# BM-0204

## Battery Monitoring Solution

## Last longer battery life

## Less on-site maintenance

save & safe
installation and maintenance

centralized
management software
& remote monitoring

local services
by local experts

### SOLUTION: BM-0204

- Battery monitoring solution for energy back-up batteries. Up to 240 batteries per single system and up to 1,920 batteries using additional server.
- Real-time monitoring for individual cell voltage, ambient temperature and string current.
- Automatic load test and battery health check by internal resistance.
- Suitable for both Data Center and Telco with 48Vdc environment.
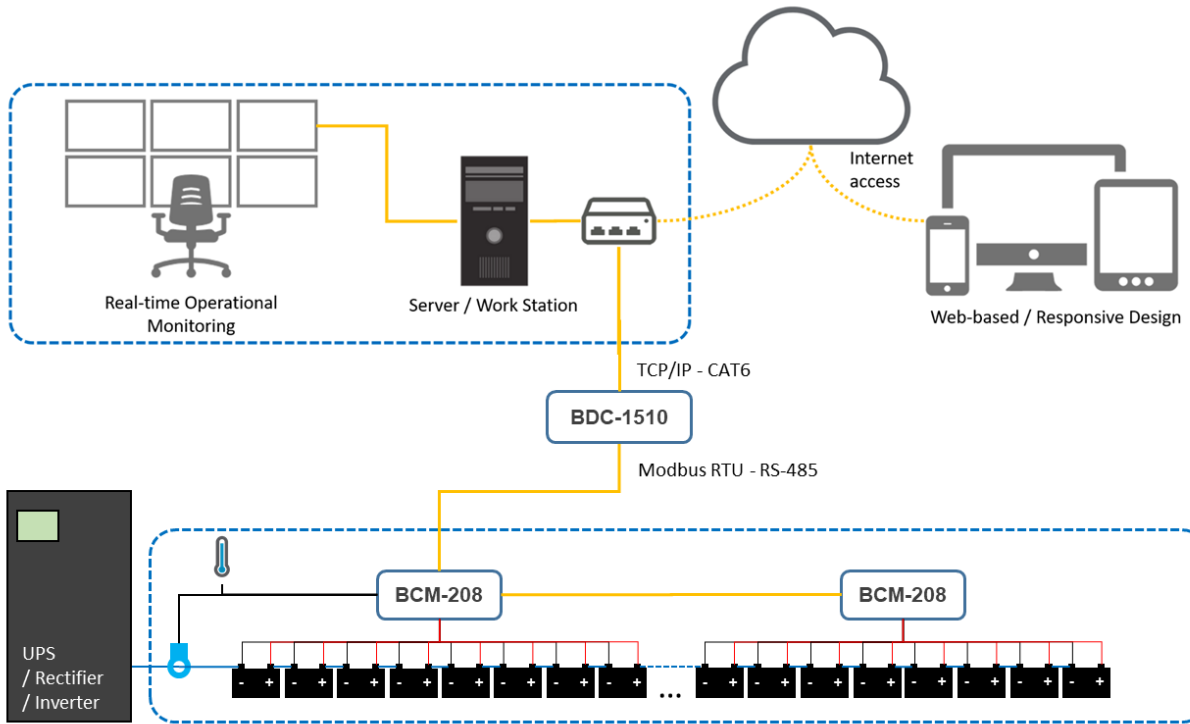- Web-based user interface and web-service API (JSON)

**BLUE SOLAR SOLUTION**

Blue Solar Solution Co., Ltd.

# BM-0204

**Battery Monitoring Solution**

# System Overview



Real-time Operational Monitoring

Server / Work Station

Internet access

Web-based / Responsive Design

TCP/IP - CAT6

**BDC-1510**

Modbus RTU - RS-485

**BCM-208**

**BCM-208**

UPS / Rectifier / Inverter

# Battery Monitoring Module

## model: BCM-208



**Features**

- A BCM-208 is designed for individual battery cell voltage measurement.
- Individually load test to check state of health (SoH) of each battery.
- Float charge current and voltage monitoring.
- No power consumed from monitored battery to avoid fully discharge that can cause the battery damages.

