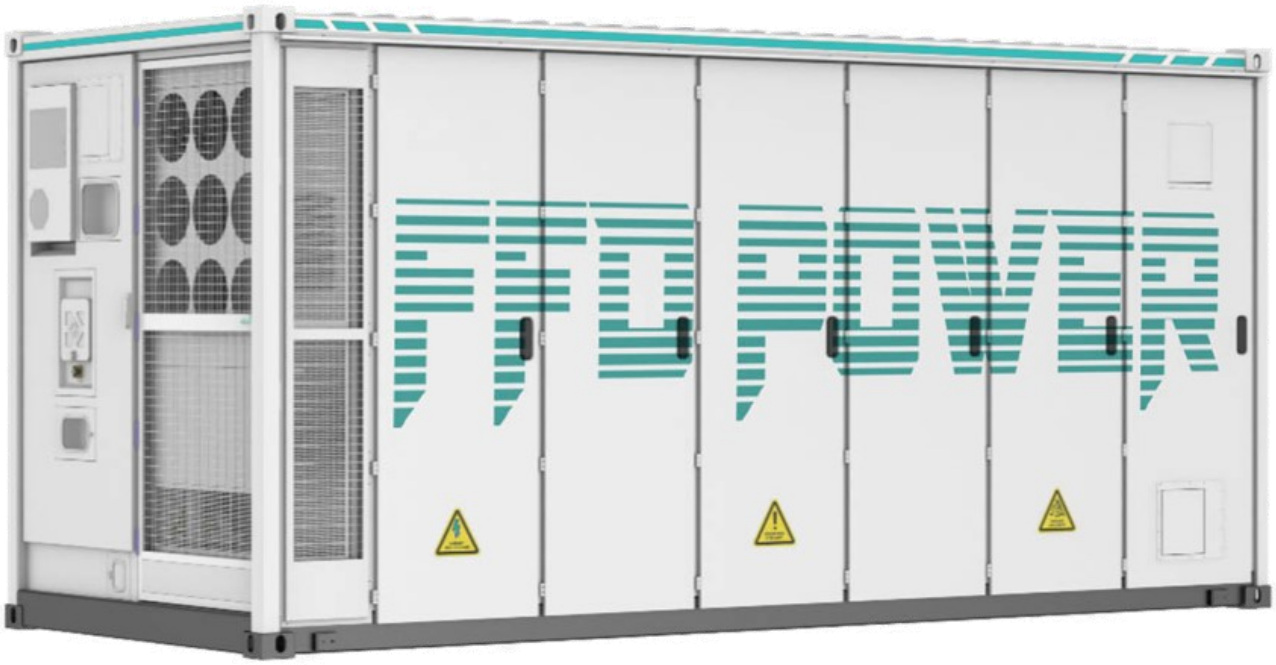
FFD POWER

Industrial and commercial energy storage container solutions — Galaxy5015

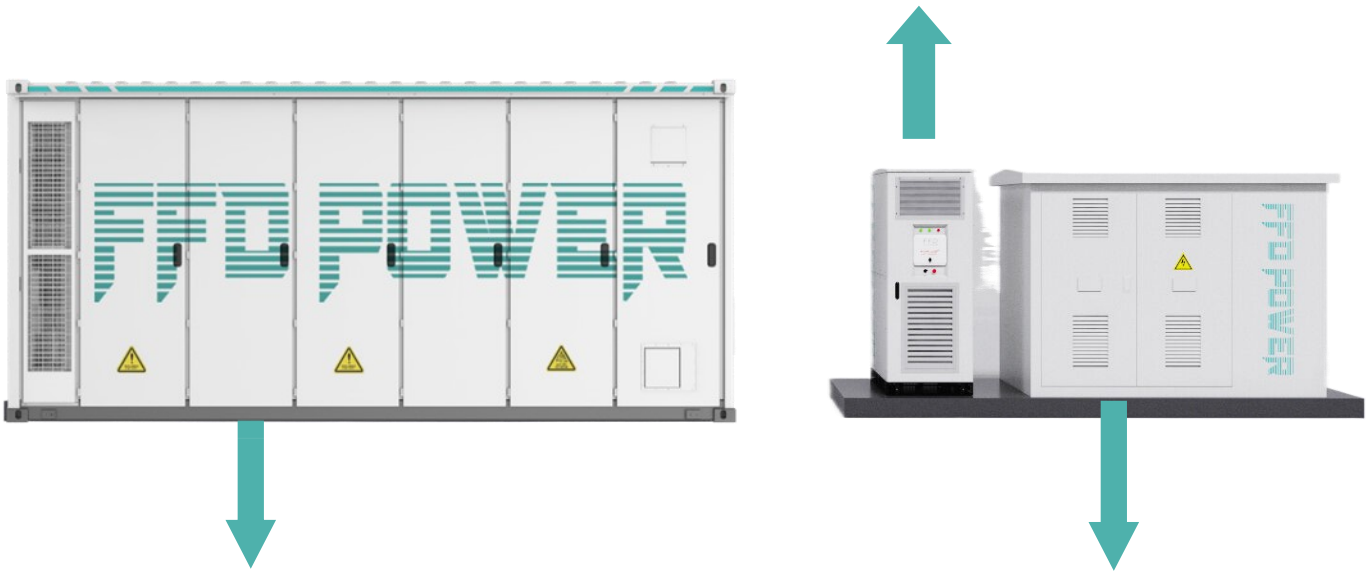


FFD Power Tec Co., LTD
Building One ,Ping An Industrial Park, Shuixiang Avenue，Ma Chong Town , Dongguan City ,China
www.ffdpower.com
info@ffdtec.com

Ang Li
Chief Executive Officer
+8613377773990
ang@ffdtec.com

Galaxy 5015 — 5MWH Battery with 1250KW PCS — 0.25C System

BCS1250K-B-HUD 1250KW Power Conversion System



GALAXY 5015，5MWH Energy Storage Container

TEBA 1250KVA Dry Type Boost/Isolation Transformer

