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Version: March 19, 2024, Residential Energy Storage System



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**Residential
Energy
Storage System**



ALL-IN-ONE

Intelligent Technology
Coexisting With Nature Powers Your Home



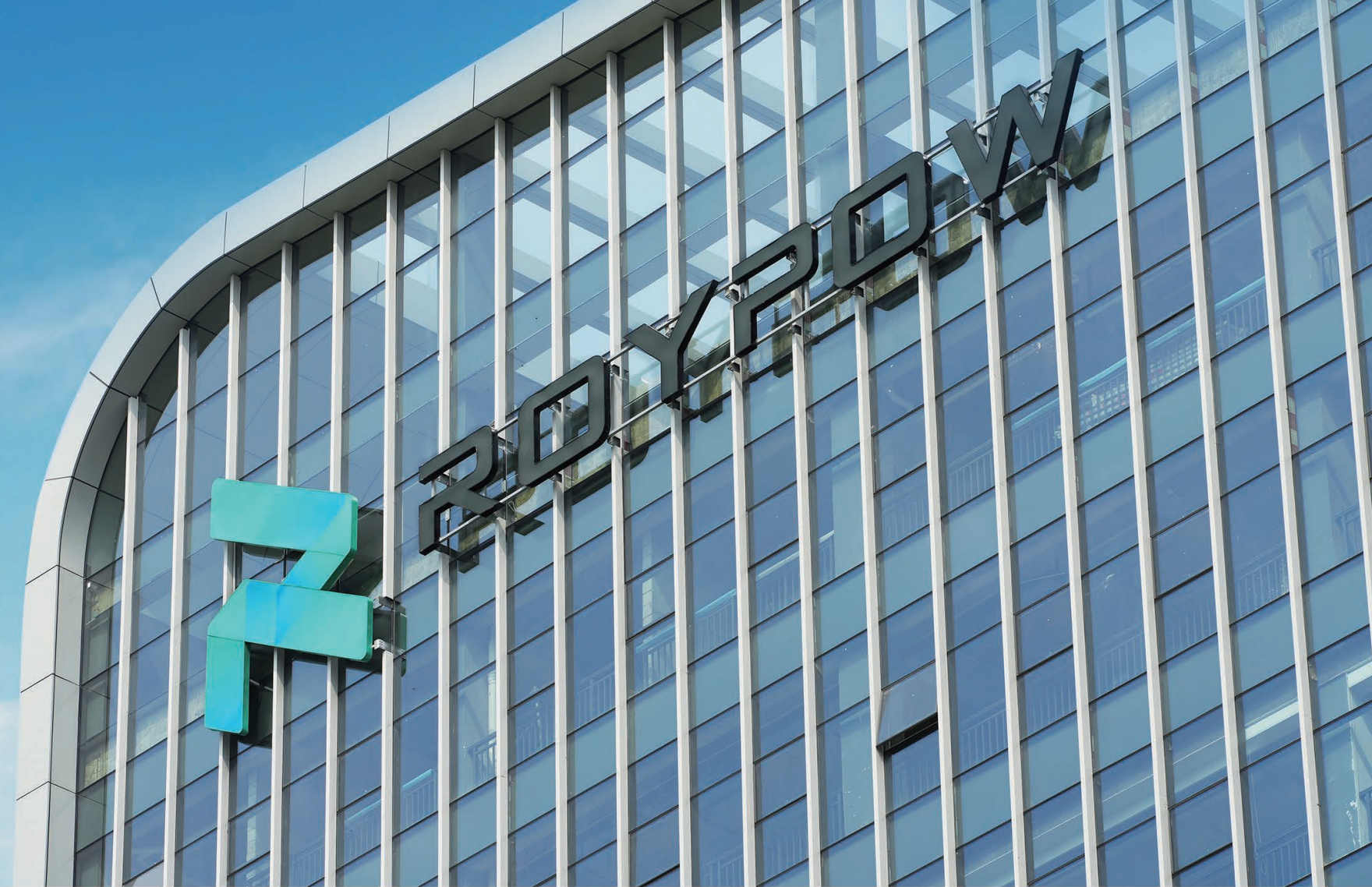
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ROYPOW

Your Trusted Partner



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ROYPOW RESS

ALL-IN-ONE

Integrated Inverter and LFP Battery Module

Meet ROYPOW RESS - Compact, Intelligent, and Safe.

