

Specification

LiFePO4 battery pack

Cell model: GSM48-100

Battery model: GSM-5000U

Edition: V1.0

Release date: Jul 2019

Customer : _____

Battery model name: GSM-5000U

Applicable Products: SOLAR ESS

Doc.No: GSM-Spec-Pack

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Declaration

1. The specification details the performance of the LiFePO₄ battery pack. Please read the specification carefully before operations and please abide by relevant industrial safety regulations. We will not be responsible for any damage to the product due to improper operations or use under conditions that are not prescribed in the specification.
2. As the product version upgrades or other reasons, this document is subject to change without notice. Unless otherwise agreed, this document only as a guide, all statements, information, and recommendations in this document do not constitute any express or implied warranty.

1 Scope

This specification is applied to the reference battery in this Specification .

2 Product Specification

Table 1

No.	Item	General Parameter		Remark
		Typical	50Ah	
1	Rated Capacity	Minimum	50Ah	Standard discharge (0.2C ₅ A) after Standard charge
2	Nominal Voltage	3.2V		Mean Operation Voltage
3	Internal Impedance	≤0.65		Internal resistance measured at AC 1KHz after 50% charge The measure must uses the new batteries that within one week after shipment and cycles less than 5 times
4	Dimension	Thickness:Max 24.5mm		Initial Dimension
		Width: Max 140.5		
		Height: Max 160.5mm		
5	Weight	1.15kg		APPROX
6	Standard charge	Constant Current 0.33C ₅ A Constant Voltage 3.65V 0.02C ₅ A cut-off		Charge time : Approx4
7	Rapid Charge	Constant Current 1C ₅ A Constant Voltage 3.65V 0.01C ₅ A cut-off		Charge time : Approx1.5h@ ≥ 10°C
8	Standard discharge	Constant current 0.33C end voltage 2.5 V		16.5A
9	Maximum discharge current	Constant current: 2C end voltage: 2.5 V		100A@ ≥ 0°C
10	Volumetric specific energy	295 WH/L		APPROX
11	Gravimetric specific energy	139Wh/kg		APPROX

Table 2

Package	No.	Item	General Parameter		Remark
	1	Combination method	15S2P		
	2	Rated Capacity	Typical	100Ah	Standard discharge after Standard charge (package)
			Minimum	98Ah	
	3	Factory Voltage	48V		Mean Operation Voltage
	4	Voltage at end of Discharge	40.0 V		Discharge Cut-off Voltage
	5	Charging Voltage	54.0 V		
	6	Internal Impedance	≤50mΩ		Internal resistance measured at AC 1KHz after 50% charge The measure must uses the new batteries that within one week after shipment and cycles less than 5 times
	7	Standard charge	Constant Current 20A		Charge time : Approx 5-6 h
		Max charge	120A		
8	Standard discharge	Constant current: 50A			
9	Maximum Continuous Discharge Current	120A			

Continuous the table 2

	No.	Item	General Parameter	Remark
Package	10	Maximum Discharge Current	300A	
	11	Operation Temperature Range	Charge: 0~45℃	60±25%R.H. Bare Cell
			Discharge: -20~55℃	
	12	Storage Temperature Range	Less than 12 months : -10~35℃	60±25%R.H. at the shipment state
			less than 3 months: -10~45℃	
			Less than 7 day : -20~65℃	
	13	Dimensions	650*485*180 mm	Include case
	14	Weight	53 kg	Include case
	15	Volumetric specific energy	124.3WH/L	Include case
16	Gravimetric specific energy	96WH/KG	Include case	

