



RDC Charger

User manual



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BTMS - Battery Monitoring System

BTMS is a battery monitoring system for larger UPS systems. Enables:

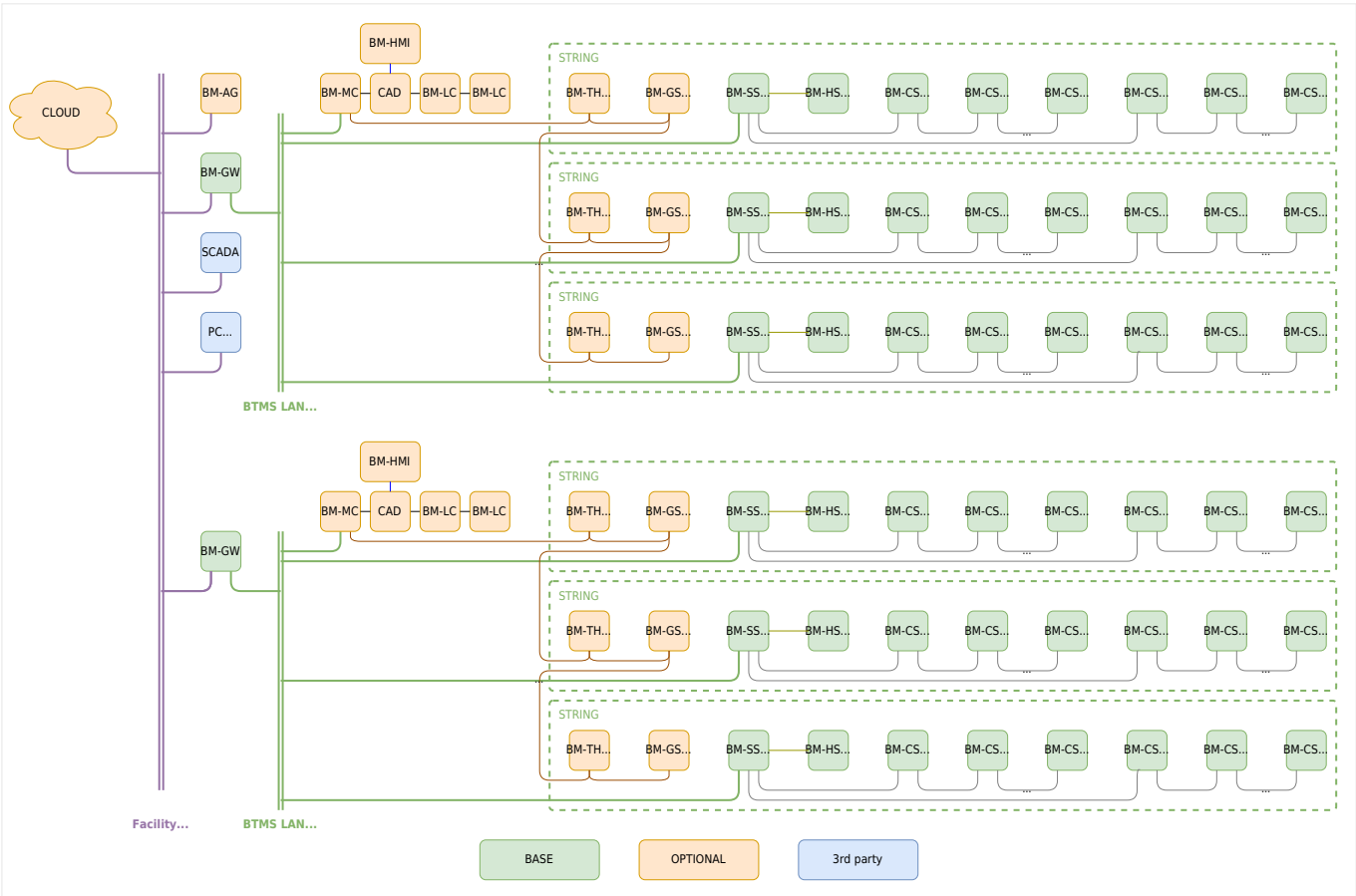
- cell status monitoring
- equalization of cell load within the string
- switching off strings where an error is detected on at least one cell

