Lithium Ion Battery System Specification

Customer: _____

Product name: LiFePO4 Battery system

Model: MSP-HV-512-100 512V100Ah

Author	Checked by	Approved by

Customer confirmation	
Customer company:	
Signature	Company signature
Date:	Date:

Battery Pack Specification

1. Overview

MSP-HV series is Lithium iron phosphate battery system which designed for high voltage UPS and energy storage system application, suitable for 100V to 1000V DC system which backup time is over 10min. This battery system consists of battery racks and CBMS,GBMS, every battery rack integrates with intelligent BMU inside. And this system has big advantages on safety, cycle life, energy density, fast charging, temperature range and environmental protection. MERITSUN is committed to providing safe and stable power supply for UPS system.

2. Advantages

The battery module consists of battery racks and CBMS.

- Packed with high performance LFP single cell, long life, safety and wide temperature range
- High energy density, small size, light weight, no pollution;
- Use CBMS-BMU design, protect voltage, current, temperature in whole process
- Integrated communication interface, CAN2.0 and RS485 communicate with UPS or PC
- Integrated LED indicator, display the SOC and operating status
- Balance between cells, balance between racks
- LCD display the battery system information(customized)
- Packed in 19 inches standard container, easily for installation and capacity expansion
- can customize the battery system with neutral line
- 15 years design life, Stable performance, maintenance-free

3. Battery specification

Name	Item	Parameter	Remarks
Battery system 512V100Ah (±256V100Ah)	Battery Type	LiFePO4	
	Pack	4P-160S	
	Rated voltage	512V with neutral line (±256V)	
	Rated capacity	100Ah	0.2C， @25℃
	Rated energy	51.2kWh	
	Max. Charging current	100A	Constant
	Max. Discharging current	100A	Constant
	Max. Output power	50kW	Constant

	Charging voltage	560~576V	
	Discharge cut-off voltage	448V	
	Cycle life (1C/1C)	>2500	100%DOD,@@25℃
	Short circuit current(A)	200A	<10mS
	System dimension	600*1000*2000(mm)	19-inches cabinet
	Total weight(kg)	≈720kg	
	Internal Resistance	<50mΩ	Fully charged @25℃
	Thermal Management	Fan cooling(controlled by temp.)	
	Operating temperature	Charge: -5~55℃ Discharge: -20~65℃	
	Communication	RS485/CAN/LAN	
	Dry contact	3	
	Display	7 inches touch LCD screen	
Single cell	Cell container	Prismatic, Aluminum shell	
	Rated	3.2V 25Ah	
	Operating voltage range	2.5V~3.6V	
	Dimension (T*W*H,mm)	27*70*180	
	Weight	~660g	
	Rated Charging current	1.0C	
	Max. Charging current	1.0C	
	Rated discharging current	2.0C	
	Pulse. Discharging current	2.0C	
	Impedance(1kHz)	<4mΩ	
	Cycle life(1.0C)	>6000 , 80%DOD @25°C	
Battery module rack	Module Voltage	51.2V	
	Rated capacity	100Ah	
	Pack	4P-16S	
	BMU inside	1	
	Dimension (W*D*H)	442*765*128	
	Weight	~52kg	
	Power Terminal	M8 Screw	
	Max. Output Power	24.4kW	

4. BMS Parameters

The HV Series BMS products are battery management systems developed for large-scale high-voltage battery energy storage and UPS systems. It adopts distributed architecture, modular design concept, high configurability, easy assembly, debugging and maintenance. It is suitable for various battery energy storage systems with DC voltage below 1000V. This product can be configured as a secondary architecture (BMU+CBMS) for 10KWh-100KWh. Cooperate with industrial computer and battery stack management software to form a three-level architecture (BMU+CBMS+GBMS) for 50KWh-2MWh applications. In conjunction with the server and plant battery management system software, it can form a four-level architecture (BMU+CBMS+GBMS+BBMS) for applications from 2MWh to 1000MWh to meet different project requirements.

The product has a complete and reliable operation and protection strategy to effectively extend the life of the battery pack. It comes with a variety of communication interfaces and can be directly or indirectly connected to third-party energy management systems.

For this project, we choose the CBMS+BMU for UPS system.

