

SOFAR

Battery Energy Storage System

**PowerMaster &
PowerMagic**

SOFAR INTRODUCTION

SOFAR is a global leading provider of all-scenario solar PV and energy storage solutions and committed to be the leader of digital energy solutions. SOFAR supports the transition to renewable energy through a comprehensive portfolio including PV inverters range from 1 kW to 350 kW, hybrid inverters range from 3 kW to 20 kW, battery storage systems, C&I and utility ESS solutions, microinverter system and SOFAR Monitor for residential, commercial & industrial, and utility-scale applications.

Founded in 2013, SOFAR has always insisted on independent innovation, established a global R&D network with three R&D centers and over 25% of its workforce assigned to R&D, thus gradually establishing the holistic technology and product R&D system.

SOFAR always insists on globalization thinking and localization action since its establishment and now has two global manufacturing bases of 16 inverter production lines and 4 battery production lines, with an annual production capacity of 14GW PV & storage inverters & 1 GWh batteries. It has built an extensive service network of over 20 branch offices worldwide, such as the United Kingdom, Poland, Germany, South Korea, Pakistan, Australia, and so on. By the end of 2024, SOFAR had shipped over 37 GW inverters to more than 100 countries and regions around the world.

As the world's fastest-growing solar energy brand, SOFAR stands firmly among the mainstream solar energy brands with a compound annual growth rate of over 100% from 2020 till 2022. Due to the abilities in cutting-edge solar technologies, SOFAR has achieved China "CQC" certification, Chinese Top 5 String Inverter Brand, TOP5 Global Hybrid Inverter Provider and and entitled by EuPD as TOP Brand PV Inverter in India, Poland, Australia, the U.K., Italy and Brazil.

Looking forward, SOFAR will adhere to its mission of "Technology Drives Green Energy" and its value of Virtue & Integrity, Collaboration & Effectiveness to build its core competitiveness in independent innovation in Net-Zero era, expecting to accelerate the global clean energy transition, leveraging its leading solar and energy storage products and solutions.

Learn more about SOFAR by visiting: <https://www.sofarsolar.com/>.

PRODUCT PORTFOLIO

Utility BESS PowerMaster

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- Battery container
 - Smart String PCS
 - SP3545K-MV
 - SP7100K-MV
-

C&I ESS PowerMagic (400V)

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- Energy Storage Cabinet
- Battery Cabinet
- 400V Junction Cabinet
- Backup Cabinet
- EBI 125K-R
- EBI 125K-R-G2

Utility ESS

POWER MASTER



Utility ESS –PowerMaster

LESS LCOS

High Efficiency
and Flexibility

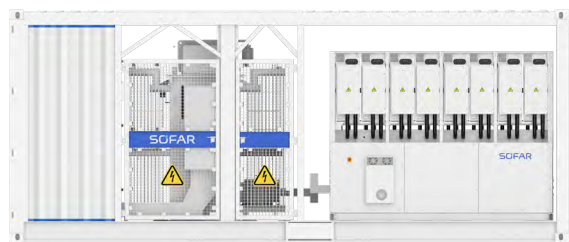
Ultimate Safety

Intelligent Stability

Utility-Scale Energy Storage System Solution



Battery container



MV station with PCS

Air-Liquid Mixing

Liquid-cooling+ Air-cooling
Intelligent Heat Dissipation



Modular Design

One unit malfunction
will not affect others
Easy O&M, Lower OPEX



Suitable For Large Cells

Higher Energy Density

3.93 MWh

3+2 Ultimate Safety Design

Cell-Level
Cabin-Level
Water Firefighting level

Combustible Gas Emission
Explosion Vent Design



Container- Combined Layout

Support 20-foot containers
installed side by side,
the land area reduced by
more than 30 %

High conversion efficiency in the full power range

Smart coordination strategy to ensure high efficiency
performance of PCS full power-range



Battery Container

ESS-3M44LA-BD1



Product Advantages

- Highly integrated & all pre-assembled for easy transport and O&M
- Liquid-cooling+ Air-cooling, to realize intelligent heat
- Dissipation and Anti-Condensation design
- 3+2 ultimate safety design for protection of property and individuals
- Suitable for larger cells to achieve high energy density
- Support 20-foot containers installed side by side, the land area reduced by more than 30 %
- IP 55 outdoor cabinet and optional C5 anti-corrosion