## BCM-208 : Specification

| | | | |
|---|---|---|---|
| Voltage measurement range | 2 V - 12 V | Current measurement range | +/- 50 to 1000 A |
| Voltage accuracy | +/- 0.1 % | Current Accuracy | +/- 1% |
| Voltage resolution | 0.01 V | Current Resolution | 0.1 A |
| No. of Voltage channels | 8 Channels | Temp. measurement range | 0-80 ºC |
| No. of Current channels | 2 Channels | Temperature accuracy | +/- 2% |
| No. of Temperature channel | 1 Channel | Temperature resolution | 0.1 ºC |
| Dry Contact Output 12V/1A | 1 Channel | Auto. Load Test is available for 7 – 300AH Battery |
| Communication RS-485 with Modbus Protocol | | Auto. Load Test Schedulable up to 4 time/day | |
| Communication Response Time | 100 ms | Powered from Power Supply | 12 – 48 Vdc |
| Operating temperature | -20 to 80 ºC | Power consumption | 2 W |
| Operating humidity non-condensing | 10 - 80% RH | Size 10x20x3 cm.  Weight 760 g. | |

# BM-0204

## Battery Monitoring Solution

# Data Collector Unit
### model: BDC-1015

Fanless Embedded system is used to collect data from voltage/temperature/current sensor with RS485 ports and being web server to let client computers to connect and display battery information via web-base UI and JSON API.

### BDC-1015 : Specification

| Maximum number of connection to BCM-208 : 30 modules 240 Batteries (15 modules/bus) | | | |
|---|---|---|---|
| No. of RS-485 Port | 2 ports | Load Test Scheduling Configurable | |
| No. of Ethernet Port | 1 port | Internal Resistance Data Logger | |
| Web-service Interface | JSON | Solid State Current Load | |
| Web-based User Interface | HTML5 | SD Card Memory | 4 GB |
| Dry Contact Output 12V/1A | 2 Channels | OLED Display | |
| Auxiliary Analog Input | 2 Channels | Powered from Power Supply | 12 – 48 Vdc |
| Operating temperature | -20 to 80 °C | Power consumption | 2 W |
| Operating humidity non-condensing | 10 - 80% RH | Size 10x20x3 cm.  Weight 500 g. | |

# String Current & Temp Module
### model: C8-200

A C8-200 is a module used to measure the string current and ambient temperature with hall effect current senor and temperature probe.

