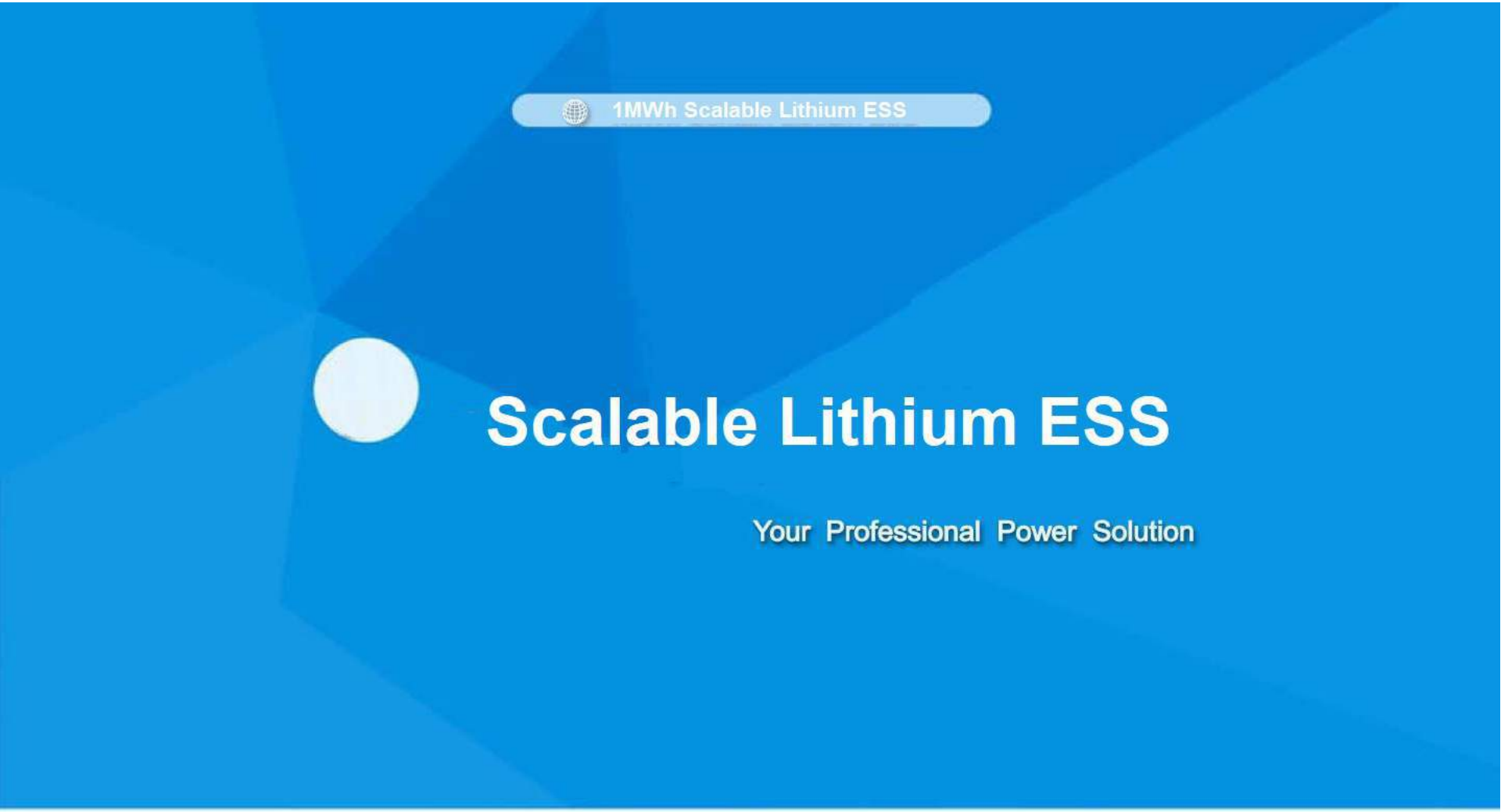
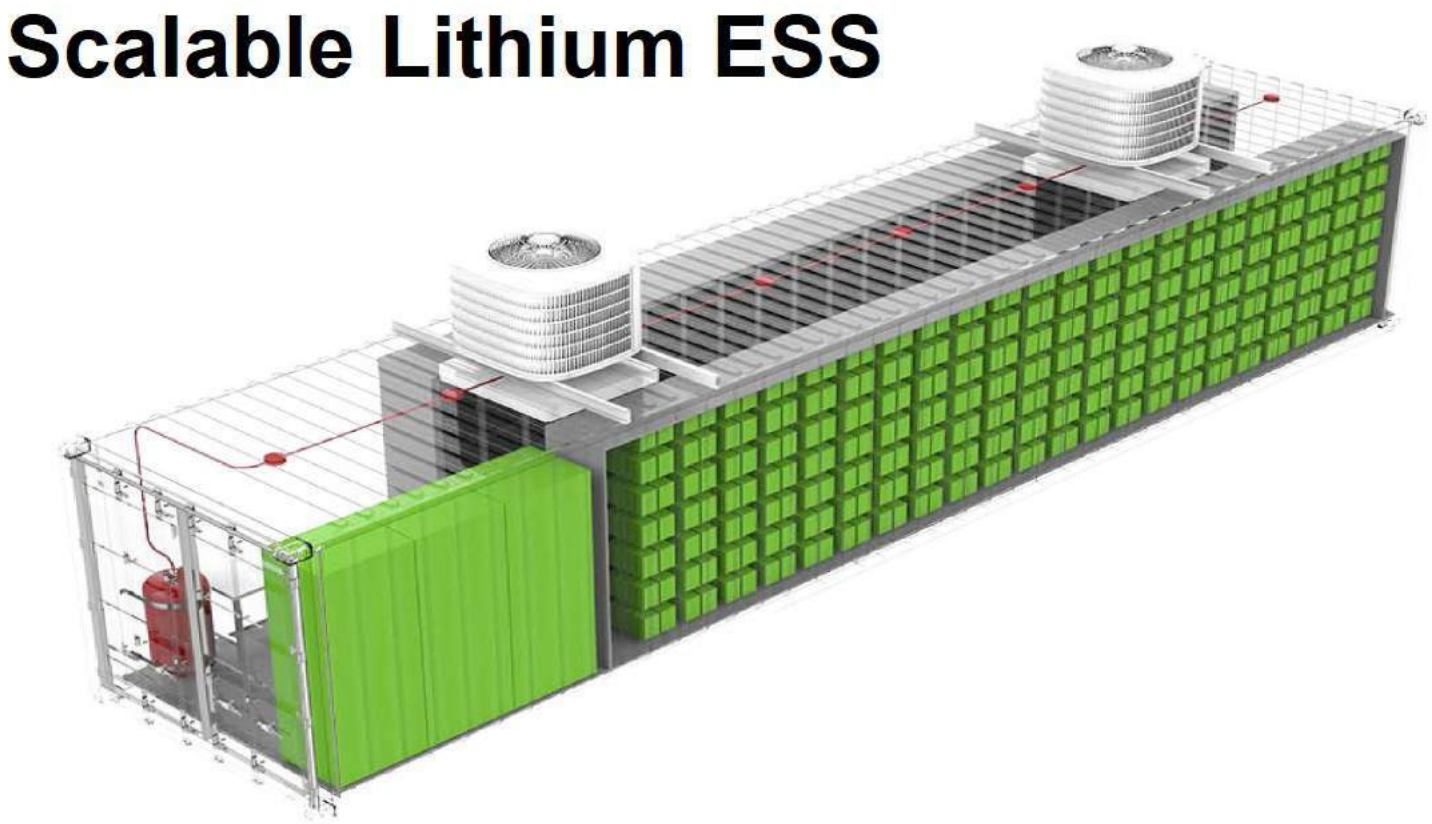
1MWh Energy Storage System (ESS) with LiFePO4 Batteries in 20 or 40 ft. Containers