3 Battery Management System

3.1 BMS Specification

1. The BMS is designed for 15/16 series lithium battery.

2. The BMS have all functions which are :

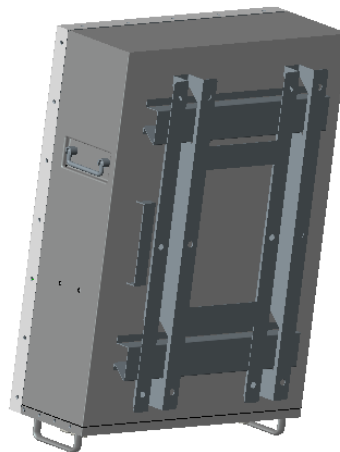
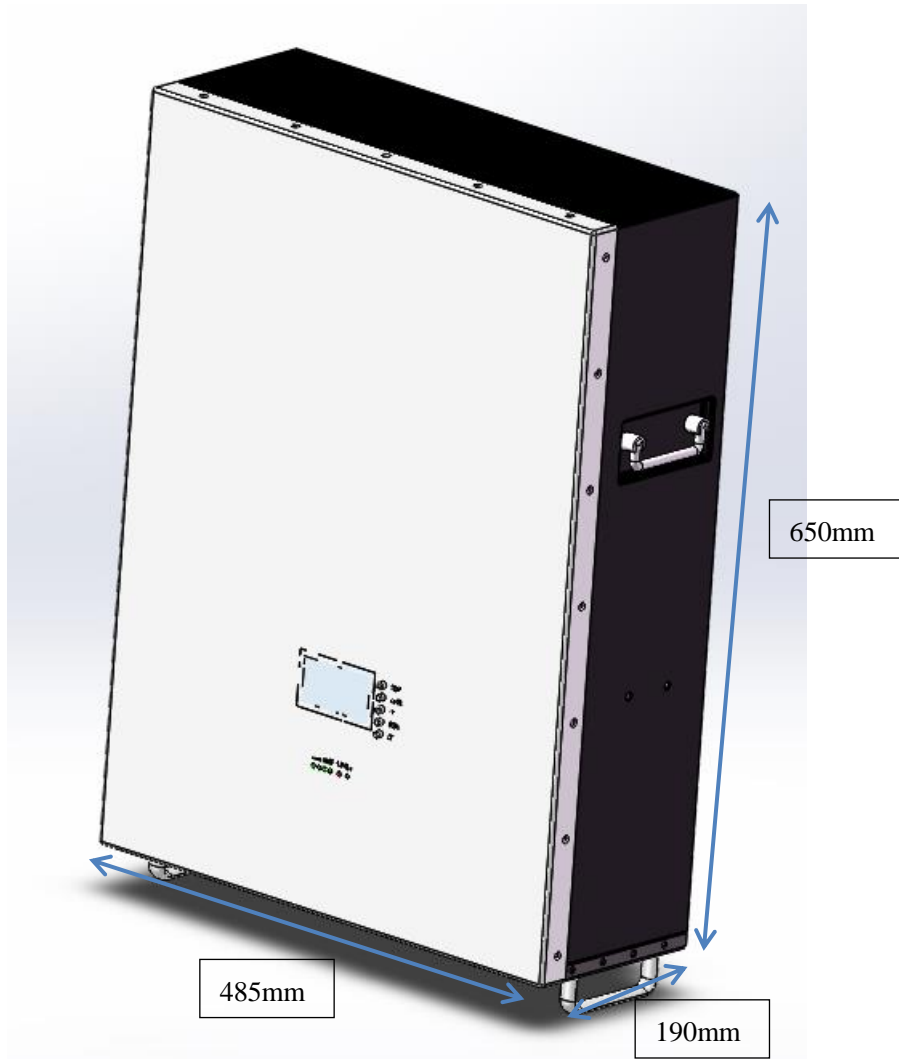
- overcharge detection function
- over discharge detection function
- over current detection function
- short detection function
- Temperature detection function
- balance function
- communicate function
- Alarm function