Dictionary of terms and abbreviations

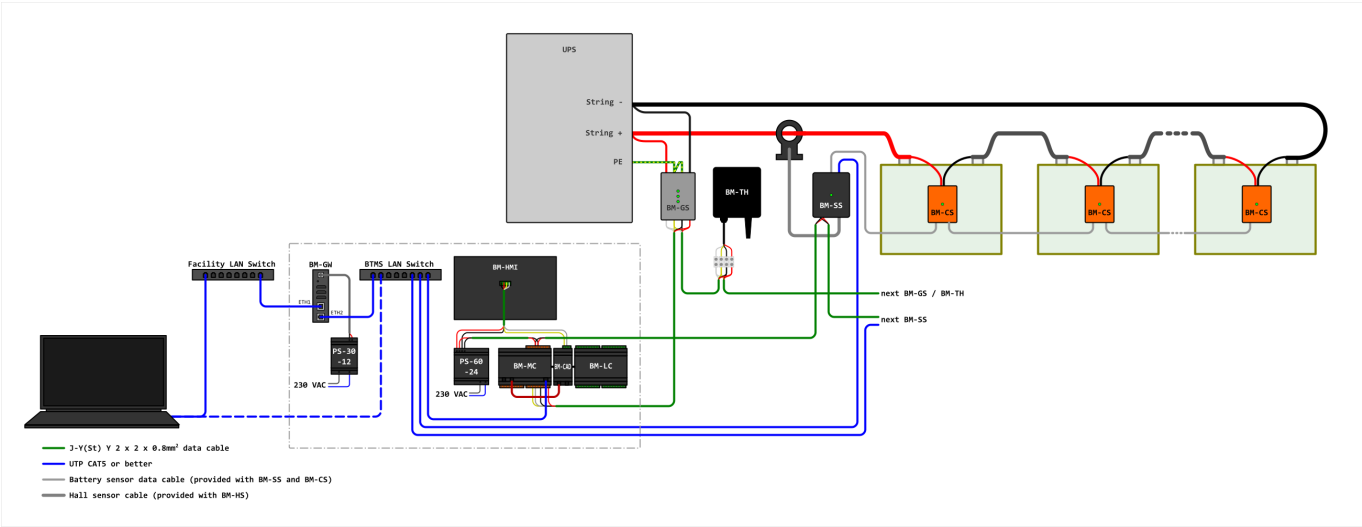
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|----------------|--------------------------------------|--|
| BTMS | Battery Monitoring System | Battery monitoring system for larger UPS systems. |
| battery | - | Lead-acid rechargeable battery stores electricity to operate the UPS during a power outage. |
| cell | - | Basic battery building. A battery usually consists of several cells connected in series. |
| string | - | Multiple batteries connected in series. |
| UPS | Uninterruptible Power Supply | A device that provides battery backup when the electrical power fails or drops to an unacceptable voltage level. |
| BM-AG | BTMS Aggregator | When several BM-GW's are needed at the Datacenter, aggregate all BM-GW and provide site functionality + Cloud connectivity and alarming.' |
| BM-GW | BTMS Gateway | Visualization (browser) of batteries and installed systems connected to the GW logically grouped into strings and UPS's in real time and their historical data. Alarming, Cloud connectivity |
| SCADA | 3rd party SCADA | Any SCADA that accesses battery, stringing and/or UPS data via Modbus TCP/IP protocol. |
| PC web | PC with WEB Browser | Viewing the user interface from BM-AG or BM-GW via any web browser. |
| BM-MC | BTMS Master Controller | It allows the connection of BM-TH sensors and configurable digital inputs for monitoring additional alarm signals and outputs for alarming or switching off strings where an error occurs. |
| BM-HMI | BTMS Human-Machine Interface | Local display of the state of the batteries inside the UPS, string and by battery. |
| CAD | BTMS HMI interface | Communication interface for connecting BM-HMI to BM-CS |
| BM-LC | BTMS IO Module | Expansion for MC with additional digital inputs and outputs. |
| BM-TH | BTMS Temperature and Humidity sensor | Ambient temperature and relative humidity sensor. |
| BM-GS | BTMS Insulation monitoring sensor | String insulation resistance monitoring |
| BM-SS | BTMS String Master | It monitors the string (string current), aggregates battery data (total string voltage, average SOC, Balance) and enables monitoring of data from BM-CSs. |
| BM-HS | BTMS Hall Sensor | It measures the string current |

| | | |
|----------------|-------------------------------|--|
| BM-CS | BTMS Cell / Battery Sensor | Control of each individual battery / cell. It allows monitoring the status, voltage, internal resistance, temperature of the cell and calculates SOC and SOH. |
| SOC | State Of Charge | Calculated battery charge; it is calculated from the actual voltage on the battery and by integrating the charge and discharge current. |
| SOH | State Of Health | Informative battery state calculation that takes into account internal resistance, battery temperature, rise/fall of voltage during charge/discharge and other parameters that affect battery performance. |
| Balance | Voltage balance within string | Calculation of voltage inequality on the batteries within the string. Battery sensors can actively equalize the voltage between the batteries within the string during the floating charge phase. |

System diagram



Wiring diagram



Detailed Wiring diagram

Detailed Wiring diagram