A typical configuration of the FFD POWER Galaxy5015 Container BESS Solution includes a 5 MWh Energy Storage Container, a Power Conversion System (PCS) with output options of 1250 kW (0.25C), 1725 kW (0.34C), or 2500 kW (0.5C), and a compatible transformer cabinet matched to the PCS capacity (1250 kVA, 1725 kVA, or 2500 kVA). The transformer cabinet is designed to step up the 690V AC output voltage to 10 kV/20 kV for medium-voltage (MV) integration or step it down to 400V for low-voltage (LV) integration.

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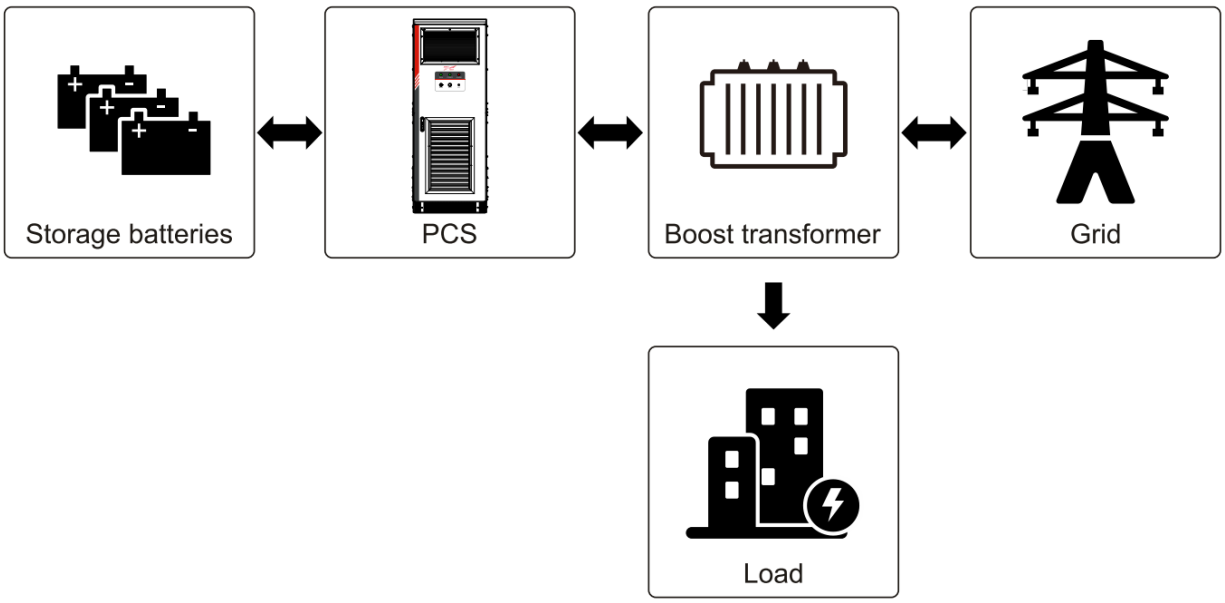
BESS — Solutions for Grid, Generation, and Consumer Applications