BESS Specifications

Cell Type	LFP/280Ah
Nominal Capacity (BOL)	3.44MWh
DC operating voltage range	960-1401.6V
Recommended Working Voltage Range	1036.8-1363.2V
Charge and Discharge Rate	≤0.5P
Operating Ambient Temperature	-30℃~55℃
Working Environment Relative Humidity	0~100%(No Condensation)
Working Altitude	≤4000m
Cooling Method	Air Cooling + Liquid Cooling
Safety design	Perfluoro Gas Firefighting (Cell Level & Cabin Level) + Backup Water FireFighting+Combustible Gas Emission + Explosion Venting Design
Communication Interface	Ethernet/CAN/RS485
Communication Protocol	IEC61850, IEC104, CAN2.0, Modbus
Degree of Protection	IP55
Anti-Corrosion Grade	C4 (C5 optional)
Dimensions (W×D×H)	6058×2438×2896mm
Weight	~34T
Standards	GB/T36276, IEC62619, UL1973, UL9540A, UN3536

PACK Specifications

Model	S1G-LP430
Cell Type	LFP
Series and Parallel Mode	1P48S
Nominal Capacity/Energy	280Ah/43kWh
Rated Voltage	153.6V
DC operating voltage range	120~175.8V
Recommended Working Voltage Range	129.6~170.4V
Charge and Discharge Rate	≤0.5P
Working Temperature	-30℃~55℃
Working Environment Relative Humidity	0~100%(No Condensation)
Working Altitude	≤4000m
Cooling Method	Liquid Cooling
Fire Fighting Method	Cell-Level Firefighting (Perfluoro)
Communication Interface	CAN
Degree of Protection	IP67
Dimensions (W×D×H)	765×1050×245mm
Weight	≤310kg
Standards	GB/T36276, IEC62619, UL1973, UN38.3

Rack Specifications

Nominal Energy	344kWh
Configuration	1P384S
Rated Voltage	1228.8V
DC operating voltage range	960~1401.6V
Recommended Working Voltage Range	1036.8~1363.2V
Charge and Discharge Rate	≤0.5P
Working Temperature	-30℃~55℃
Working Environment Relative Humidity	0~100%(No Condensation)
Working Altitude	≤4000m
Cooling Method	Liquid Cooling
Fire Fighting Method	Perfluoro Gas Firefighting
Communication Interface	CAN, Dry Contact
Dimensions (W×D×H)	1050×1105×2400mm
Weight	≤3.2T
Standards	GB/T36276, IEC62619, UL1973

* All specifications are subject to change without notice.

Smart String PCS



Product Advantages

High Yield

- Support 1500Vdc battery system, high conversion efficiency in full power band.
- Modular design, easy installation, easy maintenance, lower OPEX.
- Intelligent air cooling, no derating at 45°C.

Grid Friendly

- Supports IEC61850 and fast power response.
- Supports active and reactive power response and four-quadrant operation.
- Supports high and low voltage ride-through to support the grid.

Safe and Reliable

- Module IP66 protection level, system IP55.
- Modularized design, high system availability.



Model		EBI 1725K
DC Side		
Maximum DC Voltage		1500 V
DC Voltage Working Range		1000 ~ 1500 V
Maximum DC Current		875A×2
AC Side (Grid-on)		
Rated AC Power		1725kW
Maximum AC Active Power		1898kW
Maximum AC Apparent Power		1898kVA
Rated AC Current		1443A
Maximum AC Current		1588A
Rated Grid Voltage		690V
Grid Voltage Range		586.5~759V
Rated Grid Frequency		50/60Hz
Grid Frequency Range		45~55Hz/55~65Hz
Power Factor		-1~1, Adjustable
Current Total Harmonic Distortion (@Rated Power)		< 3%
System Characteristics		
Working Temperature		-35℃~60℃
Relative Humidity		0~100%, no condensation
Noise level		< 80dB@1m
SPD		DC: type II, AC: type II
Maximum Working Altitude		4000m
Cooling method		Smart air forced cooling
Communication port		CAN, RS485, Ethernet
Communication protocol		CAN2.0, Modbus RTU, Modbus TCP, IEC 61850, IEC104
Degree of Protection		Module: IP66, System: IP55
Mechanical Parameters		
Dimensions (W×H×D)		2790×2115×975 mm
Weight		< 1500kg
Standards		IEC/EN 61000-6-2/4, IEC 62477-1

* All specifications are subject to change without notice.

