

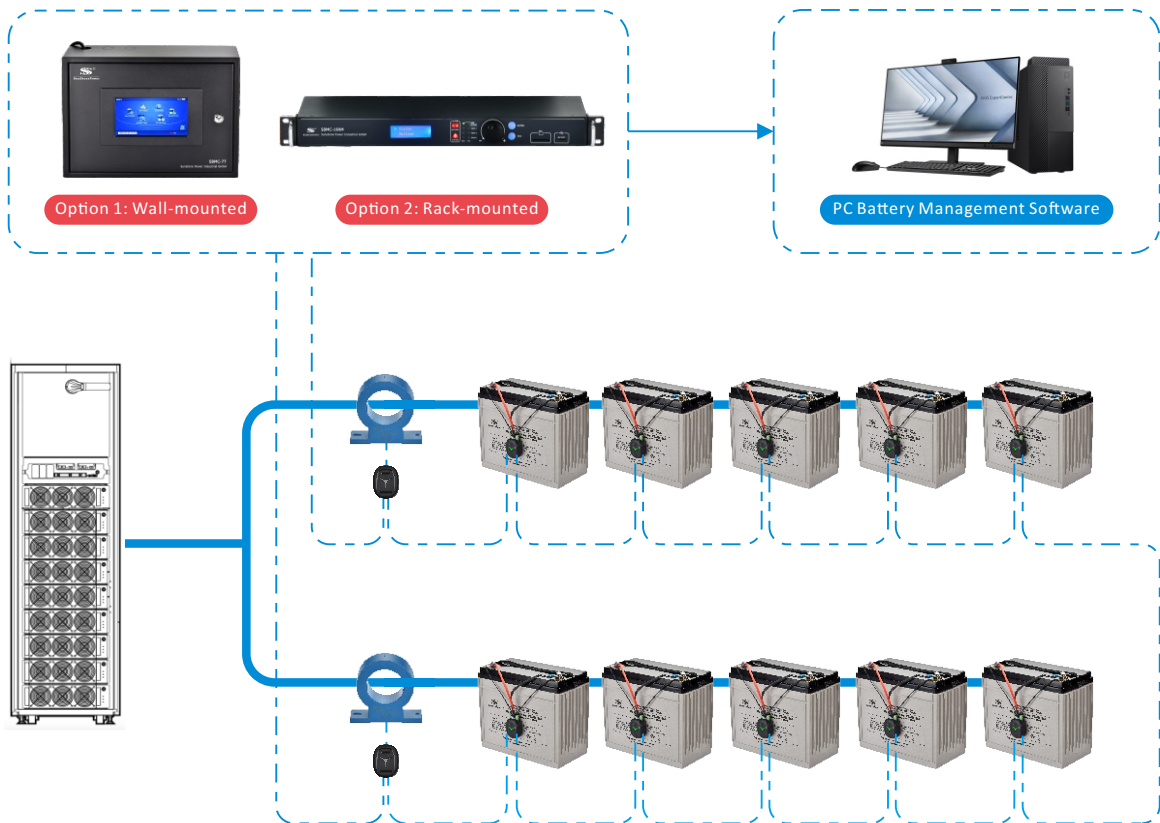
SBMS-LAB

Sunstone Battery Management System for Lead Acid Battery

Description

SBMS-LAB, the Sunstone Battery Management System for Lead Acid Battery, is adopted leading edge technology in the industry, can be completely automated measuring individual battery parameter, capable of analysis and tracking all battery data and automatic generate an early alarm for the falling battery, which allowed a better plan preventive maintenance, avoids the weak battery infect and prolong the battery life. SBMS-LAB, composed of a Battery Sensor, Current Detector, Control Module, and Battery Management Software, fully complies with IEEE1188-2005.

Architecture Diagram



Application

- Telecom Base Station
- Radio and TV System
- Data Center
- Financial
- Banking
- Electricity Power
- Aviation
- Railway Transport

Measurable Parameter

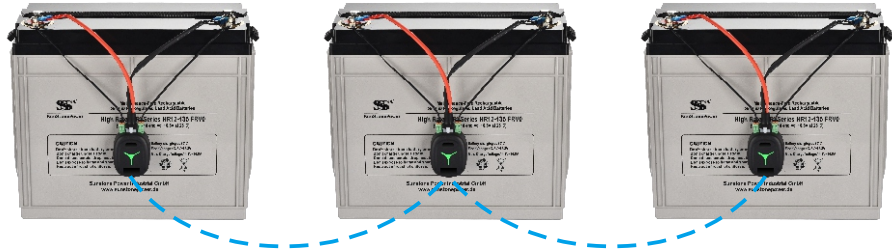
- Block Voltage
- Negative Pole Temperature
- Ambient Temperature
- Block Internal Resistance
- String Current
- Total Voltage
- SOC & SOH