3.2 BMS Protect parameter

48V 15S Typical value specifications

Items	Details	Standard
Cell overcharge protection	Overcharge detection voltage	3.80±0.025V
	Overcharge detection delay time	Typical:1.0s
	Overcharge release voltage	3.34±0.02V
Cell over-discharge protection	Over-discharge detection voltage	2.5±0.02V
	Over-discharge detection delay time	Typical:1.0s
	Over-discharge release voltage	3.1±0.02V or charge release
Over-current protection	discharge Over-current protection current1	150±10A
	discharge Over-current detection delay time 1	1S
	discharge Over-current protection current2	300±10A
	discharge Over-current detection delay time2	≤100ms
	Charge OC protection current	120±5A
Short protection	Short protection current	400±10A
	Protection condition	Load short
	Detection delay time	≤800us
	Protection release condition	Charging release
Temperature(T) protection	Charge high T protection	55±5℃
	Charge high T recover	50±5℃
	Discharge high T protection	65±5℃
	Discharge high T recover	60±5℃
	Charge low T protection	-10±5℃
	Charge low T recover	0±5℃
	Discharge low T protection	-20±5℃
	Discharge low T recover	-10±5℃
Balance	Balance threshold voltage	3.45V
Communication	It has RS232 and RS485 standard communication interface, it can real-time monitoring the capacity of battery bank, the voltage, current, environment temperature, and charging/discharging current.	
Alarm	It has over-temperature, over charge, under-voltage, over-current, short circuit alarm function.	

