

L261 Distributed Energy Storage System Product Specifications

Document Version: A0

Release Date: 2024-10-07



Revised Records

Date	Edition	Revise content
2024-10-07	A0	First release

Catalogue

Catalogue.....	1
1. Distributed energy storage system.....	1
1.1 Overview.....	1
1.2 Functions.....	1
1.3 Parameters.....	2
1.4 Product topology.....	3
1.5 Appearance.....	4
2.Core components.....	5
2.1Industrial and commercial energy storage integrated cabinet.....	5
2.1.1Battery module (Pack).....	5
2.1.2Bidirectional inverter(PCS).....	6
2.1.3Battery management system (BCMS).....	7
2.2 Intelligent combiner cabinet.....	8
2.2.1Energy management unit (EMUS).....	8
3.Description of the external interface.....	9

Distributed Energy Storage System

1.1 Overview

The distributed energy storage system is composed of industrial and commercial energy storage integrated cabinet and intelligent combiner cabinet. A single industrial and commercial energy storage integrated cabinet is mainly composed of 5 modules, one high pressure box, one PCS, one liquid cooling unit, one dehumidification device, one fire control system and cabinet. The intelligent combiner cabinet is mainly composed of busbar switch, energy management system (EMU), environmental monitoring unit, metering device and box ; a distributed energy storage system can be composed of 8 industrial and commercial energy storage integrated cabinets and one intelligent combiner cabinet.

1.2 Functions

- ▶ Communication function: the battery module uses CAN communication to communicate with BCMS, the industrial and commercial energy storage all-in-one machine uses ethernet to communicate with the intelligent junction cabinet, and the intelligent junction cabinet uses Ethernet communication by default;
- ▶ Metering function: can measure the charging and discharge of energy storage system during peak shaving and valley filling ;
- ▶ Display function: provide friendly human-machine interface, including but not limited to real-time data monitoring, historical data query, equipment control, parameter setting and other pictures;

- ▶ Management function: can collect and distribute data from industrial and commercial energy storage all-in-one machines, formulate control strategies to realize peak load shifting and demand management through charging and discharge of energy storage;
- ▶ Data collection: collect battery cell voltage, temperature, equilibrium current, and total module pressure, etc.;
- ▶ Calculation function: calculate the temperature, voltage, current and other important features in the battery module;
- ▶ Equilibrium function: supports multiple equalization modes such as disable, automatic equalization, manual control equalization and specified equalization;
- ▶ Fan control: to support the control module fan;
- ▶ Protection function: cell voltage collection abnormal alarm, line break protection, over temperature protection, low temperature protection, over voltage protection, under voltage protection, short circuit protection;
- ▶ Parameter configuration: to support the CAN communication to set the battery related parameters;
- ▶ Storage function: the battery module can store the power level, and can store the battery-related parameters.

Table 1.3-1 Specification and parameters of industrial and commercial all-in-one energy storage cabinets

Order number	The parameter name	Specifications	Remarks
AC side parameters			
1	Power grid voltage	400V , 3W+N+PE	
2	Rated AC power	125KW	
3	Rated AC current	180A	
4	Maximum AC current	200A	
5	Rated power grid frequency	50/60Hz	
6	Power factor is adjustable range	-1~+1	
7	THDi (rated power)	≤ 2%	
DC side parameters			
8	Battery type	LFP	
9	Battery capacity	261Kwh	
10	DC rated voltage	832V	
11	DC voltage range	715~923V	
12	Rated charge and discharge rate	0.5C	
13	DC maximum current	183A	
System parameter			
14	Isolation method	Non-isolation	
15	Dimensions (W *H*D)	865mm*2300mm*1250mm	
16	Weight	2200kg	

17	System life	8000 times @25℃, 0. 5CP, 90% DOD, EOL 70%	
18	Communication interface	RS485、 CAN、 LAN	
19	Working temperature	-20℃ ~50℃	
20	Altitude	≤ 3500m	Over 2000m derating
21	Battery temperature	liquid cooling	
	Control mode		
22	Fire extinguisher system	Non-storage pressure perfluorhexone +as / smoke / temperature detection	
23	IP levels of protection	IPX5	

Table 1.3-2

Order number	The parameter name	Specifications	Remarks
1	Power grid voltage	400V , 3W+N+PE	
2	Rated current	1600A	
3	Rated power grid frequency	50/60Hz	
4	Communication interface	RS485、 CAN、 LAN	Standard external is ethernet communication
5	Weight	< 300kg	
6	Working temperature	-20℃ ~50℃	
7	Altitude	4000m	Over 2000m derating
8	Dimensions (W *H * D)	700mm*2400 mm*700mm	
9	IP levels of protection	IP55	