Item		Parameter
Battery Series Support		16S x 10
Rated voltage		512V
Rated current		100A
Number of BMU management		10
Two level protection		Relay & MCB
LCD Screen integrated		Into the cabinet
LED indicator		RUN & ALM
Balance between battery modules		Passive, integrated
Balance between cells		Passive, integrated
BMU temperature sensor	No. of sensor	8
	Accuracy	±2℃
BMU cell voltage	Accuracy	±5mV
Current sensor	Range	-400~+400A
	Accuracy	FSC±1%
SOC calculate error		≤5%
Power consumption	Switch off	0
	Operating	< 40W
Dimension (W*D*H) mm		442*650*225mm
Weight		40kg
Communication		CAN, RS485, Ethernet
Dry contact integrated		3

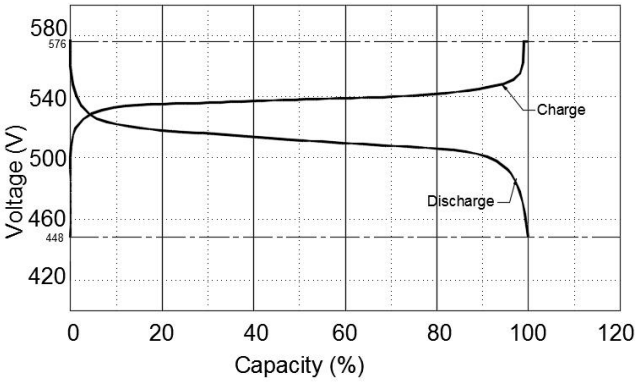
BMS settings

Item	Name	Value	
Basic	Rated capacity of one string	100AH	
	Number of module in one string	10	
	Number of cells of one module	16	4P-16S
	Number of temp sensor in one module	8	
	BMS Communication ID	0~15	
Rated	Rated charging voltage	560.00V	
	Rated charging current	50.00A	
	Rated discharging current	100.00A	
	Rated discharging cut-off voltage	448.00V	
Charging voltage protection for system	Warning	584.00V	
	First-class protection	592.00V	
	Second-class protection	600.00V	
	Protection release	552.00V	
Discharging voltage protection for system	Warning	448.00V	
	First-class protection	432.00V	
	Second-class protection	400.00V	
	Protection release	480.00V	
Charging current protection	Warning	55.00A	
	First-class protection	105.00A	
	Second-class protection	120.00A	
	Protection release	100.00A	
Discharging current protection	Warning	110.00A	
	First-class protection	150.00A	
	Second-class protection	200.00A	
	Protection release	100.00A	
Over-charging voltage protection for cell	Warning	3700mV	
	First-class protection	3800mV	
	Second-class protection	3900mV	
	Protection release	3500mV	
Over-charging voltage protection for cell	Warning	2500mV	
	First-class protection	2200mV	

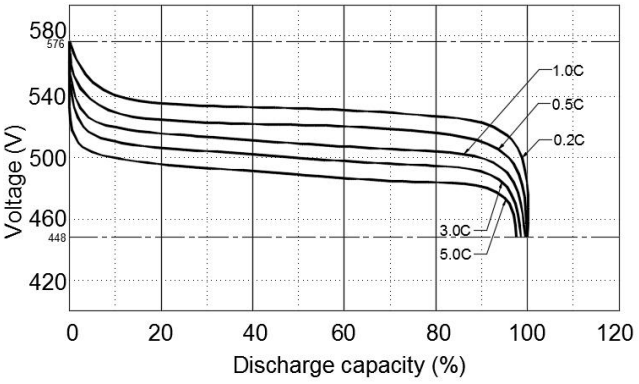
	Second-class protection	2000mV	
	Protection release	3000mV	
Charging over temperature protection	Warning	60 ℃	
	First-class protection	65 ℃	
	Second-class protection	70 ℃	
	Protection release	45 ℃	
Charging low temperature protection	Warning	-3 ℃	
	First-class protection	-5 ℃	
	Second-class protection	-10 ℃	
	Protection release	0 ℃	
Discharging over temperature protection	Warning	65 ℃	
	First-class protection	70 ℃	
	Second-class protection	75 ℃	
	Protection release	60 ℃	
Discharging low temperature protection	Warning	-10 ℃	
	First-class protection	-20 ℃	
	Second-class protection	-25 ℃	
	Protection release	0 ℃	
Cell balance inside module	Balance start voltage	3450mV	
	Voltage difference_start	40mV	
	Voltage difference_Stop	20mV	
Voltage balance between modules	Balance start voltage	53.00mV	
	Voltage difference_start	300mV	
	Voltage difference_Stop	100mV	
Cooling Fan control	Fan start	45 ℃	
	Fan stop	35 ℃	
	Fan starting current	30mA	
Parallel	The difference of string voltage when connect strings in parallel	<15V	
Communication	Module ⟶ Module	CAN	
	Module ⟶ BMS	CAN	
	BMS ⟶ UPS/GBMS	CAN	
	BMS ⟶ PC	LAN/RS485	