ROYPOW RESS combines the most advanced battery management system with super power supply capacity to provide sustainable & green energy for your working and family usages all day.

The all-in-one, modular system saves space and simplifies the installation and operation processes. Adopting a modern and minimalist style design, it fits any home environment, achieving the best of both worlds for practicality and aesthetics.



ROYPOW RESS is a fully-integrated LiFePO₄ battery system for residential usages. The rechargeable lithium-ion battery with long design life improves solar self-consumption.



Bi-directional energy storage system supports backup mode.



The electrical interface provides a simple connection to any houses or buildings. Simple installation and user-friendly APP monitoring facilitate your usage of clean energy.

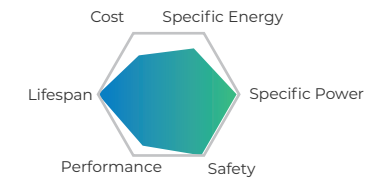




Why ROYPOW RESS?



Safety



LiFePO₄ batteries ensure premium electrical characteristics without any safety issues.



Integrated Arc Fault Circuit Interrupters (AFCI) & Rapid Shut Down (RSD).



Enhanced safety with aerosol fire protection.



IP65 Rating, safe and reliable while using.

Core Value

Application

- Energy Transformation
- Smart Home

- Energy Conservation
- Capitalization

Platform

- Prediction
- AI Algorithm

- Scheduling
- Big Data

Communication Control

- Wi-Fi Power Carrier

- Cloud Communication

Hardware

- Power Generation / Transformation / Distribution



Lifelong Free
Access to Monitoring
Via Web and APP



New Function and
Latest Version Upgrades
Available Remotely

ROYPOW Cloud Platform

With full-on visual experience, user-friendly data display
and all-round monitoring functions, ROYPOW makes
smart energy management easier for everyone.

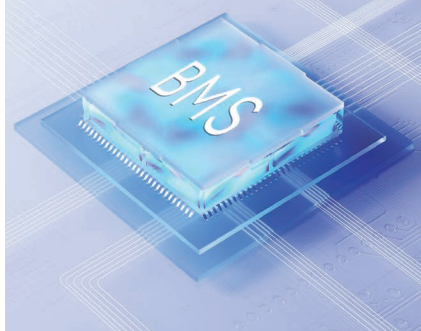


IoT
Compatible



Set Parameters Control
and Build VPP

Battery management system (BMS)



- ROYPOW Research Institute**
30+ BMS R&D veteran researchers with **16+** years ESS BMS experiences
- High SOC Accuracy**
 Our SOC algorithm accuracy reaches **5%**
- Comprehensive Protection**
3-level software protection, redundant hardware level protection

Euro-standard

3 - 5 kW / 5 - 40 kWh



US-standard

10 - 15 kW / 10 - 40 kWh



Intelligent Residential Energy Storage System

2
MPPTs

35 dB
Max. Noise

7 kVA
Max. AC Input

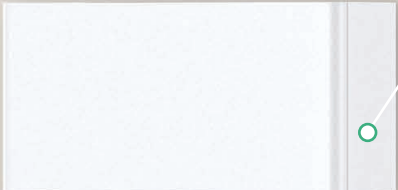
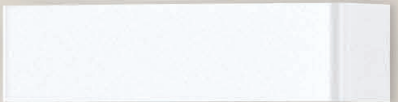
7 kW
Max. PV Input

10 Years
Warranty

Euro-standard



Inverter
Module



Battery
Modules



IP65 Protection



Integrated
Multiple Protections



Natural Cooling



Smart Load
Function



Modular &
Integrated Design



Smart App &
Web Management

System Specification

Model	SUN3600S-E/A	SUN4600S-E/A	SUN5000S-E/A
Rated AC Output Power (W)	3600	4600	5000
Nominal Energy (kWh)	5 to 40		
Noise （dB）	<35		
Operating Temperature Range	-20~55°C (>45°C derating)		
Dimensions (WxDxH, mm)	650 x 240 x 750+330*N (N=1 to 8)		
Ingress Rating	IP65		
Mounting Options	Indoor/Outdoor, Floor standing or Wall mounted (optional)		

