

Features

Highlights

- **monitoring** of all important **battery** parameters of larger **UPS systems** in order to ensure operational reliability
- **simple** and **fast installation** on existing or new UPS systems
- very **reliable operation**
- simple and intuitive **WEB user interface**
- automatic **logging** of data and storage for a period of one year
- easy **download of all displayed data** for further processing in **standard format** (csv)
- easy connectivity to 3rd party SCADA, BMS, ... systems via standard **Modbus TCP/IP protocol**

System functionality

| Data | | Real-time data | History data | Alarming | | Range | Accuracy | Resolution |
|--------------------|---------------------|----------------|--------------|----------|------|---|------------------|------------|
| | | | | Low | High | | | |
| Per Battery (cell) | Voltage | ✓ | ✓ | ✓ | ✓ | 2V battery..... 1.6 .. 2.6 V 12V battery.... 7.5 .. 15.6 V | ±0.2 % | 0.001 V |
| | Resistance | ✓ | ✓ | | ✓ | 0.1 .. 50 mΩ | ±(1.5 % + 25 μΩ) | 0.001 mΩ |
| | Temperature | ✓ | ✓ | | ✓ | -20 .. +85 °C | ±0.5 % | 0.1 °C |
| | SOC | ✓ | ✓ | ✓ | | 0 .. 100 % | | 1 % |
| | SOH | ✓ | ✓ | ✓ | | 0 .. 100 % | | 1 % |
| Per string | Voltage | ✓ | ✓ | ✓ | ✓ | 20 .. 800 V | ± 0.5 % | 0.01 V |
| | Current | ✓ | ✓ | ✓ | ✓ | -1000 .. 1000 A | ± 2 % | 0.01 ADC |
| | State | ✓ | | | | floating charge, equalizing charge, discharge, idle | | |
| | SOC | ✓ | ✓ | ✓ | | 0 .. 100 % | | 1 % |
| | Balance | ✓ | ✓ | | | 0 .. 100 % | | 0.01 % |
| | Ambient temperature | ✓ | | | | -40 .. +80 °C | ± 0.5 °C | 0.1 °C |
| | Ambient hmdity | ✓ | | | | 0 .. 100 % RH | ±3 %RH | 0.1 %RH |
| | Hall sensor state | | | | ✓ | | | |
| | | | | | | | | |

| Data | | Real-time data | History data | Alarming | | Range | Accuracy | Resolution |
|---------|---------|----------------|--------------|----------|------|----------------------------|----------|------------|
| | | | | Low | High | | | |
| Per UPS | Voltage | ✓ | | | | Average of string voltages | | |
| | Current | ✓ | | | | Sum of string currents | | |
| | SOC | ✓ | | | | Average of string SOC | | |

System limitations

| Device | | Functionality | Limitations |
|--------|--------------------------------------|---|---|
| BM-GW | BTMS IOT Agregator | Combines several BM-GW into one system | Virtually unlimited number of BM-GW |
| BM-GW | BTMS IOT Gateway | Combines several BM-SS into UPS WEB interface Data collection and logging | Up to 32 battery strings Strings arranged arbitrarily in up to 32 UPS-es |
| BM-SS | BTMS String master | Combines several BM-CS into string | Up to 120 batteries / string |
| BM-HS | BTMS Hall sensor | Measures string current | One per string |
| BM-CS | BTMS Cell sensor | Measures battery | One per battery |
| BM-MC | BTMS Master controller | Enables the connection of BM-LC, BM-TH and BM-HMI | One per BM-GW |
| BM-LC | BTMS IO expansion module | Connection of auxiliary sensors (leakage, fire, ..) Connection of auxiliary alarm devices (string disconnection, warning light, siren) | Up to 32 IOs (Up to 4 per BM-MC) |
| BM-TH | BTMS Temperature and humidity sensor | Ambient temperature and humidity measurement | One per string |
| BM-HMI | BTMS Human-Machine Interfaces | Local inspection of data from UPS, strings and batteries | One per BM-MC |