

Industrial and commercial energy storage systems of 215kWh (DC100)

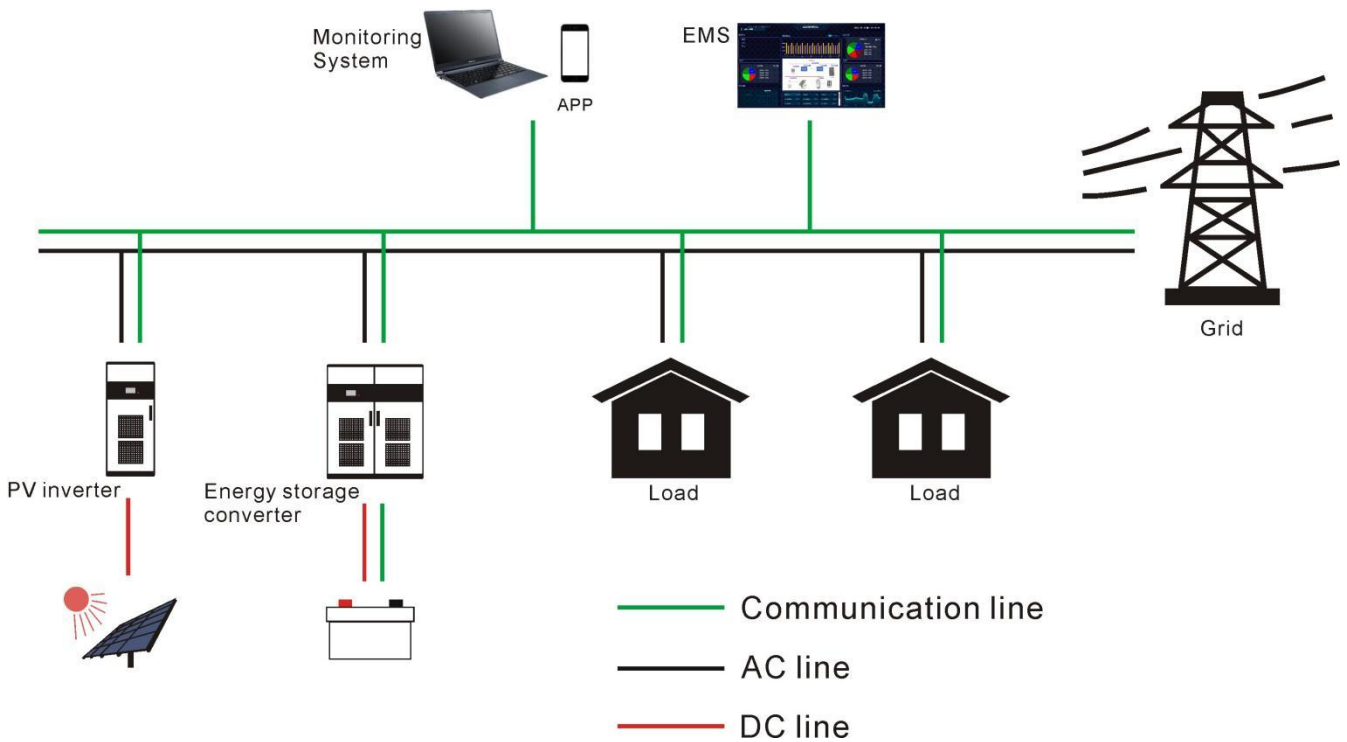


1. General description

The object of this proposal is the energy storage system solution which is packed into an outdoor cabinet.

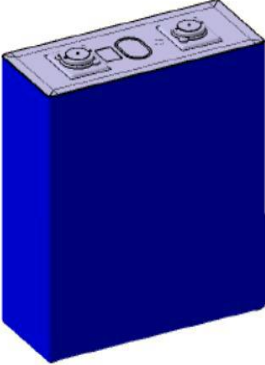
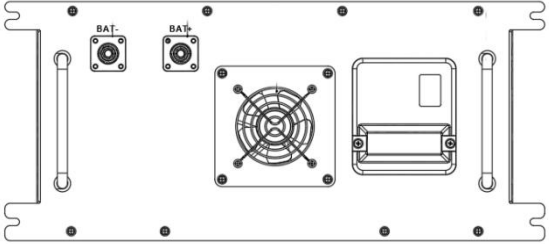
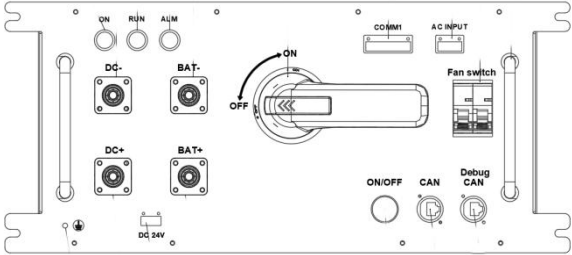
This solution has integrated almost everything needed for an On-Grid ESS solution, including battery system、 power convertor system and energy management system.