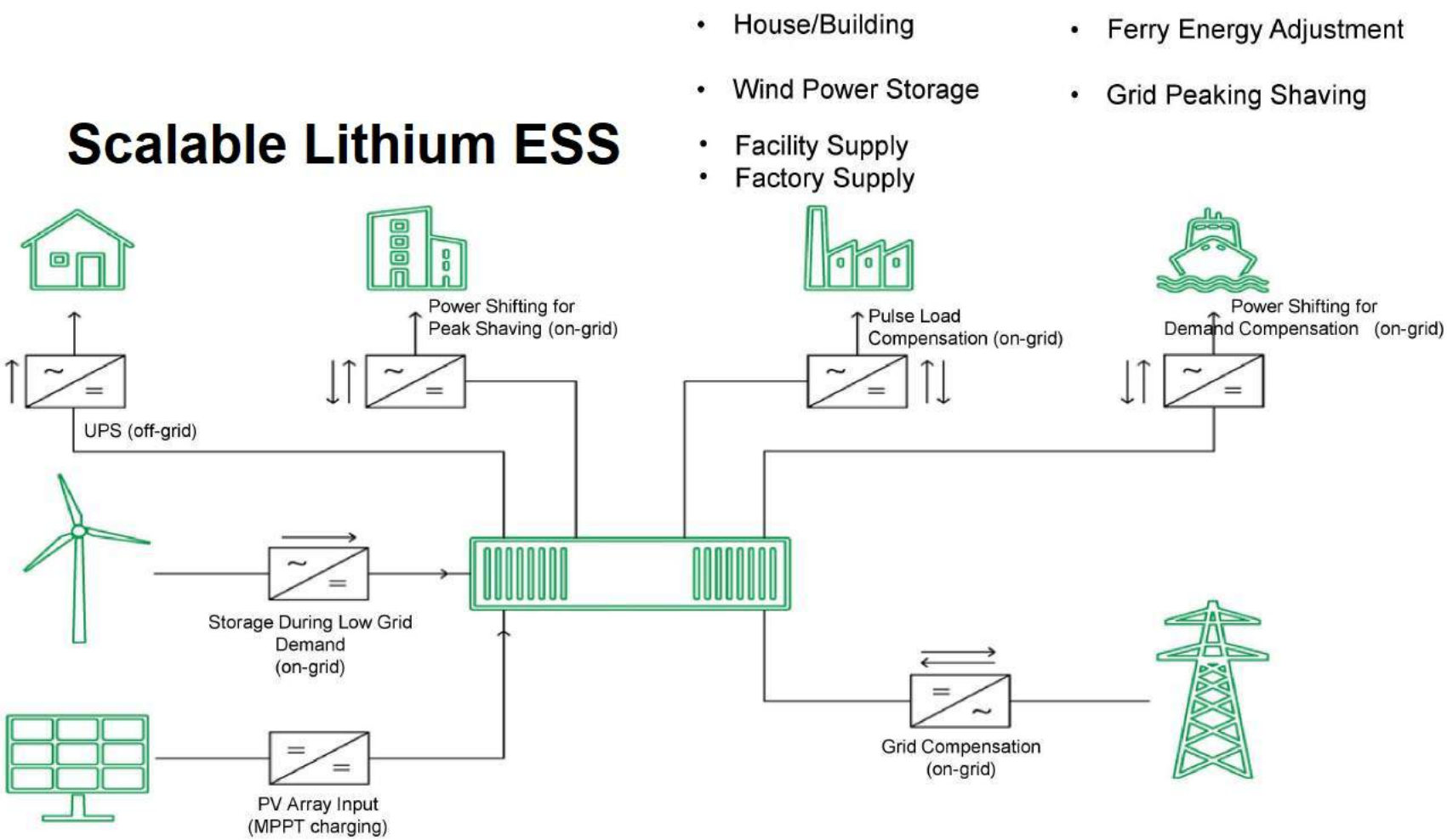


Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers



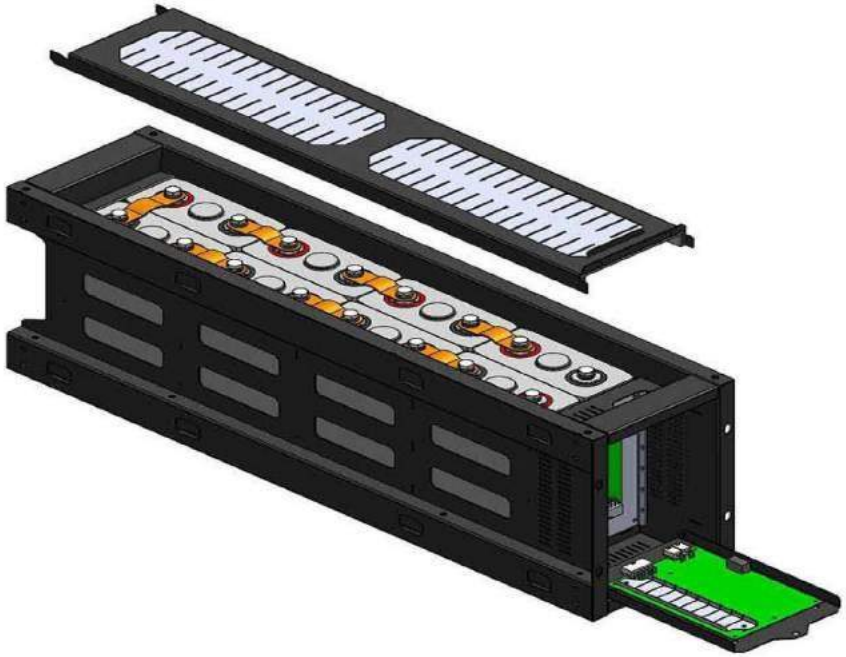
Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

- House/Building
- Wind Power Storage
- Facility Supply
- Factory Supply
- Ferry Energy Adjustment
- Grid Peaking Shaving