5. Performance curve

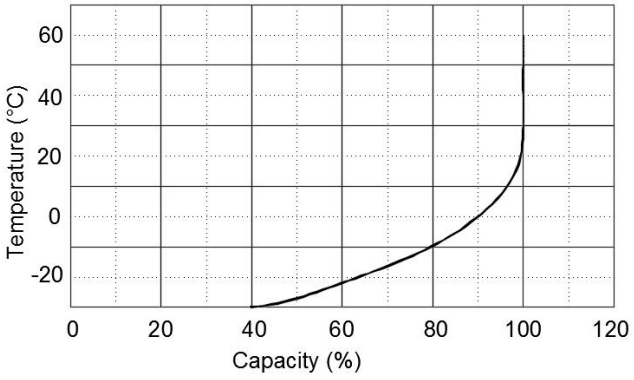
Charge & Discharge curve with1.0C @ 25°C



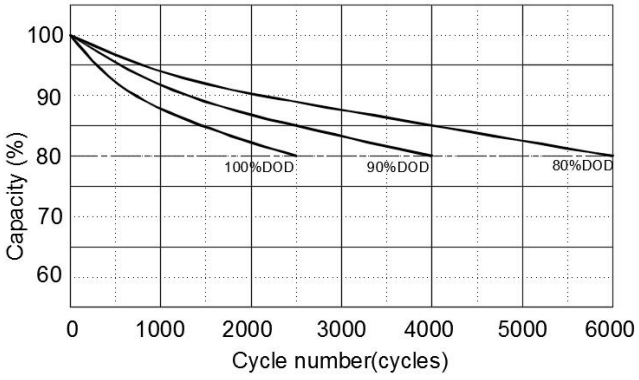
Discharge perfomance with different rate @ 25°C



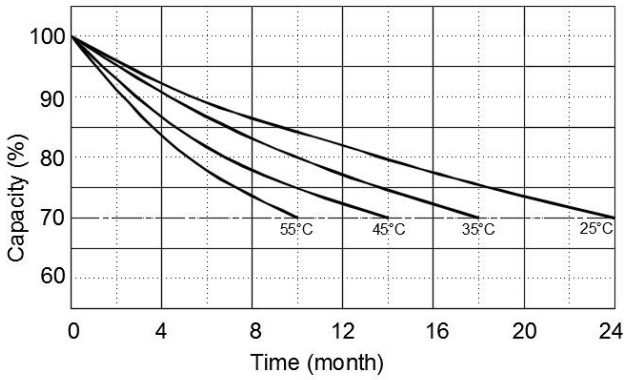
Discharge capacity with different temperature @ 1.0C