System schematic design drawing:



2. Key Components inside the cabinet

2.1 Battery configuration

Cell Basic Parameters		
Type	LFP	
Rated Capacity [Ah]	280	
Rated Voltage [V]	3.2	
Voltage Range [V]	2.8~3.55	
Charge current [A]	140	
Discharge current [A]	140	
Module Basic Parameters		
Configuration	1P20S	
Rated Capacity [Ah]	280	
Rated Voltage [V]	64	
Voltage Range [V]	56~72	
Rated Energy [KWh]	17.82	
Main control box		
Rack Basic Parameters		
Rated Capacity [Ah]	280	
Rated Voltage [V]	768	
Voltage Range [V]	672~864	
Rated Energy [KWh]	215	
Configuration	12	

Dimensions [mm]	1800*1200*2300(W*D*H)
levels of protection	IP55
Weight [KG]	3000
Ambient relative humidity	0~85% RH
Pv rated capacity [KW]	100
Photovoltaic voltage range[V]	200~680
Rated AC power[KW]	100
Rated AC current[A]	144
Rated AC voltage[V]	400
Rated AC frequency	50/60Hz
Total current harmonic distortion rate THDI	< 3% (power rating)
The voltage total harmonic distortion rate THDU	<3% (linear load)
Isolation mode	Non-isolation (optional transformer)
Display	Touch the LCD, the touch the screen
Communication interface	RS485/CAN 2.0/ Ethernet/dry contact



2.2 Battery Management System (BMS)

Items	Details	Standard
Cell overcharge protection	Overcharge detection voltage	3.5±0.025V
	Overcharge detection delay time	Typical:1.0s
	Overcharge release voltage	3.4±0.05V
Cell over-discharge protection	Over-discharge detection voltage	2.7±0.5V
	Over-discharge detection delay time	Typical:1.0s
	Over-discharge release voltage	3.1±0.1V or charge release
Over-current protection	discharge Over-current protection current1	200±10A
	discharge Over-current detection delay time 1	5S
	discharge Over-current protection current 2	220±10A
	discharge Over-current detection delay time 2	≤600m±50ms
	Charge Over-current protection current	140±10A
Short protection	Short protection current	300±50A
	Protection condition	Load short
	Detection delay time	≤30ms
	Protection release condition	Charging release
Temperature(T) protection	Charge high T protection	55±3℃
	Charge high T recover	45±5℃
	Discharge high T protection	55±5℃
	Discharge high T recover	50±5℃
	Charge low T protection	0±5℃
	Charge low T recover	5±5℃
	Discharge low T protection	-20±5℃
Discharge low T recover	-10±5℃	
Balance	Balance threshold voltage	3.4V
Communication	It has CAN common Baud rate:250K/S.	
Alarm	It has over-temperature, over charge, under-voltage, over-current, short circuit alarm Function.	

2.3 Power Converter System (PCS)

Specification		
Utility-interactive Mode		
Battery voltage range	630~900V	
DC max current	175A	
AC voltage	380V/400V (-15%~10%) Vac	
Nominal power	100kVA	
AC frequency	50/60Hz(±2.5Hz)	
THDi	≤3%	
AC PF	Listed: 0.8~1 leading or lagging (Controllable)	
	Actual: 0.1~1 leading or lagging (Controllable)	
Physical		
Cooling	Forced air cooling	
Noise	75dB	
Enclosure	IP20	
Max elevation	3000m/10000feet (> 2000m/6500feet derating)	
Operating ambient temperature	-20°C to 60°C (De-rating over 50°C)	
Humidity	0~95% (No condensing)	
Size (W×H×D)	485×220×680mm	
Other		
Peak efficiency	99%	
AC connection	3-Phase 3-Wire	
Communication	RS485,CAN,Ethernet	
Isolation	Non-isolation	

2.4 Fire Suppression System

The fire suppression system is designed according to the outdoor cabinet size, and the fire extinguishing material is aerosol. The system includes fire detectors, audible and visual alarm, emergency start/stop button, controller, etc.

2.5 Heating Ventilation Air Conditioning

The air conditioner's running is controlled automatically according to the temperature inside the cabinet. The controller controls the compressor or fan's work by comparing the cabinet return air temperature detected by the internal cycle temperature sensor with the fixed temperature point and making judgment.

Cooling

Cooling startup point = cooling point + cooling sensitivity. When the temperature inside the cabinet exceeds the cooling startup point, the cooling will start; when the temperature inside the cabinet is lower than the cooling point, the cooling will stop.

Parameter	Default value	Setting range	Unit	Setting point description
Cooling point	25	[15 ~ 50]	℃	The temperature point of the cooling stop
Cooling sensitivity	10	[1-10]	℃	The sensitivity of the temperature control

Heating

Heating startup point = heating point - heating sensitivity. When the temperature inside the cabinet is lower than the heating startup point, the heating will start; when the temperature inside the cabinet is higher than the heating point, the heating will stop.

Parameter	Default value	Setting range	Unit	Setting point description
Heating point	15	[-15~25]	℃	The temperature point of the heating stop
Heating sensitivity	10	[1-10]	℃	The sensitivity of the temperature control

Dehumidification

Dehumidification Start Point = Dehumidification Point + Sensitivity, when the ambient temperature inside the cabinet is higher than the Dehumidification start point, the dehumidifier will work; when the ambient temperature inside the cabinet is lower than the Dehumidification point, the dehumidifier stops working.

Parameter	Default value	Setting range	Unit	Setting point description
Dehumidification Point	60	[40 ~90]	%	The point when the dehumidifier stops working
Sensitivity	10	[1 ~30]	%	Sensitivity of Controlling the humidity

3. System Main Component lists

NO.	ITEM	Specification	Qty
1	Battery System		
1.1	Battery Management System	BMU+BCMU+Cable	1
1.2	Battery String	215kWh include rack	1
1.3	High Voltage Box		1
2	Electrical System		
2.1	PCS	100kW	1
2.2	EMS	EMS	1
3	Outdoor Cabinet		1
4	FSS	Aerosol Fire Suppression system	1
5	HAVC	3kW cooling power	1