Hybrid Inverter Specification

Model	SUN3600S-E/I	SUN4600S-E/I	SUN5000S-E/I
Input - DC (PV)			
Max. Input Power (W)	4600	6000	7000
Max. Input Voltage (V)		580	
MPPT Voltage Range (V)		120~550	
MPPT Voltage Range (full load)		180~550	
Start Voltage (V)		150	
Max. Input Current (A)		13.5 / 13.5	
Max. Short Current (A)		16 / 16	
No. of MPPT		2	
No. of String per MPPT		1	
Input - DC (Battery)			
Battery Type		Lithium-ion	
Nominal Voltage (V)		51.2	
Operation Voltage Range (V)		40-60	
Max. Charge / Discharge Power (W)	3600 / 3600	4600 / 4600	5000 / 5000
Max. Charge / Discharge Current (A)	75 / 75	95.8 / 95.8	100 / 100
Battery Charge Method	Self-adaption to BMS		

AC (On grid)			
Rated Input Apparent Power (VA)	7000		
Rated Output Power (W)	3600	4600	5000
Max. Output Apparent Power (VA)	3600	4600	5000
Rated Grid Voltage	230 Vac / L+N+PE		
Rated Grid Frequency (Hz)	50 / 60		
Max. Input Current (A)	30		
Max. Output Current (A)	16	20.9	22
THDI(Rated power)	<3%		
Adjustable Power Factor	0.8 leading to 0.8 lagging		

AC (Back Up)			
Rated Output Power (W)	3600	4600	5000
Rated Output Current (A)	15.6	20	22
Rated Output Voltage (V)	230		
Rated Frequency (Hz)	50 / 60		
THDV (@linear load)	< 3%		
Overload Capacity	105%<Loads≤125%, 10min. 125%<Loads≤150%, 1min. 150%<Load rate,10S		
Back-up Switch time	< 20ms		

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Efficiency	
Max.Efficiency （BAT to AC）	93.8%
Max.Efficiency (PV to BAT)	95.2%
Max.Efficiency （PV to AC）	97.0%
Euro.Efficiency	96.2%
Max.MPPT Efficiency	99.9%

Protection	
DC Switch / GFCI / Anti-islanding Protection / DC Reverse-polarity Protection / Output Over/Under Voltage Protection / Output Over Current Protection / AC Short Circuit Protection / Insulation Resistor Detection	
DC/AC Surge Protection	Type II / Type II
General Data	
PV Connection	MC4/H4
DC Switch	Integated
Dimensions (WxDxH, mm)	650 x 240 x 620
Net Weight (kg)	35
Operating Temperature Range	-25~60°C (>45°C derating)
Relative Humidity	0~95%
Max. Altitude(m)	3000
Electronics Protection Degree	IP65
Topology type	Transformer(Bat to AC)
Night Self Consumption (W)	<10
Cooling	Natural
Noise （dB）	<35
Display	Wifi+APP / LCD
Communication	RS485 / CAN / WiFi

Standard Compliance	
Safety / EMC	EN IEC 62109-1, EN IEC 62109-2, EN IEC 61000-6-1, EN IEC 61000-6-3
Grid Connection Standard	VDE-AR-N 4105, NRS 097, EN 50549, G98, G99, AS 4777.2