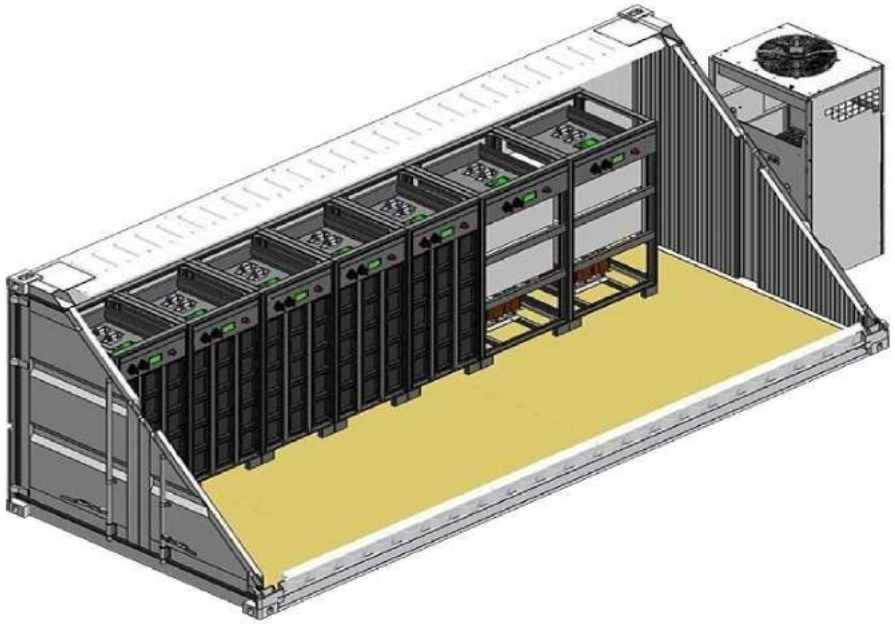


Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

- Scalable in 5760 watt increments
- Plug & Play with MOSFET
- 48V120AH Scalable Battery Module
- Customized Monitoring Software
- HMI
- Scalable Voltage
- Scalable Capacity
- Simple Installation
- Remote Monitoring