SP3545K-MV



Product Advantages

Smart O&M

- Modular PCS, easy O&M and more generation
- OTA update, less OPEX

Lower CAPEX

- Integrated PCS, MV transformer, RMU and auxiliary power, lower transportation and installation cost
- Oil leakage tank integrated, lower initial investment

Environment adaptation

- IP55 ingress protection, easy for outdoor installation
- No detating up to 45°C, suitable for high-temp environment
- C5 anti-corrosion degree optional, adjust to harsh applications

Grid support

- Compliance with standards: IEC 62477-1, IEC 62271-202, IEC 62271-200, IEC 60076 and grid code
- Support L/HVRT, fast active/reactive power response



Model

SP3545K-MV

DC Side

Max. DC Voltage	1500V
DC Voltage Range	1000~1500V
Max. DC Current	875A×4

AC Side (Grid-on)

AC Output Power	3545kVA@45℃/3900kVA@35℃
Max. AC Current	2966A@45℃/3263A@35℃ (690V)
PCS Nominal AC Voltage	690V
PCS AC Voltage Range	586.5 ~ 759V
Nominal Frequency / Frequency Range	50Hz/45 ~ 55Hz (60Hz/55 ~ 65Hz)
Harmonic (THD)	< 3% (At nominal power)
Power Factor	-1~1 (Adjustable)
Feed-in Phases / AC Connection	3/3

MV Transformer

Transformer Rated Power	3545kVA
Transformer Max. Power	3900kVA
LV/MV Voltage	0.69kV/ (6~37) kV
Transformer Vector	Dy11
Transformer Cooling Type	ONAN
Winding Material	Al (Cu optional)
Oil Type	Mineral oil (PCB free) or degradable oil on request

Protection

PCS Output Protection	Circuit breaker+Fuse
AC Output Protection	Circuit breaker
Surge Protection	Type II+Type I (PCS)
Overheat Protection	Yes
Overcurrent Protection	Yes
Grid Monitoring / Ground Fault Monitoring	Yes/Yes
Insulation Monitoring	Yes
Transformer Protection	Yes (Includes oil temperature, oil level, pressure relief, gas relays)

System Parameters

Operating Temperature	-35℃~60℃ (Derated above 45℃)
Working Environment Relative Humidity	0~100% (No condensation)
Battery Expansion	Max 5h duration hours BESS (Max 5 ESS-3M44LA-BD1 connected)
Cooling Method	Temperature controlled forced air cooling
Protection Class	IP55
Anti-corrosion Grade	C4-M/C5 (Optional)
Max. Working Altitude	4000m (more than 2000m needs to be customized)
Communication	RS485, CAN, Ethernet
Compliance	IEC 62477-1, IEC 62271-202, IEC 62271-200, IEC 60076
Dimensions (W×D×H)	7000×2438×2896mm
Weights	< 20t

* All specifications are subject to change without notice.

SP7100K-MV



Product Advantages

Smart O&M

- Modular PCS, easy O&M and more generation
- OTA update, less OPEX

Lower CAPEX

- Integrated PCS, MV transformer, RMU and auxiliary power, lower transportation and installation cost
- Oil leakage tank integrated, lower initial investment

Environment adaptation

- IP55 ingress protection, easy for outdoor installation
- No detating up to 45°C, suitable for high-temp environment
- C5 anti-corrosion degree optional, adjust to harsh applications

Grid support

- Compliance with standards: IEC 62477-1, IEC 62271-202, IEC 62271-200, IEC 60076 and grid code
- Support L/HVRT, fast active/reactive power response