### C8-200 : Specification

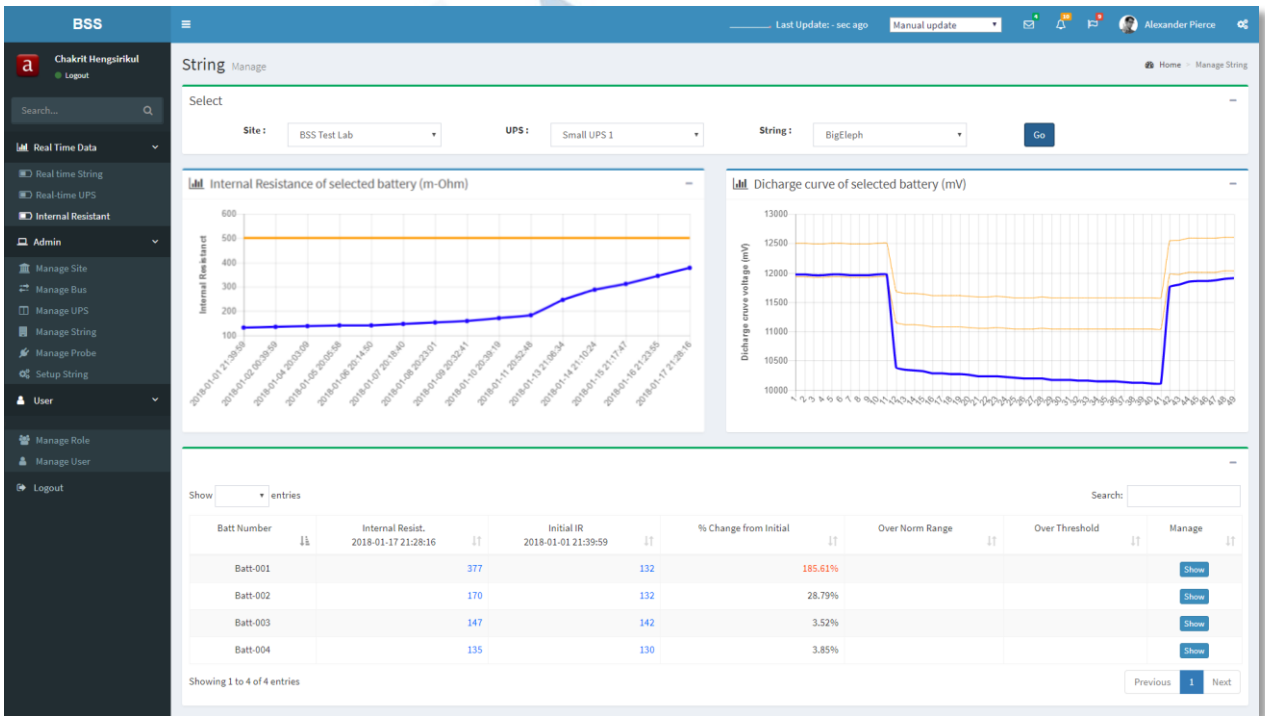| Current Sensor | | | |
|---|---|---|---|
| Current measurement range | +/- 50 to 1000 A | Offset Voltage | 20mV |
| Current Accuracy | +/- 1% | Hysteresis Error | ±10mV |
| Linearity | 1% | Overload Capacity | 20 times |
| Insulation Voltage | 3000 Vdc | Response Time | 10uS |
| Operating Temperature | -10°C ~ +80°C | Thermal Drift | 500 ppm/°C |
| Unit Weight | 90 g | Power Consumption | 0.25 W |
| **Temperature Sensor** | | | |
| Temperature measurement range | 0-80 °C | | |

# BM-0204

## Battery Monitoring Solution

# Software Interface
## PC Version

Battery Monitoring Software installed in an industrial PC to manage load test schedule, record data and analyze state of health of individual battery using internal resistance information.

# Software Features and Functions

### Structure Configuration
✓ Multi-Site Management
✓ Multi-UPS per Site
✓ Multi-String per UPS
✓ Battery Types and Condition

### Real-time Monitoring
✓ Charge/Discharge Status
✓ Individual Battery Voltage
✓ String Total Voltage
✓ String Current
✓ Ambient Temperature

### Overall Level Alert
✓ Power Outage / Discharge Event
✓ Abnormal Ambient Temperature
✓ Over Charge/Discharge Current

### Individual Battery Alert
✓ Over Charging Voltage
✓ Deep Discharging Voltage
✓ Internal Resistance exceeding threshold
✓ %Change of Internal Resistance from Initial State

### Discharge Curve Analysis
✓ Discharge curve comparable to the other batteries
✓ Internal Resistance Trending comparing to threshold

### Scheduled Automatic Load Test
✓ Monthly/Daily Schedule
✓ Specific day of month
✓ Specific hour of day

# BM-0204

## Battery Monitoring Solution

# Monitoring Cloud Services

**We also provide cloud solution for Battery Monitoring Services.**

### Why cloud?

✓ Customers can monitor anywhere anytime over the internet.
✓ Multiple locations support.
✓ Maintenance-free software.
✓ Save initial cost on infrastructure.
✓ Free new features update.

# Services

## Local Services by Local Experts

In Thailand, we provide local services and supports by local experts.
with in 4 hours for Bangkok
and next business day for up-country

## Design and Installation

We provide on-site survey, solution design, hardware and software installation services and also product commissioning.

## Demonstration and Training

We provide pre booking product demonstration and training.
We also provide 1 day installation training for free of charge.

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