1.4 Product topology

The topology map of the distributed energy storage system is shown in Figure 1.4-1 show:

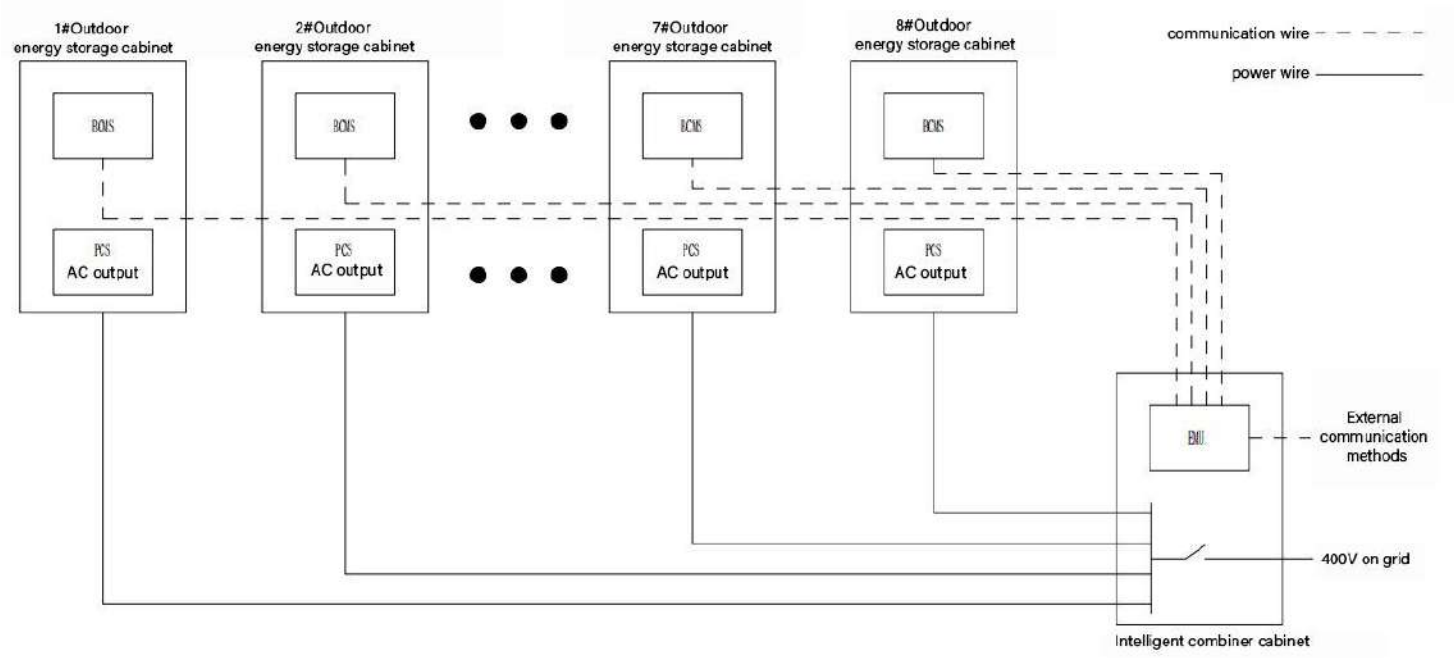


Figure 1.4-1 energy storage system

Table 1.4-1 configuration scheme

Power /kW	Nominal energy/ kWh	Duration/h	Number of cabinet body	Remarks
125	261	2	1 industrial and commercial energy storage cabinet + 1 combiner cabinet	0.5C
250	522	2	2 industrial and commercial energy storage cabinet + 1 combiner cabinet	0.5C
375	783	2	3 industrial and commercial energy storage cabinet + 1 combiner cabinet	0.5C
500	1044	2	4 industrial and commercial energy storage cabinet + 1 combiner cabinet	0.5C
625	1305	2	5 industrial and commercial energy storage cabinet + 1 combiner cabinet	0.5C
750	1566	2	6 industrial and commercial energy storage cabinet + 1 combiner cabinet	0.5C
875	1827	2	7 industrial and commercial energy storage cabinet + 1 combiner cabinet	0.5C
1000	2088	2	8 industrial and commercial energy storage cabinet + 1 combiner cabinet	0.5C

1.5 Appearance

The appearance of a distributed energy storage system composed of 8 industrial and commercial energy storage cabinets + 1 combiner cabinet as an example, as shown in Figure 1.5-1 show:

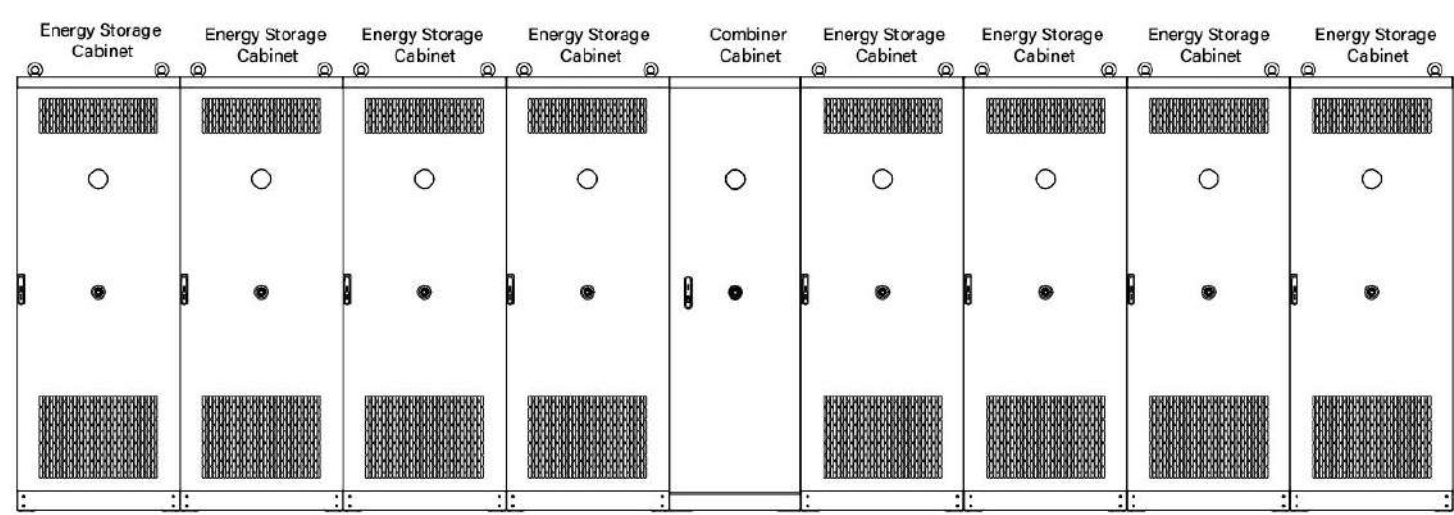


Figure 1.5-1 Appearance diagram of energy storage system

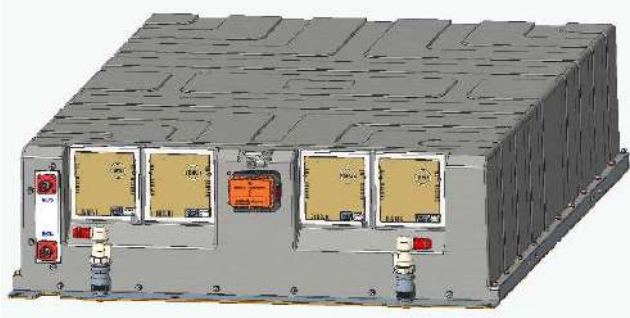
2 Core components

2.1 Industrial and commercial energy storage integrated cabinet

The industrial and energy storage integrated cabinet is mainly composed of battery module, PCS, high voltage box, fire protection system, dehumidification device,liquid cooling unit and so on.

2.1.1 Battery module (Pack)

- ▶ High life cell, cycle times more than 8000 times;
- ▶ Accurate temperature control design, built-in air duct design, intelligent constant temperature control;
- ▶ The shell material are all fiber reinforced plastic materials, A1 grade noncombustible fire grade, excellent insulation performance;
- ▶ Intelligent operation and monitoring, advance fault early warning.