Model		SP7100K-MV
DC Side		
Max. DC Voltage		1500V
DC Voltage Range		1000~1500V
Max. DC Current		875A*8
AC Side (Grid-on)		
AC Output Power		7100kVA@45℃/7810kVA@35℃
Max. AC Current		2×2971A@45℃/2×3268A@35℃ (690V)
PCS Nominal AC Voltage		690V
PCS AC Voltage Range		586.5~759V
Nominal Frequency / Frequency Range		50Hz/45~55Hz
Harmonic (THD)		< 3% (At nominal power)
Power Factor		-1~1 (Adjustable)
Feed-in Phases / AC Connection		3/3
MV Transformer		
Transformer Rated Power		7100kVA
Transformer Max. Power		7810kVA
LV/ MV Voltage		0.69kV/ (6.6~37) kV
Transformer Vector		Dy11y11
Transformer Cooling Type		ONAN
Winding Material		Al (Cu optional)
Oil Type		Mineral oil (PCB free) or degradable oil on request
Protection		
PCS Output Protection		Circuit breaker+Fuse
AC Output Protection		Circuit breaker
Surge Protection		Type II+Type I (PCS)
Overheat Protection		Yes
Overcurrent Protection		Yes
Grid Monitoring / Ground Fault Monitoring		Yes/Yes
Insulation Monitoring		Yes
Transformer Protection		Yes (Includes oil temperature, oil level, pressure relief, gas relays)
System Parameters		
Operating Temperature		-35℃~60℃ (Derated above 45℃)
Working Environment Relative Humidity		0~100% (No condensation)
Battery Expansion		Max 5h duration hours BESS (Max 10 ESS-3M44LA-BD1 connected)
Cooling Method		Temperature controlled forced air cooling
Protection Class		IP55
Anti-corrosion Grade		C4-M/C5 (Optional)
Max. Working Altitude		4000m (more than 2000m needs to be customized)
Communication		RS485, CAN, Ethernet
Compliance		IEC 62477-1, IEC 62271-202, IEC 62271-200, IEC 60076
Dimensions (W×D×H)		12192×2438×2896mm
Weights		< 33t

* All specifications are subject to change without notice.

C&I ESS

POWER MAGIC



C&I ESS –PowerMagic

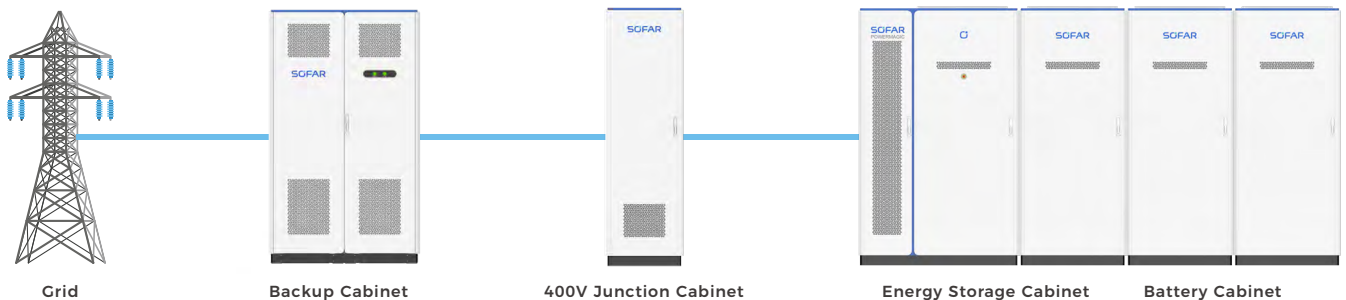
– AC 400V

Efficient & Flexible

Lower LCOS

Ultimate safety

Smart Management



Lower LCOS

All-in-one design, High energy density
Plug-and-play design, quick installation & less cost

Efficient & Flexible

Modular design supports parallel connection
and easy system expansion
Grid-On/Off auto-switch function, easy O&M

Ultimate Safety

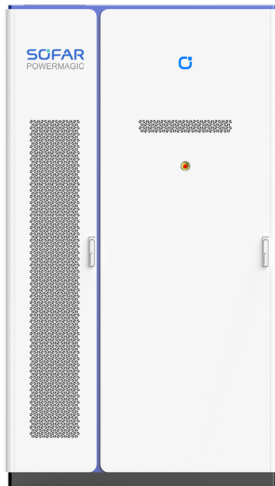
3+2 protection design enables ultimate safety
Electricity and liquid separation reduces system risks

Smart Management

Integrated EMS enables multi-scenario energy
management
Fast state monitoring and faults record enables
pre-alarm and faults locating

Energy Storage Cabinet

Product Advantages



- Modular design, flexible system expansion
- Grid-on/off auto-switch
- Electrical cables and liquid pipes separated design
- 3 Level FSS+ Flammable gas emission & Explosion vents
- Liquid cooling + Anti-condensation design
- Multi-function EMS integrated