Battery Module Specification

Model	RBmax5.1L	2*RBmax5.1L	3*RBmax5.1L	4*RBmax5.1L	5*RBmax5.1L	6*RBmax5.1L	7*RBmax5.1L	8* RBmax5.1L
Electric Data								
Nominal energy(kWh)	5.12	10.24	15.36	20.48	25.6	30.72	35.84	40.96
Usable energy(kWh)	4.79	9.58	14.37	19.16	23.95	28.74	33.53	38.32
Cell type	Lithium iron phosphate (LFP)							
Nominal voltage (V)	51.2							
Operating voltage range (V)	44.8 ~ 56.8							
Max. continuous charge current (A)	50	100	100	100	100	100	100	100
Max. continuous discharge current (A)	100	100	100	100	100	100	100	100
General Data								
Weight (lbs / kg)	47.5	92.1	136.7	181.3	228.8	273.4	318	362.6
Dimensions (W × D × H) (mm)	650 × 240 × 460	650 × 240 × 790	650 × 240 × 1,120	650 × 240 × 1,450	Double tower			
					650 × 240 × 790 + 650 × 240 × 1120	650 × 240 × 1120 + 650 × 240 × 1120	650 × 240 × 1120 + 650 × 240 × 1450	650 × 240 × 1450 + 650 × 240 × 1450
Operating temperature ^①	Charge: 32 ~ 131°F (0 ~ 55°C), Discharge: 4 ~ 131°F (-20 ~ 55°C)							
Storage temperature	≤1 month: -20 to 45°C (-4 to 113°F), >1 month: 0 to 35°C (32 to 95°F)							
Relative humidity	0 ~ 95%							
Max. altitude (m)	4,000 (> 2,000 derating)							
Ingress rating	IP65							
Mounting options	Indoor/Outdoor, Floor standing or Wall mounted			Communication		CAN, RS485		
Certification								
IEC 62619, UL 1973, EN 61000-6-1, EN 61000-6-3, FCC Part 15, UN38.3								

[1] When the ambient temperature is too low or too high, the performance of battery may be limited.

Intelligent Residential Energy Storage System

98%
Max. Efficiency

4
MPPTs

35 dB
Max. Noise

27 A
Max. Current
(Per MPPT)

20 kVA
Max. AC Input

10 Years
Warranty

US-standard



Inverter
Module

Battery
Modules



Split Phase
Output



Type 4X
Protection



PV Systems
Compatible



Integrated RSD
& AFCI



Natural
Cooling



Smart Load
Function



Modular &
Integrated Design



Smart App &
Web Management

System Specification

Model	SUN10000S-U/A	SUN12000S-U/A	SUN15000S-U/A
Rated AC Output Power (W)	10000	12000	15000
Nominal Energy (kWh)	5 to 40		
Noise (dB)	<35		
Operating Temperature Range	-20~55°C (>45°C derating)		
Dimensions (WxDxH, mm)	845 x 200 x (815+270*N (N=2 to 8))		
Ingress Rating	IP65		
Mounting Options	Indoor/Outdoor, Floor standing or Wall mounted (optional)		
Compliance & Certificates			
UL9540, UL9540A, UL1973, FCC, UN38.3, IEEE 1547, IEEE 1547.1, UL1741, UL1741 CRD, UL1741SB, UL1699B, UL991, IEEE 2030.5, HECO SRD-V2.0, C22.2, CEC, FCC Part 15, ICES-003 Issue 7			

Hybrid Inverter Specification

Model	SUN10000S-U	SUN12000S-U	SUN15000S-U
Input - DC (PV)			
Max. Power (Wp)	14400	20000	24000
Max. DC Voltage (V)	550		
MPPT Voltage Range (V)	120~550		
MPPT Voltage Range (V, full load)	235~550	200~550	225~550
Start Voltage (V)	150		
Max. Input Current per MPPT (Imp, A)	15.5	27	27
Max. Short Circuit Current per MPPT (Isc, A)	20	40	40
Number of MPPT	4		
Number of PV String per MPPT	1	2	2

Input - DC (Battery)			
Compatible Battery	RBmax5.1H Series		
Voltage Range (V)	75-480		
Max. Charge / Discharge Power (W)	10000 / 10000	12000 / 12000	15000 / 15000
Max. Charge / Discharge Current (A)	75 / 75		

Input - AC (GEN)			
Max. AC Power (W)	19000		
Max. AC Current (A)	79.2		
Rated Voltage (V) / Frequency (Hz)	240, (L1/L2) / 60Hz		