The Galaxy5015 BESS plays a pivotal role in three key grid scenarios: :

Generation Side: BESS is primarily utilized to smooth the output of renewable energy generation and to provide combined frequency regulation with conventional power generation units, thereby enhancing power quality. Additionally, it enables energy revenue optimization through peak-valley arbitrage.

Grid Side: In transmission and distribution grids, BESS performs critical functions such as peak shaving, load shifting, frequency regulation, emergency backup, and black start capabilities, ensuring grid stability and reliability.

Consumer Side: BESS offers diverse applications, including reducing energy costs through time-of-use pricing arbitrage, boosting transformer capacity during peak loads, serving as a backup power supply during outages, and functioning as a core part of a standalone power system to achieve energy independence.

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Key Features of the Galaxy 5015 Energy Storage Container

- The energy storage system employs independently developed and manufactured lithium iron phosphate batteries , featuring high safety, an exceptionally long cycle life, superior rate capability, and eco-friendly, pollution-free characteristics. It stands as the top-choice for energy storage applications.
- Using the battery management system(BMS) , this system can detect the voltage and temperature of individual cells in the battery pack in real time, the total current, total voltage of the battery pack, ambient temperature and other parameters, and has multiple protection functions to prevent battery overcharge and over-discharge, etc., ensuring system flexibility, reliability, and scalability for upgrades.
- CAN interface design reduces the complexity of advanced energy storage system application development.High modularity of container installation with a simple structure, facilitating easy installation and maintenance.
- Equipped with an intelligent liquid cooling temperature control system, achieving approximately 30% improvement in energy consumption efficiency compared to traditional air cooling. The maximum temperature difference of the megawatt-level battery system is ≤5°C.
- The container is equipped with PACK-level immersion and multiple fire extinguishing systems including fully submerged gas fire extinguishing system and water sprinkling extinguishing system. The container is also equipped with temperature sensors, smoke sensors, flammable gas detectors and automatic explosion-proof exhaust devices to achieve all-round detection and multiple protection for the battery container.

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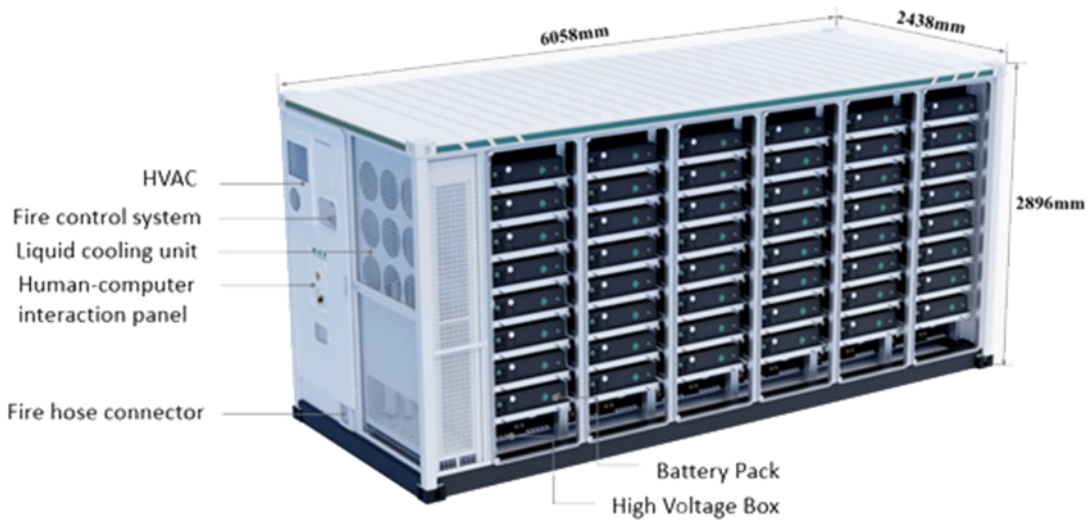
Internal Configuration of the 5MWh Energy Storage Container