Model	ESS-258kLA-SA1	ESS-215kLA-SA1
DC Side		
Battery type	LFP/280Ah	
Rated energy	258kWh (6Pack)	215kWh (5Pack)
Rated Voltage	921.6V	768V
DC operating voltage range	734.4V~1036.8V DC	612V~864V DC
Recommend DC voltage range	777.6V~1022.4V DC	648V~852V DC
AC side		
AC Voltage	400V AC	
Rated power	125kW	
Maximum AC power	138kW	
Maximum AC current	198A	
Rated grid frequency	50Hz/60Hz	
Power factor	-1~1	
System Parameters		
Operating ambient temperature	-30℃~50℃ (Derating above 45℃)	
Storage ambient temperature	-30℃~60℃	
Operating relative humidity	0~100% (No condensation)	
Cooling type	Liquid cooling	
Fire suppression	1.Battery cell level (perfluorohexanone) 2.Canibet level (perfluorohexanone or aerosol) 3. Water fire suppression	
System configuration	AC side: Maximum 6 Energy storage cabinets in parallel DC side: Maximum 3 Battery cabinets per Energy storage cabinet	
Grid-On/Off	Auto-switch (With backup cabinet)	
Cabinet connection	Plug-in connector	
Dimension(W×D×H)	1450×1350×2200mm	
Weight	< 2.8T	< 2.5T
Ingress protection rating	IP55	
Anti-corrosion	C4 (C5 optional)	
SPD	AC: type II	
Operating altitude	≤4000m (Derating above 2000m)	
Noise level	≤60dB	
Installation	Ground mounting	
Communication interface	Ethernet, Dry connect	
Standard	IEC/EN 61000-6-2/4 , IEC62477-1 , IEC62619, UN38.3, UL9540A, UL1973	

* All specifications are subject to change without notice.

Battery Cabinet



Product Advantages

- Modular design, flexible system expansion
- Electrical cables and liquid pipes separated design
- 3 Level FSS + Flammable gas emission & Explosion vents
- Liquid cooling + Anti-condensation design



Model	ESS-258kLA-BD1	ESS-215kLA-BD1
Battery type	LFP/280Ah	
Rated energy	258kWh (6Pack)	215kWh (5Pack)
Rated Voltage	921.6V	768V
DC operating voltage range	734.4V~1036.8V DC	612V~864V DC
Recommend DC voltage range	777.6V~1022.4V DC	648V~852V DC
Operating ambient temperature	-30℃~50℃ (Derating above 45℃)	
Storage ambient temperature	-30℃~60℃	
Operating relative humidity	0~100% (No condensation)	
Cooling type	Liquid cooling	
Fire suppression	1.Battery cell level (perfluorohexanone) 2.Canibet level (perfluorohexanone or aerosol) 3. Water fire suppression	
Communication interface	CAN, RS485	
Cabinet connection	Plug-in connector	
Dimension(W×D×H)	1000×1350×2200mm	
Weight	< 2.5T	< 2.2T
Ingress protection rating	IP55	
Anti-corrosion	C4 (C5 optional)	
Operating altitude	≤4000m (Derating above 2000m)	
Installation	Ground mounting	
Standard	IEC62619, UN38.3, UL9540A, UL1973	

* All specifications are subject to change without notice.

400V Junction Cabinet



Product Advantages

- Non-Walk-In design with less footprint
- Easy installation and O&M
- Support installation against wall
- Maximum 6 Energy Storage Cabinets in Parallel



Model		PAC-750K-H1
Input side		
Rated operating voltage		400V AC, Three-phase four-wire
Rated current		6×180A (max 6 cabinets in parallel)
Maximum current		Max 1188A
Rated input power		6×125kW
System Parameters		
Operating ambient temperature		-30℃~50℃ (Derating above 45℃)
Storage ambient temperature		-30℃~60℃
Relative humidity		0~100% (No condensation)
Maximum operating altitude		≤2000m (Customized if above)
Ingress protection rating		IP55
Anti-corrosion		C4 (C5 optional)
Wire inlet & outlet		Bottom inlet, bottom outlet
Dimension(W×D×H)		700×700×2182mm
Weight		< 300kg
Installation		Ground mounting
Standard		IEC/EN 61439-2

* All specifications are subject to change without notice.

Backup Cabinet



Product Advantages

- Grid-on/off auto-switch
- Pre-assembled design, less on-site renovation
- Easy installation and O&M



Model		PAC-750K-W1
Rated voltage		400V AC
Rated current		2160A
Rated frequency		50Hz/60Hz
Grid-On/Off		Auto-switch
Ingress protection rating		Enclosure IP4X, Internal cubicle IP2X (indoor installation)
Operating ambient temperature		-15℃~40℃ (indoor installation)
Storage ambient temperature		-30℃~60℃
Dimension(W×D×H)		1300x800×2200mm
Maximum operating altitude		≤4000 (Standard ≤ 2000m, customized above 2000m)
Communication interface		RS485
Standard		IEC/EN 61439-2

* All specifications are subject to change without notice.

