Robotina d.o.o.
OIC Hrpelje 38
SI-6240 Kozina
Slovenia

1. Features

1.1. 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**

1.2. 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 hmidity	✔				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		

1.3. 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