The 5.015MWh liquid-cooled energy storage container is composed of the container body, battery system, temperature control system, fire protection system, electrical system, etc. The internal layout of the battery container product is shown below:



Galaxy5015 Battery Container Internal Configuration Table	
Battery Container Body	20 feet high box, 6058mm×2438mm×2896mm; Non-walk-in design; Protection level: IP55
Battery System	Using 314Ah lithium iron phosphate battery; The battery container consists of 12 battery racks, each battery rack contains four 1P104S battery packs and one high-voltage box; Battery management system included.
Temperature Control System	60kW (cooling capacity) liquid cooling unit, liquid cooling pipeline, coolant; 2.0kW (cooling capacity) ambient air conditioner, etc.
Fire Fighting System	PACK level immersion fire protection, gas fire protection, water fire protection, exhaust fan, 1 set of pressure relief device
Combiner Cabinet	DC1500V, 12 inputs and 2 outputs (6 Racks per Stack)

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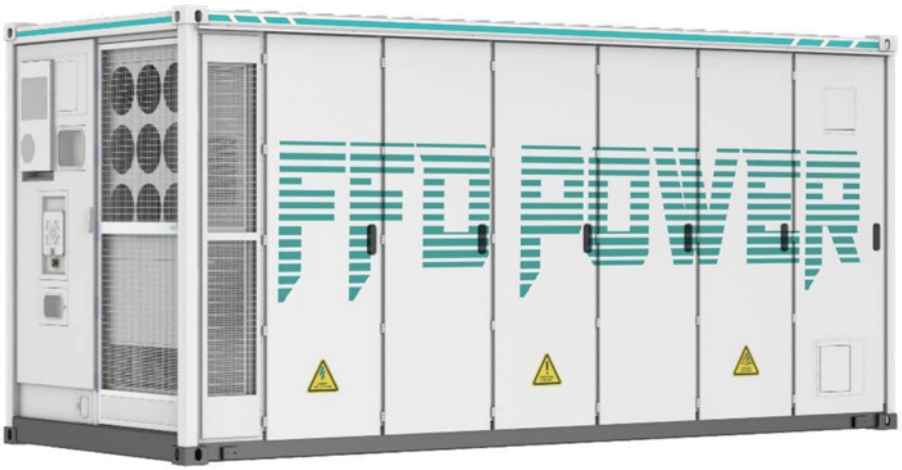
Galaxy5015 - 5MWH Energy Storage Container Technical Parameters



Energy storage system configuration parameter table	
MODEL	Galaxy 5015 (20GP)
System capacity (MWh)	5.015MWH
Capacity	314Ah
System Battery Configuration	2 Stack ×6 Rack ×4 Pack ×1P104S
Annual Availability Rate	≥98%
System efficiency	≥86%
Rated DC voltage (V)	1331.2V
DC bus voltage range (V)	1164.8~1497.6V
Communication method	Ethernet, CAN 2.0, RS485
Protection level	IP55 (Battery Room)/IP55(Electrical Room)
Working temperature (℃)	-30℃~45℃
Maximum altitude allowed (m)	≤2000 (3000m optional)
Fire Fighting System	Fire alarm, Perfluorohexanone(C6F12O)/ Heptafluoropropane (C3HF7)/Aerosol
Size (L*W*H, mm)	6058×2438×2896mm
Weight	≈44t

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Galaxy5015 - 5MWH Battery Cell Technical Parameters

The battery cells utilize lithium iron phosphate cells specifically developed for energy storage with the model 314Ah. All cells are of Grade A quality. At an ambient temperature of 25°C and a charge/discharge rate of 0.5C/0.5C, the cycle life of the cells is ≥8000 cycles.