4. Case Structure of Battery Pack



5 Packaging of Battery Pack

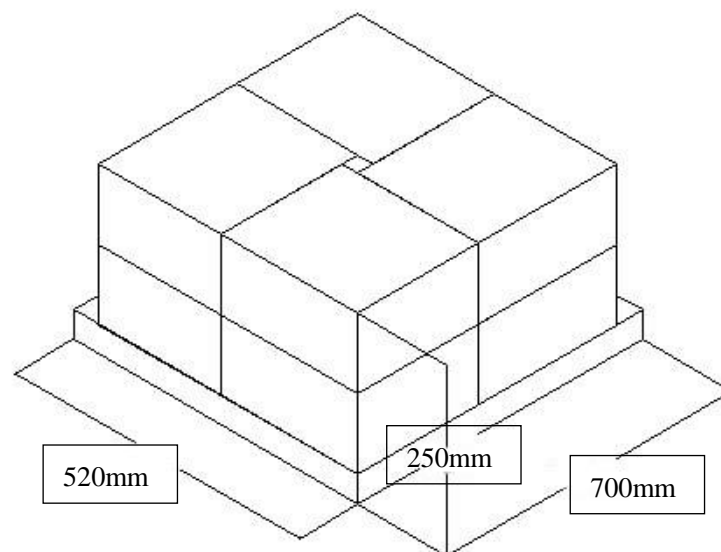
5.1. Pictures



5.2. Seven layers of corrugated packaging on the outside, overall dimension: 700*520*250 mm

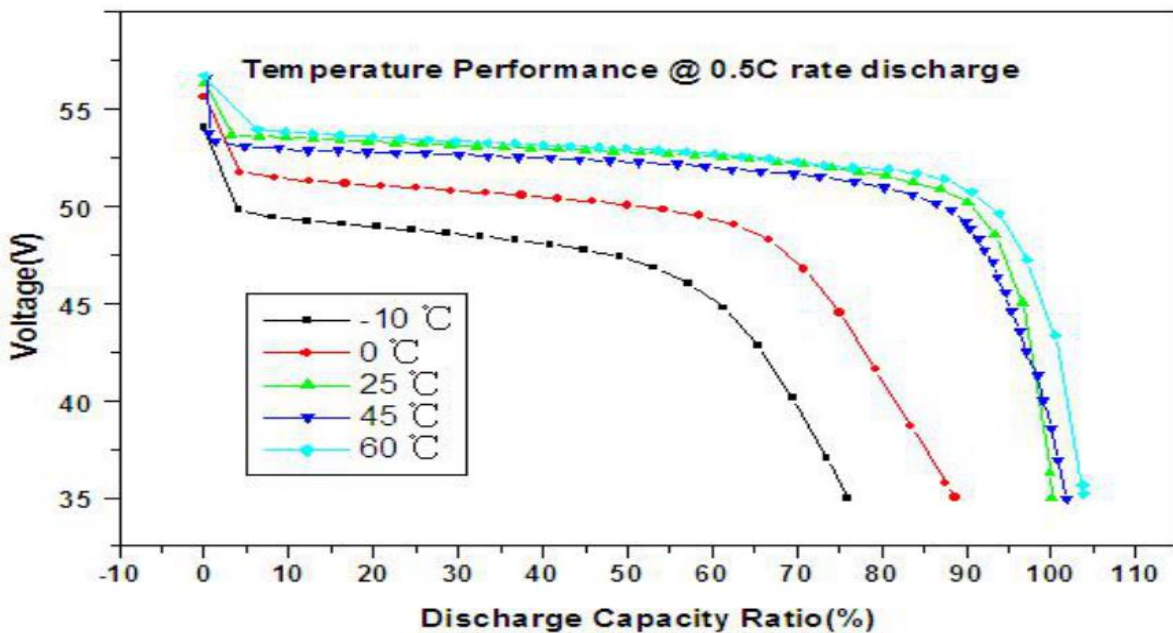
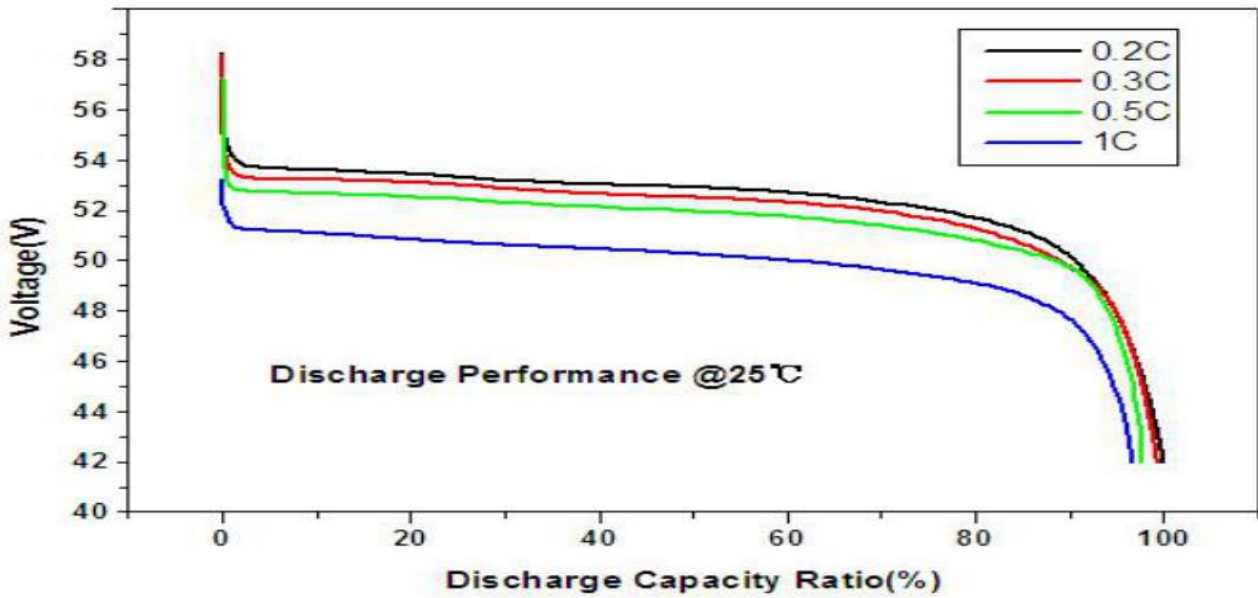
6 Transportation