System Advantage

Monolithic modular design, flexible installation for various application and unlimited for expansion. R-Bus cable connects in a link loop for efficient communication. Data collection interval will be less than 10 seconds. 4 Wired Method to obtain the battery internal resistance measurement, which will be more precise and avoids errors caused by wire resistance.

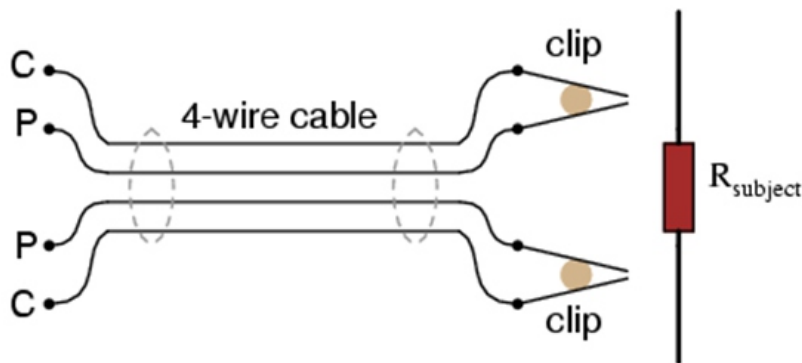
Modular Design

- Fast to Detect Failed Battery
- Easy to Install and Maintain
- Used for Various Application
- Unlimited for Expansion
- Electrical Isolation
- Accurated 4 Wire Method



4 Wired Method

This method of measurement, which avoids errors caused by wire resistance, is called the Kelvin, or 4-wire method. Special connecting clips called Kelvin clips are made to facilitate this kind of connection across a subject resistance.



BMS Component

Modular Design

- Capture individual battery internal resistance, voltage and temperature.
- Protocol: R-bus
- 1 Block Battery Requires 1 Sensor.

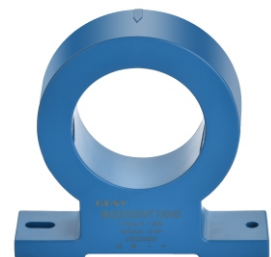
Current Detector

- Capture battery string current & ambient temperature.
- Used with Current Transducer.
- Protocol: R-bus
- 1 Battery String requires 1 Sensor.



CT

- Suited to 7Ah-1000Ah Battery.
- Measurement Range: 0 to 1000A
- Each string requires 1 unit of CT.
- Hole size is $\Phi 20$ mm or $\Phi 40$ mm.



Control Module Option 1:

Touch Panel 7 Inch

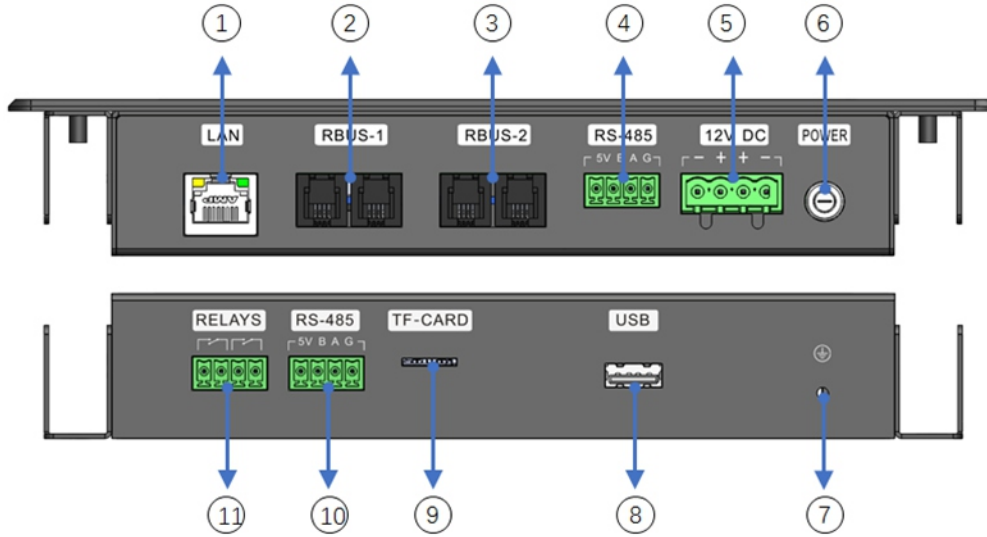
Model: SBMC-7T

- Continuously data monitored, analyzed and uploaded.
- Interface: RS485, Rj45
- Protocol: Modbus TCP/RTU
- Manage up to 254 blocks batteries.



