measuring Range : 300 to 1100 hPa
- IP Protection rating : IP 66
- Power Supply : 12 to 24VDC with self-loop powered and reverse polarity protection
- Output signal options : Analog 4-20mA & Digital RS-485 Modbus
- Sensor Types :
    a) Air Temperature Sensor
    b) Air Temperature and Relative Humidity Sensor
    c) Air Temperature, Relative Humidity and Barometric Pressure Sensor
    d) Barometric Pressure Sensor

Make : **MBCS**
Model : **MBMet 901 Series**

MeteoTemp

- Temperature Accuracy : ±0.2°C
- Temperature Measuring Range : -40°C to +105°C
- Relative Humidity Accuracy : ± 1.8% RH
- Relative Humidity Measuring Range : 0-100% RH
- Barometric Pressure Accuracy : ±1.5 hPa
- Barometric Pressure Measuring Range : 300 to 1100 hPa
- Dew Point / Frost Point : Calculated
- IP Protection rating : IP 66
- Power Supply : 5 to 15VDC with reverse polarity protection
- Output signal option : Digital RS-485 Modbus

Make : **Barani Design**
Model : **MeteoTemp**

PV MODULE TEMPERATURE SENSOR

MBMet 801 Series

- Measurement Range : -40° to +110°C
- Sensor Element Type : RTD
- Temperature Accuracy : Class A
- Temperature Stability : <0.1°C per year
- Sensor Housing : Self-Adhesive Aluminium
- Output signal options : RTD PT100/1000

Make : **MBCS**
Model : **MBMet 801 Series**

MBMet 800 Series

- Measurement Range : -40° to +110°C
- Temperature Accuracy : ±0.2°C
- Temperature Stability : <0.1°C per year
- Sensor Housing : Self-Adhesive Aluminium
- Power Supply : 12 to 24VDC
- IP Protection rating : IP 67
- Output signal options : Analog 4-20mA and Digital RS-485 Modbus

Make : **MBCS**
Model : **MBMet 800 Series**

RAIN GAUGE SENSOR

Rain Gauge Sensor SEB-200

- Accuracy : ±0.2mm (typical)
- Stability : <0.1 mm per year
- Resolution : 0.2mm
- Measuring Range : 0℃ to 60℃
- Operating Range : -40℃ to 60℃
- Orifice area : Ø 200 cm2
- Output signal option : Pulse Output

Make : **Barani Design**
Model : **SEB-200**

DATALOGGER

EasyLog GSM

- Analog inputs : 4 single-ended and 4 differential
- Analog inputs range : 4-20mA, 0-2.5V
- Digital Input : 4
- PT100 Input : 3 (+1 reference) for 4 wire PT100 ratio-metric measurement
- Pulse counters : 1
- Serial inputs : RS-485 MODBUS
- Serial output : RS-485 MODBUS TCP IP / RTU (for integration with SCADA)
- Wireless communication : Built-in GSM/GPRS Modem
- Memory : 4MB (internal flash), 512MB (external SD card-further extendable to 16GB)
- Operating voltage: 4-20 VDC

Make : **Barani Design**
Model : **EasyLog GSM**

MB WMS SOLAR POWER SUPPLY SYSTEM

Part of WMS offering, MBCS offer WMS Solar power supply to provide constant power supply to the datalogger and sensors or as a backup when AC power fails. MBCS provides the edibility to customise as per the requirements of the client. The system consists of Solar Panel, Solar Charger, Battery, Cabinet and other mounting accessories.

REMOTE MONITORING SOFTWARE - MBSCADA CLOUD

MBSCADA Cloud offers users to monitor and analyse plant WMS data through field datalogging devices. Users can generate reports, view trends and graphs and download reports in .xls and .pdf. MBSCADA Cloud allows multilevel account access along with accessing multiple locations through a single account.

Benefits of MBSCADA Cloud :

- User friendly software
- Realtime data can be accessed from any part of the world
- No local hardware server to be installed
- Alarms and reports
- Easy to deploy and use
- Automated reports are configured and sent by email
- Live multiple-channel trend display and preconfigured reports delivered automatically or on user-selected schedules.

M. B. Control & Systems with an experience of 35+ years in the field of electrical automation and instrumentation, in 2017 ventured into turnkey Weather Monitoring Stations. Further, we set up in-house production for high accuracy and reliable weather monitoring sensors under the name **"MBMet"** series. The MBMet series currently includes Air Temperature, Relative Humidity, Barometric Pressure, Wind Speed, Wind Direction and PV Module Temperature sensors in Digital and Analog Outputs.

**Specifications are subject to change without notice.