Battery Cell technical parameters	
Battery Model	314Ah
Battery materials	LFP
Battery grade	New A grade
Cell capacity (Ah)	314AH
Rated Voltage	3.2 V
Voltage range	2.5V~3.65V
Charging current	157A
Discharging current	157A
DC internal resistance	0.3mΩ＜R＜0.5mΩ
Charging operating temperature range (℃)	0℃~55℃
Discharging operating temperature range (℃)	-30℃~60℃
Cycles	≥12000 0.5P@25±2℃ 90%DOD, 70%EOL
Size (L*W*H, mm)	(174.8±0.5)×(71.95±0.5)×(207.1±0.5)mm
Weight	5.76±0.2kg

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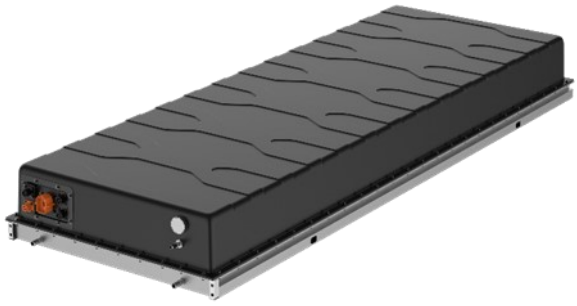
Galaxy 5015 — 5MWH Battery Pack Technical Parameters



The battery pack consists of four 1P26S sub-modules connected in series to form 1P104S , with a total energy capacity of 104.4 kWh and a nominal voltage of 332.8V.

Battery Pack technical parameters	
Arrange in groups	1P104S
Rated Capacity	314AH
Rated Voltage	332.8V
Rated Energy	104.4KWH
Standard charging conditions	Constant power (CP), constant current (CC), constant voltage (CV)
	Power: 52.2KW (0.5CP)
	Termination voltage: 374.4V
Standard discharging conditions	Constant power (CP), constant current (CC),
	Power: 52.2KW (0.5CP)
	Termination voltage: 291.2V
Cycles	≥12000 0.5P@25±2℃ 90%DOD, 70%EOL
Charge and discharge rate	≤0.5P
Cooling Method	Liquid Cooling
Working temperature	-30～60°C
Working Humidity	5% ~ 95%
Weight	680±10kg
Dimensions (L*W*H)	(785±1.5)×(2192±1.5)×(240±1.5)mm

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Galaxy 5015— 5MWH Battery Cluster Technical Parameters

Each battery shelf is composed of two electrical racks, each containing four battery packs connected in series, and the high-voltage box for each rack is located at the bottom of the mechanical structure as a rack-level control module.

Battery cluster technical parameters	
Cell type	314Ah
Combination method	1P416S
Battery cluster nominal voltage (V)	1331.2
Battery cluster voltage range (V)	1164.8～1497.6
Rated capacity (Ah)	314
Battery cluster nominal capacity (kWh)	418
Rated charge and discharge rate	0.5P
Working temperature range (℃)	Charge：0℃～55℃ Discharge：-30℃～60℃
Humidity(%)	5% ~ 95%
Cooling method	Liquid Cooling

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0.25C SYSTEM BCS1250K-B-HUD

1250KW Power Conversion System Technical Parameters

Power Conversion System Technical Parameters	
Item	BCS1250K-B-HUD
DC Input	
Max. DC voltage	1500Vdc
DC voltage range	1000-1500Vdc
Max. DC current	1543A
Soft Start	YES
AC Output (On-Grid)	
Rated AC output power	1250KW@45℃
Max. AC output power	1375kVA
Rated grid-tied voltage	690Vac 3P3W+PE
Grid voltage range	-15%~10% (settable)
Grid frequency range	50Hz
Max. output current	1151A
Power factor	>0.99 (at rated power)
Adjustable power factor	1 (leading)~1 (lagging)
THDi	< 3% (at rated power)

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Ang Li
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FFD POWER

BCS1250K-B-HUD

1250KW Power Conversion System Technical Parameters

AC Output (Off-Grid)	
Rated AC output voltage	690Vac
Output voltage accuracy	1%
Max. output current	1151A
THDu	< 3% (liner load)
Rated output frequency	50Hz/60Hz
Overload capability	110% overload
PCS efficiency	
Max. efficiency	99%
General data	
Isolation mode	None
IP rating	IP55
Operation temperature	-35ºC~60ºC (>45ºC derating)
Relative humidity	0~100% (no condensation)
Cooling type	Intelligent forced air cooling
Dimensions (W×H×D)	860×2270×1725mm
Weight	1500Kg
Altitude	4000m (>2000m customized)
Display	Touch screen
Communication protocol	Modbus-RTU, Modbus-TCP, IEC61850, IEC104
Communication interface	RS485, Ethernet
Compliance	IEC/EN 62477-1, EN IEC 61000-6-2/4, EN 50549-2, EN 50549-10, NC RfG, IEC 62116, IEC 61727
✦ Specification indexes may be subject to changes without further notice	

The transformer type and transformer parameters need to be customized according to the specific project, so the transformer parameters are not fixed values. Specific parameters will be issued separately according to specific needs.