Category	Parameter name	Specifications
Up serial interface	Serial port type	RS485
	Number of ports	2
	Connection terminal	Phoenix terminal
	Baud rate	9600bps
	Communication protocol	Modbus RTU protocol
	Transmission distance	100M
Down serial interface	Serial port type	R-BUS
	Number of ports	4
	Connection terminal	RJ11
	Baud rate	9600bps
	Communication protocol	R-BUS protocol
	Transmission distance	100M
Network	Number of network ports	1
	Speed	10/100M
	Transmission distance	100M
	Communication Protocol	Modbus RTU/TCP protocol
	Protocol mode	TCP Server/Client Mode
USB	Number of interfaces	1
	Interface type	2.0
SD port	Number of interfaces	1
Power output	Power connection terminal (DC12V)	Phoenix terminal
	Output voltage	DC12V/2A
Working power supply	Power connection terminal (DC12V)	Phoenix terminal
	Input voltage	DC12V/2A
Dry contact	RELAYS	Normally open
Physical characteristics	Size	220*34.50*132mm
	Installation fixed opening distance	204*117mm
	Installation method	Place the battery holder
Cabinet installation		

Working environment	Display screen	7 inches (touchable)
	Working temperature	-5-50°C
	Storage temperature	-5-50°C
	Relative humidity	5% -95% non-condensing



Number	Name	Function
1	RJ45 Ethernet port	It can be connected to the network through a network cable, connected to a computer's WEB configuration, or connected to a dynamic environment (10M/100M Self-Adaptation).
2	R-BUS communication port	Battery sensor module, current detection module loop back access port
3	R-BUS communication port	Battery sensor module, current detection module loop back access port
4	RS485 interface	485 interface, adjustable loop (baud rate 9600, MODBUS protocol)
5	DC12V power supply	DC12V DC input and output, maximum output power of 25W, which is used to power the host and the current detection module
6	Switch key	Control host power switch
7	Grounding terminal	Connectable grounding wire
8	USB port	Can only be used for system firmware upgrades currently
9	SD card socket	Can be inserted to store historical data, but the function is not yet available
10	RS485 interface	485 interface, adjustable loop (baud rate 9600, MODBUS protocol)
11	Dry contact 2 way	Two dry contacts can be connected to two UPSs

Control Module Option 2:

Rack Mount 19 Inch

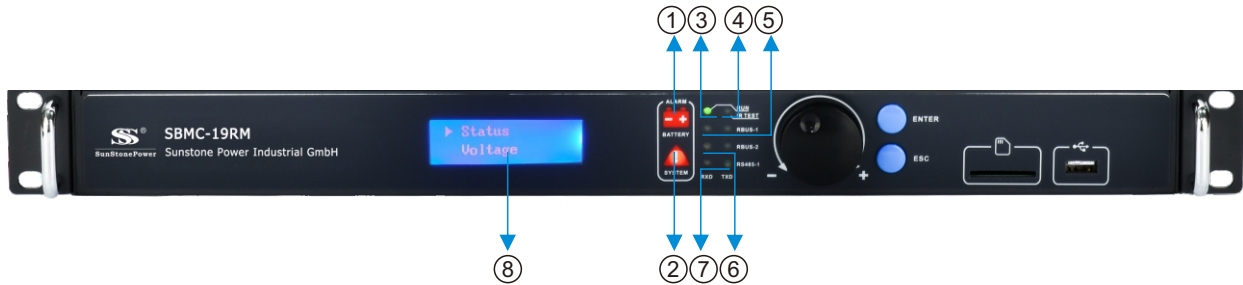
Model: SBMC-19RM

- Continuously data monitored, analyzed and uploaded.
- Interface: RS485, Rj45
- Protocol: Modbus TCP/RTU
- Manage up to 254 blocks batteries.