EBI 125K-R



Product Advantages

High Yield

- Advanced three-level technology, max. efficiency 98.3%
- Effective forced air cooling, no derating up to 45°C
- Rack level management, more battery usable energy

Flexible & Reliable

- Bidirectional power conversion system with full four-quadrant operation
- Modular design, easy for design & maintenance
- IP66 protection degree, suitable for outdoor installation

Grid Support

- Compliant with CE, IEC 62477 and grid regulations
- L/HVRT, Fast active/reactive power response



Model		EBI 125K-R
DC Side		
Maximum DC Voltage		1200 V
DC Voltage Working Range		600~1200 V
DC Voltage Full-power Working Range		650~1100 V
Maximum DC Current		220A
AC Side (Grid-on)		
Rated AC Power		125 kW
Maximum AC Active Power		138 kW
Maximum AC Apparent Power		138 kVA
Rated AC Current		180 A
Maximum AC Current		198 A
Rated Grid Voltage		400V 3W+PE
Grid Voltage Range		340~440V
Rated Grid Frequency		50/60 Hz
Grid Frequency Range		45~55Hz/55~65Hz
Power Factor		-1~1
Current Total Harmonic Distortion (@Rated Power)		<3%
System Parameters		
Working Temperature		-35℃~60℃, >45℃ derating
Relative Humidity		0~100%, no condensation
Noise level		<75 dB
SPD		DC: type II, AC: type II
Maximum Working Altitude		4000m, >2000m derating
Cooling method		Temperature controlled forced air cooling
Communication port		CAN, RS485, Ethernet
Degree of Protection		IP66
Mechanical Parameters		
Dimensions (W×H×D)		740×265×850mm (without terminals)
Weight		<93 kg

* All specifications are subject to change without notice.

EBI 125K-R-G2



Product Advantages

High Yield

- Advanced three-level topology, max. efficiency 98.8%
- Smart air cooling design, no derating up to 50°C
- BPU and BCU integrated to save system cost
- 3P4W output in off-grid mode, support single phase load w/o isolation transformer

Grid Support

- Support active and reactive power response with four-quadrant operation
- Power response time less than 30ms
- HVRT/LVRT to support the grid

Flexible & Reliable

- IP66 protection degree, suitable for outdoor installation
- With intelligent control algorithm, support parallel operation and flexible capacity



Model		EBI 125K-R-G2
DC Side		
Maximum DC voltage		950V
DC voltage working range		600~950V
DC voltage full-power working range		650~950 V
Maximum DC current		217A
BPU integration (W/ BPU)		BCU, DC load switch, DC relays, Hall sensors integrated
AC Side (Grid-tied)		
Rated AC active power		125kW
Maximum AC active power		138kW
Maximum AC apparent power		138kVA
Rated AC current		180A
Maximum AC current		198A
Rated grid voltage		400V, 3P+N
Grid voltage range		323~460V
Rated grid frequency		50/60 Hz
Grid frequency range		45~55Hz/55~65Hz
Power factor		-1~1, adjustable
Current THD		<1.5% @Rated Power
AC Side (Off-grid)		
Rated output power		125kVA
Maximum output power		138kVA
Rated output current		180A
Maximum output current		198A
Rated output voltage		230/400V, 3P+N
Rated output frequency		50/60Hz
Unbalanced load capability		100% unbalanced load
Power factor		0.8~1, leading or lagging
Overload capacity		120%,1min; 150%, 10s, 160%, 2s @35°C
System Characteristics		
Working temperature		-35°C ~ 60°C, >50°C derating
Relative humidity		0~100%, no condensation
Noise level		<68dB @1m, 25°C , full-power
SPD		DC: type II, AC: type II
Maximum working altitude		4000m, >2000m derating
Cooling method		Smart forced air cooling
Communication port		CAN, RS485, Ethernet
Ingress protection		IP66
General Data		
Dimensions (W×H×D)		740×265×850 mm (without terminals and switch handle)
Weight		<98 kg

* All specifications are subject to change without notice.



E-MAIL
info@sofarsolar.com

WEBSITE
www.sofarsolar.com

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