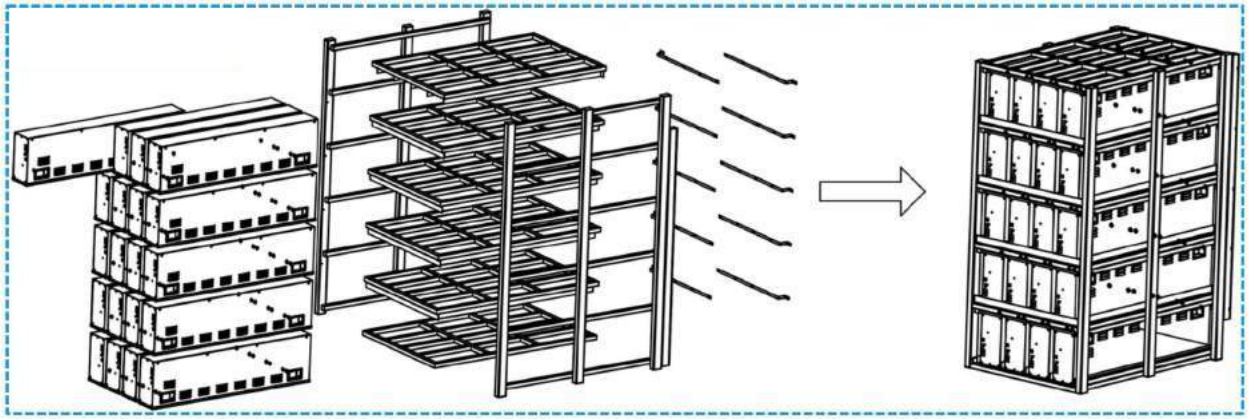
Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers



In 20 ft. or 40 ft.
Containers

Up to 1MWh Energy Storage System with
Lithium Batteries in 20 ft. or 40 ft. Containers

Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers



48V2400Ah

48V120Ah

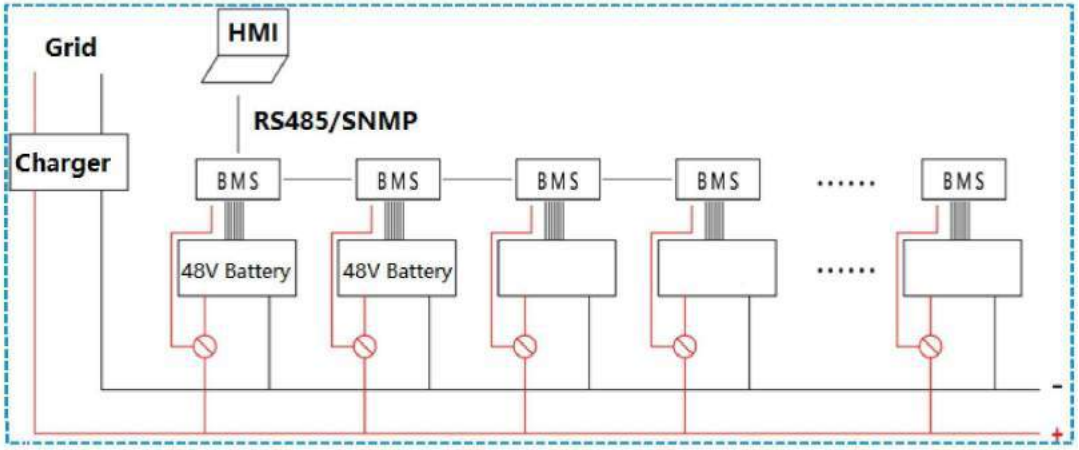
Each battery rack has a capacity of 115.2 KWh (48V 2400Ah), which is composed of 20pcs x 48V 120Ah battery modules in parallel in one battery bracket.

48V120Ah BMS

Each 48V 120Ah battery module has one independent BMS which operates independently and does not affect the other modules.

The product modular design makes it very convenient to install, commission, and maintain.

Intelligent design with remote monitoring, remote messaging, remote control, etc. functions. Remote monitoring and management available.



Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

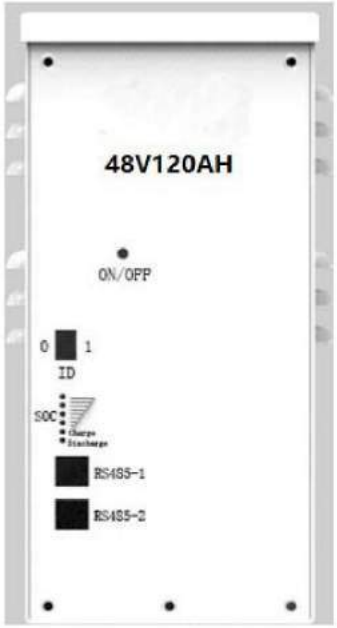
System Parameters

S/N	Item		Parameter
1	48V120Ah 48V 120Ah Battery Module	Nominal Voltage	51.2V
2		20±5℃0.3C@100%DOD	6.14kWh
3		Connections	3.2V120Ah (16S)
4		Operating Voltage	43.2V～56.8V
5		Float Charge Voltage	53～54.4V
6		Nominal Charge Current	30A
7		Nominal Discharge Current	100A
8	48V 2400Ah Battery System	Nominal Voltage	51.2V
9		20±5℃0.3C@100%DOD	122.9kWh
10		Connections	48V120Ah/20P
11		Operating Voltage	43.2V～56.8V
12		Float charge Voltage	53～54.4V
13		Max Charge Current	2000A
14		Max Discharge Current	2000A
15	48V120Ah 48V2400Ah Applied Range		0～45℃
16		SOC	10%～90%
17			30%SOC
18			-20℃～45℃
19			-20℃～25℃
30			＜70%
31			＜80%
32			≥10MΩ
33			RS485

Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

48V120Ah

48V120Ah BMS



The 48V 120Ah LiFePO4 battery is a new environmentally friendly backup power supply which has been widely used in backup power systems.

The system adopts an environmental LiFePO4 battery and configures the high-performance BMS to effectively manage the cells.

Compared with conventional batteries, it has a wider range of performance and application advantages, excellent chemical technology, BMS technology and system design capabilities to bring better product performance and reliability, providing a one-step solution for industrial applications.

Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

BMS Functions

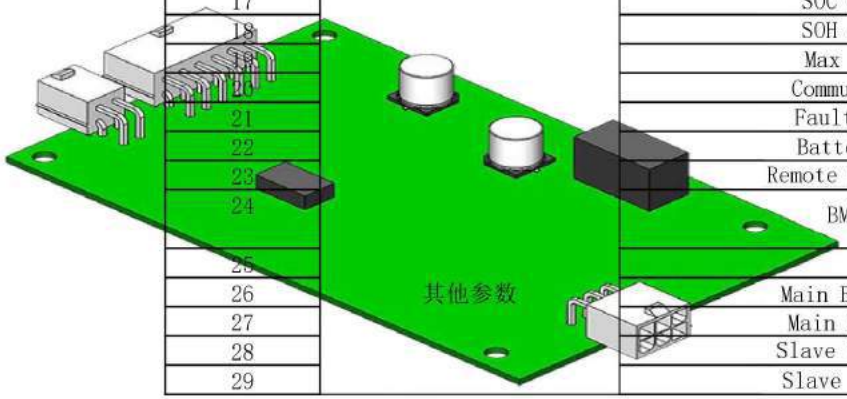
Functions	Realization	
Communication	RS485/CAN（Optional）	
LED Indication	SOC20%	
	SOC40%	
	SOC60%	
	SOC80%	
		Charge Indication
		Discharge Indication
LCD Display	128x64	Optional
	2004	Optional
Monitoring Software	SNMP	Optional
	HMI Software	Optional
Short Circuit Protection Recovery1	Recover after load cut-off	Optional
Short Circuit Protection Recovery2	Recover after reconnected	Default
Over Current Protection	Self-release after 20S	Default

Self-Check		T℃/V/Current
Sleep Mode		
Heating Management		Optional
Venting Management		Optional
Pack In Parallel		
Pack In Series		Optional

Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

BMS

S/N	Item		Parameters
1		BMS Operation Voltage Range	DC36V-72V
2		BMS Self-Consumption	2.5W
3		BMS Static power consumption	2W
4		BMS Operation Temperature	-20~85℃
5		BMS Storage Temperature	-40~85℃-
6		Individual Voltage Detection	0~5V
7		Cell Voltage Detection	2~4.5V
8		Cell Voltage Range	0~5V
9		Cell Sampling Frequency	50HZ
10		Voltage Detection Range	0~72V
11		General Voltage Range	10~72V
12		General Voltage Accuracy	<0.02%
13		Temperature Range	-55~105℃
14		Temperature Detection Accuracy	±2℃
15		Current Detection Accuracy	<1%
16		Isolation Detection	NULL
17		SOC Accuracy	<6%
18		SOH Accuracy	<8%
19		Max Current	100A
20		Communication	RS485/SNMP
21		Faulty Record	10
22		Battery List	
23		Remote Monitoring	
24		BMS List	Y
25			Y
26	其他参数	Main Board Weight	120g
27		Main Board Size	170mm x 123mm x30mm
28		Slave Board Weight	1000
29		Slave Board Size	160mm x 138mm x 65mm



Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

1MWh ESS

S/N	Item		Parameters
1		DC (V)	512
2		Rated Energy(C/3)KWh	1228.8
3		Nominal Charge Power KW	307.2
4		Nominal Discharge Power KW	512
5		Maximum Voltage Max (V)	584
6		Minimum Voltage Min (V)	448
7		Maximum Charge Current (A)	2000
8		Maximum Charge Power (KW)	1024
9		Maximum Discharge Current (A)	2000
10		Maximum Discharge Power (KW)	1024
11		charge time @ nominal power(h)	4
12		Discharge time @ nominal power (h)	2.4
13		Fast Charge Time @ Max Charge Power (h)	1.2
14		Fast Discharge Time @ Max Discharge Power (h)	1.2
15		Insulation Resistance (1000V-0C)	≥10MΩ

Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

1MWh ESS

S/N	Iterm		Parameters
1		Operating temperature	-20℃/+55℃
2		Cycle efficiency (one way)	>95%
3		Self-discharge	≤5% per month
4		Calendar lifetime at +25℃	>20 year
5		Storage temperature	-20℃~55℃
6		Storage time	6 month without charge
7		Maximum Altitude	3000m above sea leve
8		Maximum relative humidity	100% outside 70% inside
9		Cell safety	UL1642
10		Module safety	EN50178/IEC60950
11		Container safety	IEC61508(SIL2)
12		EMC	IEC 62 040-2 Cat C1 and C3
13		Container protection	IP54 on board/IP33 by operation
14		Container dimension and transport	ISO668
15		Container corrosion protection	ISO12944 Level C5I
16		Seismic	IEEE 693 high level
17		Environment	IEC 60721
18		Transport classification	UN3480-Class 9
19		Marking	CE
20		Directives	RoHS, UL, TUV
21		Manufacturing plants	ISO9001, TS16949, ISO14000

Scalable ESS with LiFePO4 Batteries in 20 or 40 ft. Containers

1MWh ESS

S/N	Item
1	Calendar Life -proven LFP Li-ion technology (15 years' experience)
2	Advanced industrial design provide highest safety and firmness
3	Years of design life with daily cycles at different depth of discharge
4	(SNMP) for Global Management
5	Cell level voltage and temperature control
6	Supervision of Dis/Charge current by real time
7	State of Charge (SOC) measurement
8	Cell level energy balancing
9	State of health (SOH) indication
10	Thermal regulation and temperature control
11	Ultra safe data collecting and saving
12	Smoke detection
13	Fire suppression system and alarm
14	Power and energy functions can be applied
15	Our system can be easily compatible with most power conversions system
16	The system can be maintenance with only operate part of the battery system
17	Self-Diagnostic functions with HMI*
18	Remote supervision and control
19	During any kind of charge or discharge condition, remains the same capability of power
20	Ground fault detection function
21	Air condition/fire suppression/cooling and heating system/illumination automatic control
22	Display for local monitoring and diagnosis
23	Container level with emergency push buttons, DC disconnection switch, ground fault detection and fire suppression system.