Category	Parameter name	Specifications
Up serial interface	Serial port type	RS485
	Number of ports	1
	Connection terminal	Phoenix terminal
	Baud rate	9600bps
	Communication protocol	Modbus RTU protocol
	Transmission distance	100M
Down serial interface	Serial port type	R-BUS
	Number of ports	4
	Connection terminal	RJ11
	Baud rate	9600bps
	Communication protocol	R-BUS protocol
	Transmission distance	100M
Network	Number of network ports	1
	Speed	10/100M
	Transmission distance	100M
	Communication Protocol	Modbus RTU/TCP protocol
	Protocol mode	TCP Server/Client Mode
USB	Number of interfaces	1
	Interface type	2.0
SD port	Number of interfaces	1
Power output	Power connection terminal (DC12V)	Phoenix terminal
	Output voltage	DC12V/2A
Working power supply	Connection terminal	National standard AC220V three-hole socket
	Input voltage	85-264V AC120V-370VDC
Dry contact	RELAYS	Normally open
Physical characteristics	Size	196*158*50mm
	Installation fixed opening distance	111*183mm
	Installation method	Place the battery holder
Cabinet installation		

Working environment	Display screen	1 inch
	Working temperature	-5-50°C
	Storage temperature	-5-50°C
	Relative humidity	5% -95% non-condensing



Number	Name	Function
1	BATTERY	Battery warning lamp
2	SYSTEM	System warning light
3	RUN	Operating indicator light
4	IR-TEST	Internal resistance test indicator light, light on when testing internal resistance
5	RBUS-1	R-BUS-1 communication indicator light
6	RBUS-2	R-BUS-2 communication indicator light
7	RS-485-1	RS485 communication indicator light
8	LED	160 * 32 dot matrix display

Control Module Option 3:

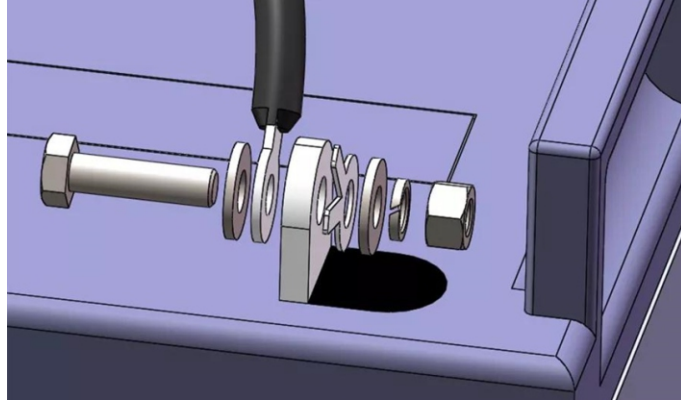
Rack Mount+Touch Panel 10 Inch

- Managen up to 10 sets of control modules.
- Multi-dimension analysis on individual battery.
- Auto detect and store cycles of charge and discharge current.
- Store 2 years of data and 10,000 pcs of alarm for playback.

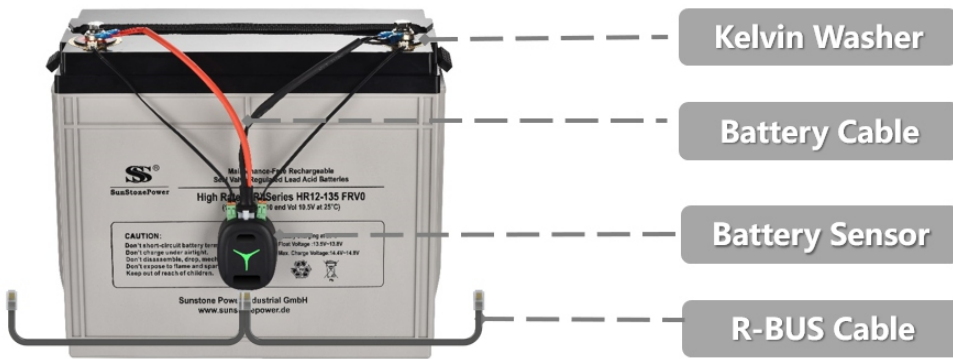





Installation for Washer

Kelvin Washer was positioned at both battery positive and negative terminals. Correct Order = Kelvin Washer, Flat Washer, Lock Washer and Bolt.



Installation for Battery Sensor



Kelvin Washer		Size=M6 or M8 or M10
Sampling Cable		Length = 25cm or 50cm
R-Bus Cable		Length= 30cm or 40cm or 50cm