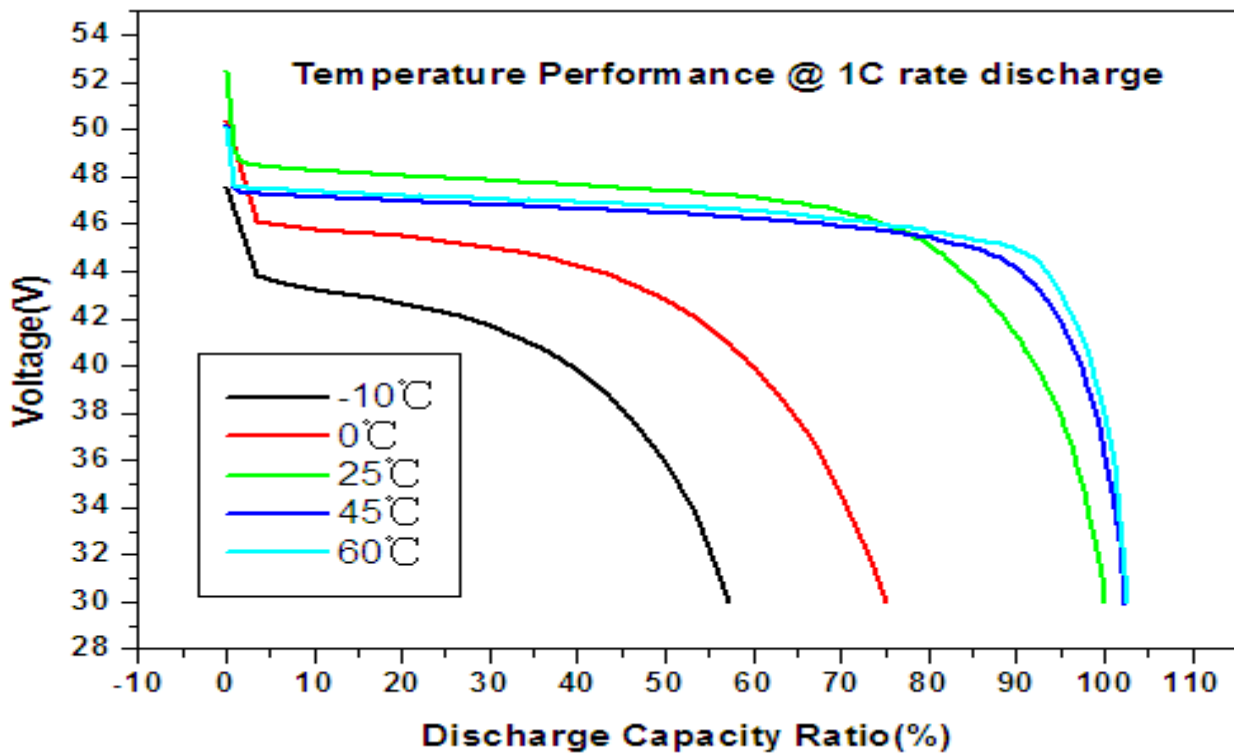
6.1 Placing on pallet during transportation, 4 boxes on each layer, and a total of 2 layers.