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ang@ffdtec.com

0.34C SYSTEM BCS1725K-B-HUD

1725KW Power Conversion System Technical Parameters

Power Conversion System Technical Parameters	
Item	BCS1725K-B-HUD
DC Input	
Max. DC voltage	1500Vdc
DC voltage range	1000-1500Vdc
Max. DC current	1936A
Soft Start	YES
AC Output (On-Grid)	
Rated AC output power	1725KW@45℃
Max. AC output power	1897.5kVA
Rated grid-tied voltage	690Vac 3P3W+PE
Grid voltage range	-15%~10% (settable)
Grid frequency range	50Hz
Max. output current	1588A
Power factor	>0.99 (at rated power)
Adjustable power factor	1 (leading)~1 (lagging)
THDi	< 3% (at rated power)

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info@ffdtec.com

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ang@ffdtec.com

FFD POWER

BCS1725K-B-HUD

1725KW Power Conversion System Technical Parameters

AC Output (Off-Grid)	
Rated AC output voltage	690Vac
Output voltage accuracy	1%
Max. output current	1151A
THDu	< 3% (liner load)
Rated output frequency	50Hz/60Hz
Overload capability	110% overload
PCS efficiency	
Max. efficiency	99%
General data	
Isolation mode	None
IP rating	IP55
Operation temperature	-35ºC~60ºC (>45ºC derating)
Relative humidity	0~100% (no condensation)
Cooling type	Intelligent forced air cooling
Dimensions (W×H×D)	860×2270×1725mm
Weight	1500Kg
Altitude	4000m (>2000m customized)
Display	Touch screen
Communication protocol	Modbus-RTU, Modbus-TCP, IEC61850, IEC104
Communication interface	RS485, Ethernet
Compliance	IEC/EN 62477-1, EN IEC 61000-6-2/4, EN 50549-2, EN 50549-10, NC RfG, IEC 62116, IEC 61727
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Chief Executive Officer
+8613377773990
ang@ffdtec.com

0.5C SYSTEM BCS2500K-B-HUD

2500KW Power Conversion System Technical Parameters

Power Conversion System Technical Parameters	
Item	BCS12500K-B-HUD
DC Input	
Max. DC voltage	1500Vdc
DC voltage range	1000-1500Vdc
Max. DC current	3086A
Soft Start	YES
AC Output (On-Grid)	
Rated AC output power	2500KW@45℃
Max. AC output power	2750kVA
Rated grid-tied voltage	690Vac 3P3W+PE
Grid voltage range	-15%~10% (settable)
Grid frequency range	50Hz
Max. output current	2302A
Power factor	>0.99 (at rated power)
Adjustable power factor	1 (leading)~1 (lagging)
THDi	< 3% (at rated power)

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FFD POWER

BCS2500K-B-HUD

2500KW Power Conversion System Technical Parameters

AC Output (Off-Grid)	
Rated AC output voltage	690Vac
Output voltage accuracy	1%
Max. output current	2302A
THDu	< 3% (liner load)
Rated output frequency	50Hz/60Hz
Overload capability	110% overload
PCS efficiency	
Max. efficiency	99%
General data	
Isolation mode	None
IP rating	IP55
Operation temperature	-35ºC~60ºC (>45ºC derating)
Relative humidity	0~100% (no condensation)
Cooling type	Intelligent forced air cooling
Dimensions (W×H×D)	860×2270×1725mm *2
Weight	3000Kg
Altitude	4000m (>2000m customized)
Display	Touch screen
Communication protocol	Modbus-RTU, Modbus-TCP, IEC61850, IEC104
Communication interface	RS485, Ethernet
Compliance	IEC/EN 62477-1, EN IEC 61000-6-2/4, EN 50549-2, EN 50549-10, NC RfG, IEC 62116, IEC 61727
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