Performance Parameter	
Product model	HT314P2L1P52A
Cell specifications	3.2V 314Ah LFP
Cell series and parallel connection mode	1P 52S (1parallel 52 strings)
Energy	52.249kWh
Rated voltage	166.4Vdc
Weight	310kg
Temperature control mode	liquid cooling
Dimensions (D * W * H)	1105*750*232 mm
Rendering	

2.1.2 Bidirectional inverter (PCS)

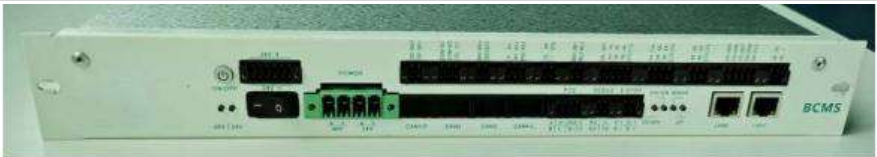
- ▶ With the functions of PQ, VF, VSG and SVG;
- ▶ Active power and reactive power independent adjustment, improve the power quality;
- ▶ Three-level topology, the highest conversion efficiency is> 98.5%;

- ▶ Support for multi-machine parallel connection, to meet the application scenarios of different configuration schemes;
- ▶ High dynamic response, full load switching response as low as 10ms;
- ▶ Accept the power grid dispatch.

Performance Parameter	
Product model	EPCS125
DC side parameters	
Maximum output	138W
DC voltage range	680 ~ 950 Vdc (three-phase four-wire)
DC maximum current	203A
Rated power grid voltage	400V
Maximal efficiency	>98.5%
AC side parameters	
Power rating	125 kW
Power grid voltage	400V+N+PE
Frequency	50/60Hz
Rated current	180A
Weight	65 kg
IP levels of protection	IP20
Dimensions / (D * W *H)	520*790*232 mm
Impression drawing	520*790*232 mm
Rendering	

2.1.3 Battery Management System (BCMS)

- ▶ Communication function: communication with the energy management system, BMU, PCS and other components;
- ▶ Calculation function: calculate the SOC, SOH, charge and discharge amount, statistical extreme value information of the cluster unit in the battery system;
- ▶ Acquisition function: collect the battery system voltage, current, ground insulation resistance, etc.;
- ▶ Control function: control the switching and closing of the battery system;
- ▶ Alarm protection: battery system abnormal alarm and protection;
- ▶ Equilibrium function: active balance to ensure the consistency of battery system cells;
- ▶ Temperature control strategy: intelligent temperature control;
- ▶ Storage function: real-time record of important logs, events, data collection, etc.

Performance Parameter	
Product model	HT-BCMS-V1
Working power supply	18~30Vdc
Maximum power	20W
Communication interface	CAN*2/ETH*2/RS485*4
Protocol	Default CAN2.0B, Modbus-TCP / IP
Communication Porter rate	250kbps(CAN)/100Mbps(LAN)/9600bps (485)
Dry contact input	7-ports, 0~12V
Dry contact output	30V / 2A, 1 port
Wet contact output	24V/2A , 5A
Battery cluster voltage	0~1500V (±0.2%FS)
Battery cluster current	0~400A (±0.5%FS) *2
Ground insulation resistance	0~65535kΩ (±5%RD±10kΩ)
Working temperature	-20~65℃
Working humidity	5%~95%
Size / (W*D*H)	408*180*53 mm
Rendering	

2.2 Intelligent combiner cabinet

The intelligent combiner cabinet is mainly composed of energy management unit (EMU), metering unit and environmental monitoring unit.

2.2.1 Energy Management Unit (EMUS)

- ▶ Communication function: use Ethernet communication with industrial and commercial energy storage machine, and support Ethernet communication externally;
- ▶ Metering function: metering the charge and discharge amount of tip, peak, flat and valley ;
- ▶ Display function: provide friendly human-machine interface, including but not limited to real-time data monitoring, historical data query, equipment control, parameter setting and other interfaces ;
- ▶ Management function: can collect and distribute data from industrial and commercial energy storage all-in-one machine, formulate control strategies to realize peak load shifting and demand management through charging and discharging of energy storage ;
- ▶ Scheduling function: Acceptable scheduling;
- ▶ Control function: the fault can be controlled and disconnected from the power grid ;
- ▶ Remote monitoring : Support ethernet data return to remote servers.

Performance Parameter	
Product model	HT-BAMS-V1
Working power supply	18~30V
Maximum power	25W
Communication interface	CAN*2/ETH*2/RS485*3
Protocol	Default, Modbus-TCP
Communication Porter rate	250kbps (CAN) /100Mbps(LAN)/9600bps(485)/19200bps(485)
Dry contact input	14-ports, 0~ 12V
Dry contact output	30V / 2A, 1 port
Wet contact output	24V / 2A, and the 5-way route
Battery cluster voltage collection	0~ 1500V (±0.2%FS)
Battery cluster	0~400A (±0.5%FS)*2
Current collection	
Ground insulation resistance	0~65535kΩ(±5%RD±10kΩ)
Working temperature	-20~65℃
Working humidity	5%~95%RH
Dimensions / (W * D * H)	482.6*215.8*86.5mm
Rendering	