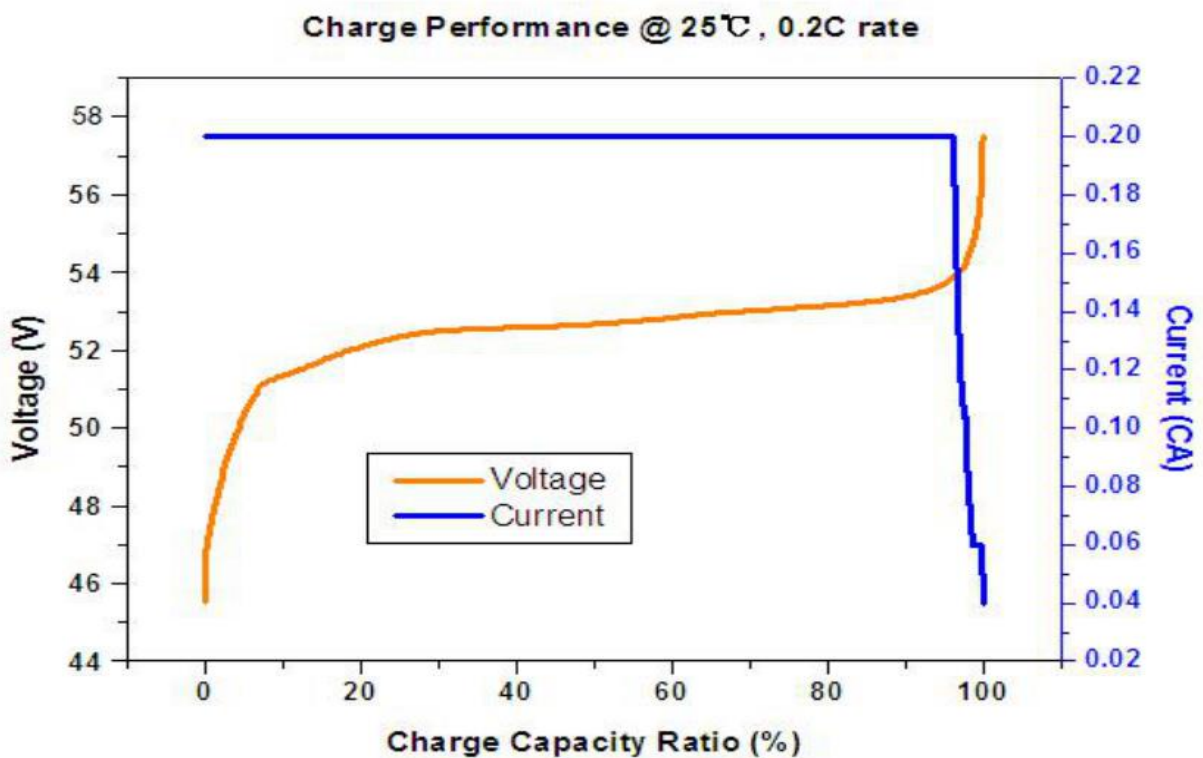
6.2 Shall pay attention to moisture and dampness during transportation, avoiding the extrusion and collision so as to preventing the battery from damaging.