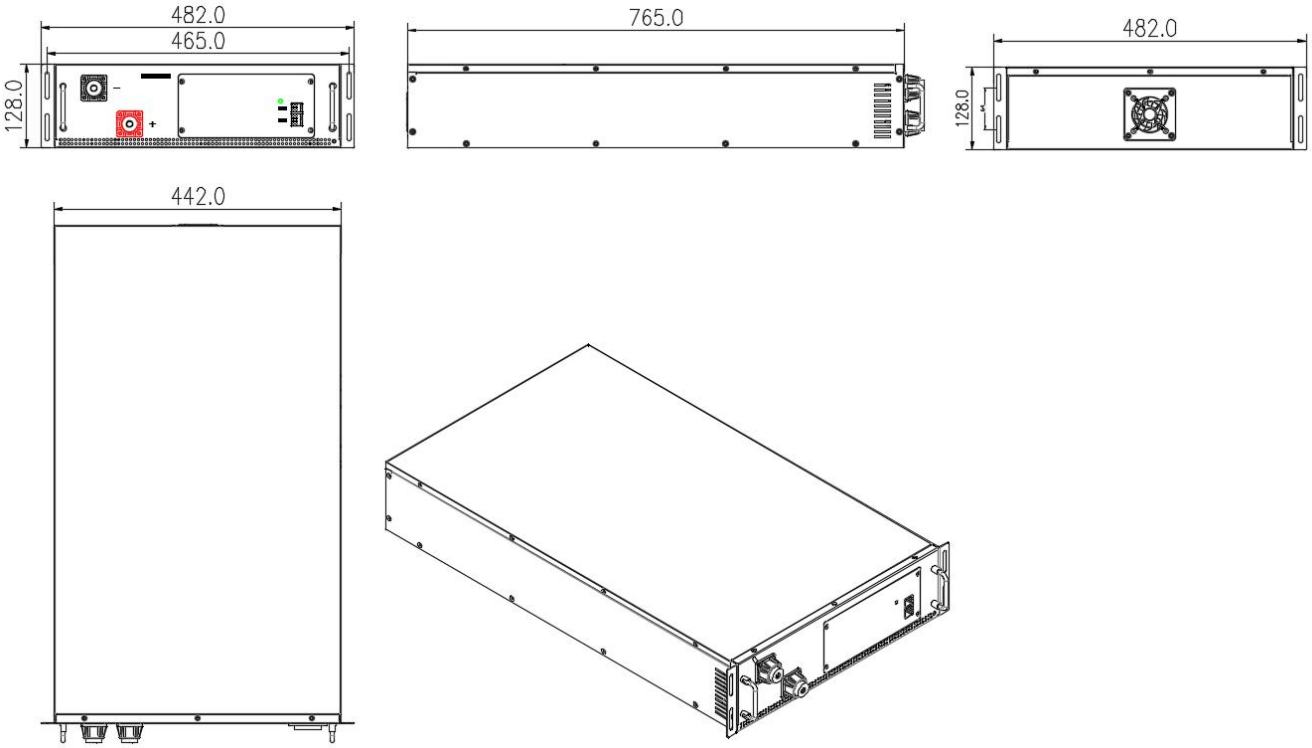
Cycle life with DOD @ 1.0C，25°C

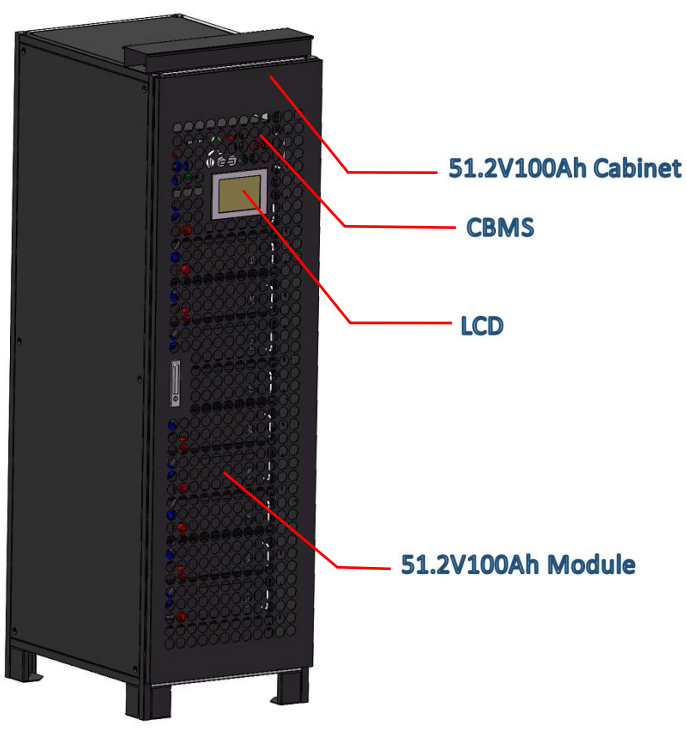


Self-discharge @ different temperature

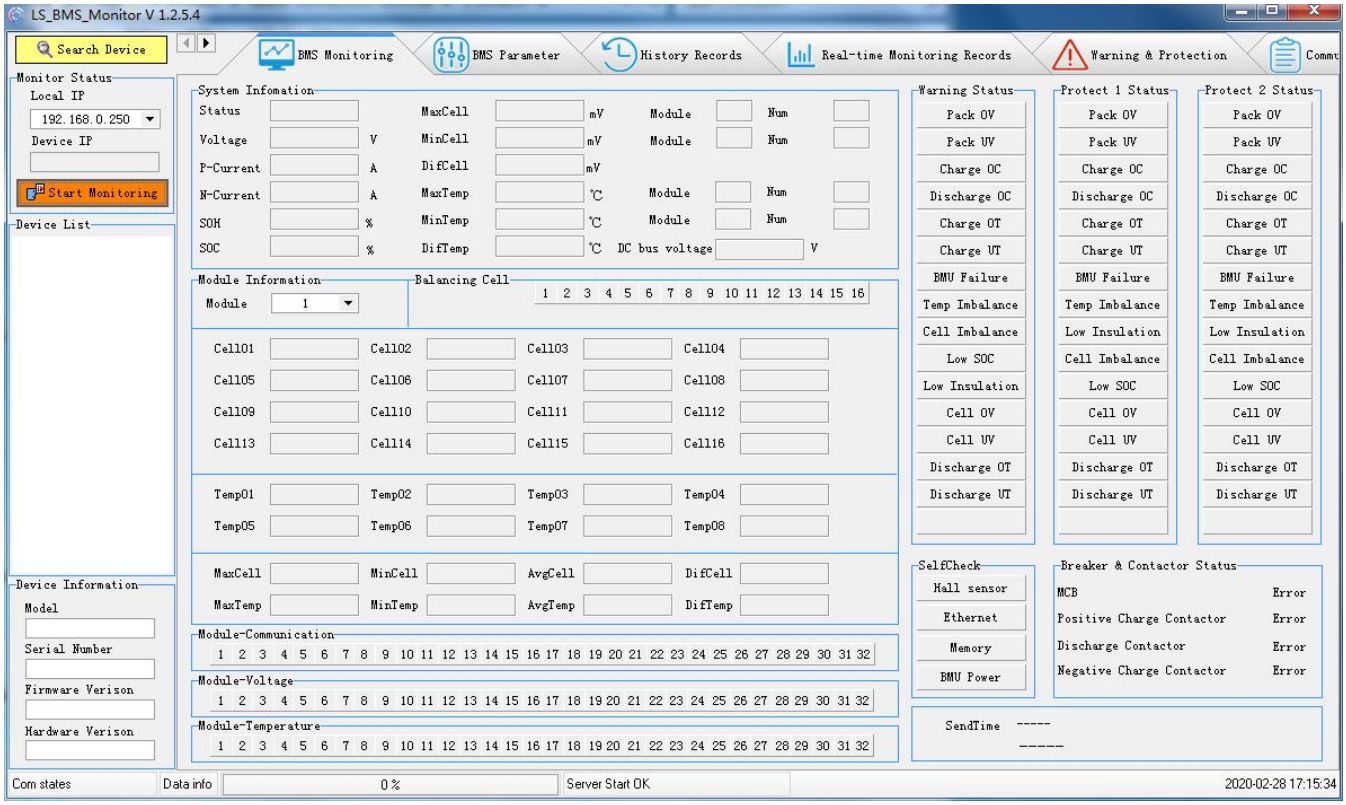


6. Drawings


482.0
465.0
128.0
765.0
482.0
128.0
442.0


51.2V100Ah Cabinet
CBMS
LCD
51.2V100Ah Module

7. PC Software Preview



8. Packing List

No.	Item	Specification	Number	Remarks
1	Cabinet	IP20,600*1000*2000mm(W* D* H)	1pcs	
2	LiFePO4 battery rack	MSPUES48100 51.2V100Ah battery rack	10pcs	
3	CBMS Module	MSP16S08D400A Battery system CBMS	1pcs	
4	LCD Screen	Integrated on the cabinet	1pcs	
5	Power cable	Connecting battery racks, CBMS, UPS and utilization equipment.	1 set	
6	Communication cable	Communication cable between battery racks and CBMS, LCD	1 set	
7	User manual	User manual	1pcs	
8				