Description of the external interface

The external interface of the energy storage system is shown in Figure 2.2-1show:

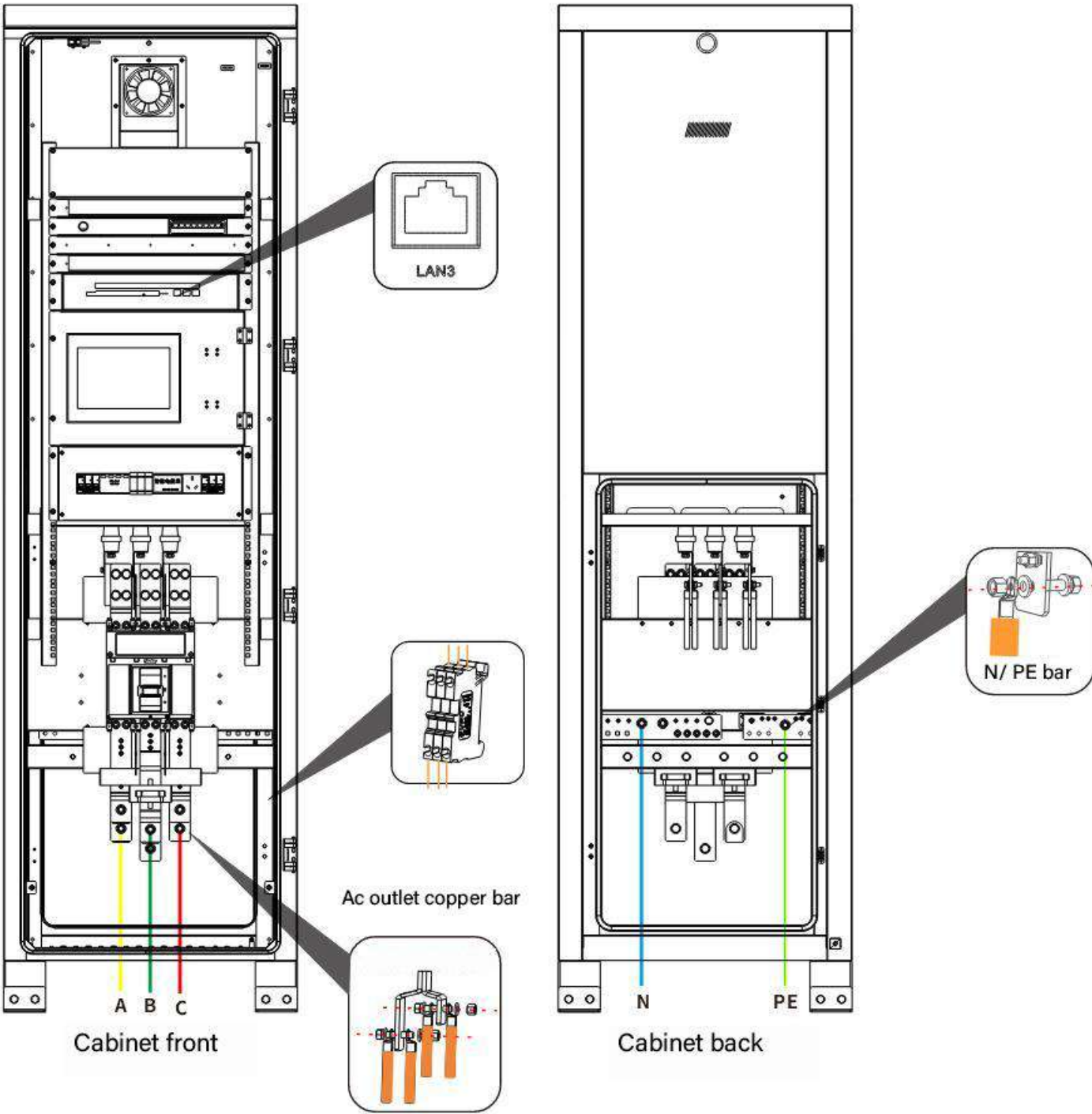


Figure 2.2-1 Schematic diagram of external interface

Table 2.2-1Description of external interface

Order	number	Name	Explain
1		A、B、C、N 、PE	The terminal point of A phase, B phase, C phase line, zero line and ground wire of A / B / C / N /PE terminal is $\varnothing$ 12
2		4A、4B、GT	External electricity meter 485 communication reserved contact point
3		LAN3	Ethernet communication reserved contact points