Discharge curve

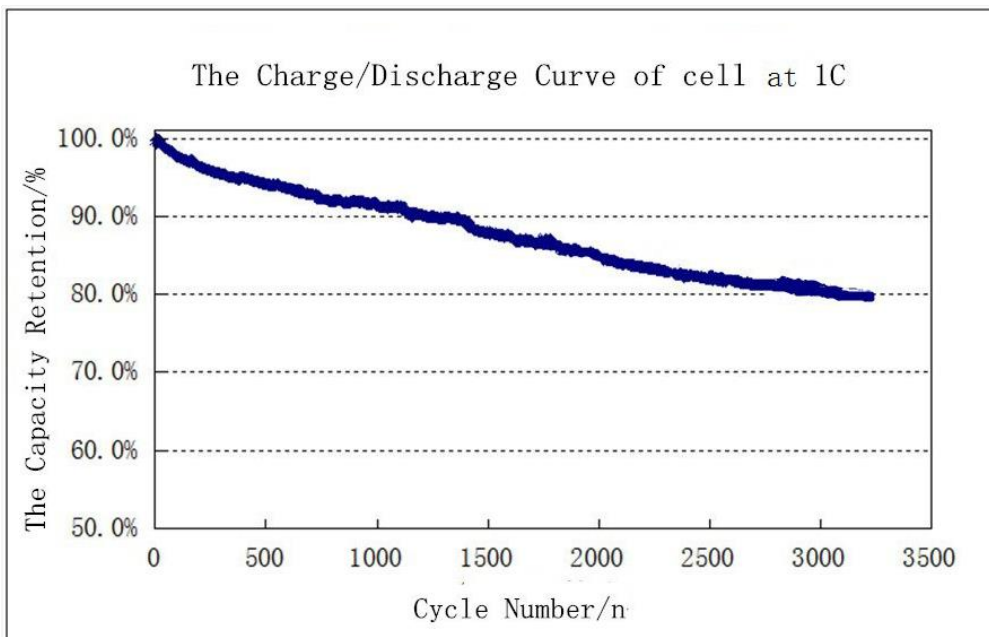




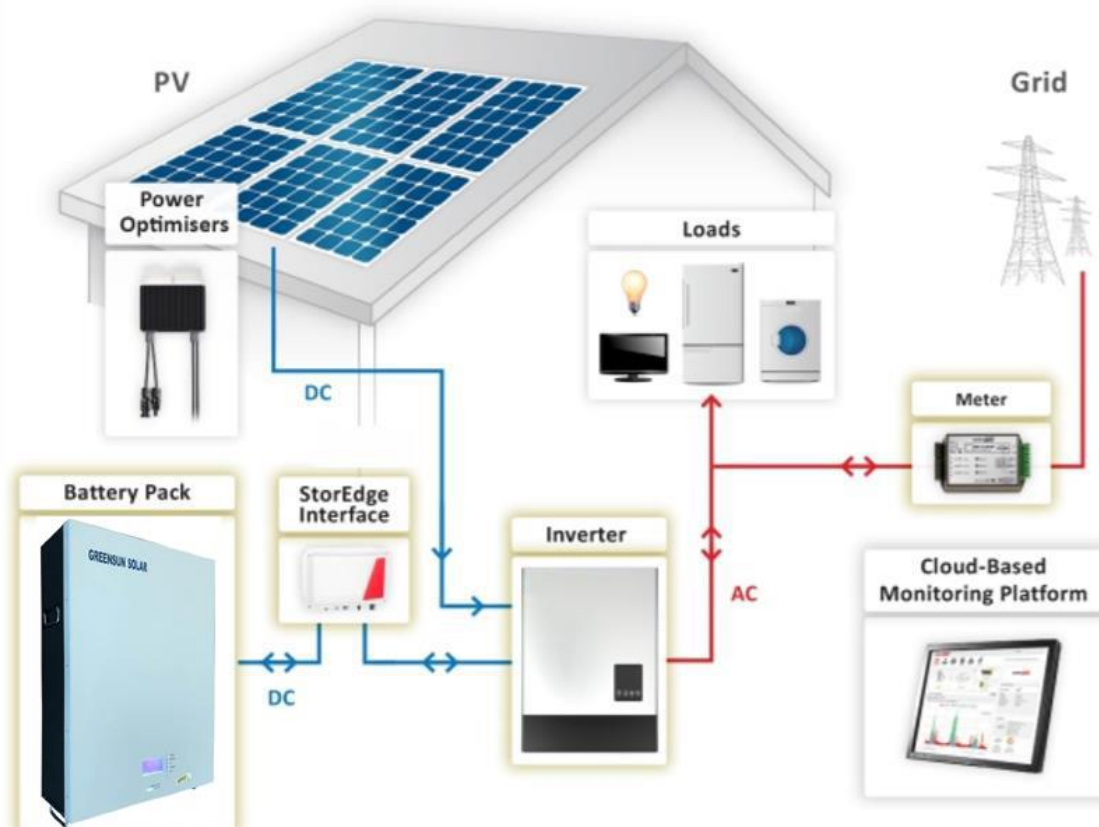
Charge curve



Cycle life Curve > 3000 times



Application—SMART HYBRID ON-OFF GRID SOLAR HOME SYSTEMS



SMART HYBRID ON-OFF GRID SOLAR SYSTEM