AC (On grid)			
Rated Output Power @240V (W)	10000	12000	15000
Max. Output Apparent Power @240V (VA)	10000	12000	15000
Rated Output Current (A)	41.6	50	62.5
Rated Input Power @240V(W)	20000		
Rated Input Apparent Power @240V(VA)	20000		
Rated Input Current (A)	83.3		
Rated Grid Voltage (V)	120/240, (L1/L2/N)		
Rated Grid Frequency (Hz)	60		
THDI	<3%		
Power Factor	0.8 leading to 0.8 lagging		

Efficiency			
Max.Efficiency (PV to Grid)	98.0%		
CEC Efficiency (PV to Grid)	97.2%		

AC (Back Up)			
Rated Output Power (W)	8000	10000	12000
Rated Output Current (A)	79.2		
Rated Output Voltage	120/240V, L1/L2/N		
Rated Frequency (Hz)	60		
Back-up Switch Time	<10ms		
THDV	<3%		

Protections	
PV Switch / PV Rapid Shutdown / Arc Fault Circuit Interrupter (AFCI) / GFCI/Anti-islanding Protection /DC Reverse-polarity Protection / AC Over / Under Voltage Protection / AC Over Current Protection / AC Short Circuit ProtectionInsulation Resistor Detection	
DC/AC Surge Protection Device	TYPE 4

Environmental	
Operating Temperature	-30 ~ 60°C(-22 ~ 140°F), derating above 45°C(113°F)
Operating Humidity	0~95% RH
Storage Conditions	-30~60°C(-22 ~ 140°F), 0~95% non-condensing
Enclosure Type	NEMA Type 4X
Max Elevation	3000m (>2000m derating)
Noise (dB)	<35

General Data	
Mounting Option	Wall Mount, indoor or outdoor
Coupling	DC-Coupling
Topology	Transformerless
Night Self Consumption (W)	10
Cooling	Natural Convection
Display	LCD + APP (WiFi)
Communication Interface	RS485 / CAN / WiFi
Dimensions (WxDxH)	850 x 200 x 550mm (33.5 x 7.9 x 21.7 in)
Weight	55kg (121.3 lbs)

Battery Module Specification

Model	2*RBmax5.1H	3*RBmax5.1H	4*RBmax5.1H	5*RBmax5.1H	6*RBmax5.1H	7*RBmax5.1H	8*RBmax5.1H
Electric Data							
Nominal Energy (kWh)	10.24	15.36	20.48	25.6	30.72	35.84	40.96
Usable Energy (kWh)	9.58	14.37	19.16	23.95	28.74	33.53	38.32
Nominal Voltage (V)	102.4	153.6	204.8	256	307.2	358.4	409.6
Operating Voltage Range (V)	89.6~113.6	134.4~170.4	179.2~227.2	224~284	268.8~340.8	313.6~397.6	358.4~454.4
Max. charge/discharge Current (A)	50 / 75						

General Data							
Battery Chemistry	LFP (LiFePO ₄)						
Weight (Kg)	106	153	200	251	298	345	392
Dimensions (W×D×H) (mm)	845×200×805	845×200×1075	845×200×1345	Double tower			
				845×200×1075, 845×200×685	845×200×1075, 45×200×955	845×200×1345, 845×200×955	845×200×1345, 845×200×1345
Operating Temperature	Charge: 0 to 55°C (32 to 131°F), -20 to 55°C (-4 to 131°F)						
Storage temperature	≤1 month: -20 to 45°C (-4 to 113°F), >1 month: 0 to 35°C (32 to 95°F)						
Relative Humidity	5~95%						
Max. Altitude	4000 (>2000m derating)						
Protection Degree	IP 65 (NEMA Type 4X)						
Installation Location	Indoor/Outdoor, Floor standing, Wall mounted						
Communication	CAN, RS485						



Advanced LiFePO₄ Battery Module

5 kW / Module

Max. Continuous Discharge Power

5.12 kWh ~ 40.96 kWh

Flexible Capacity

5/10 Years

Optional Warranty

- 

Easy Installation with Modular and Stacked Design
- 

Safety Standards Like CE, UN38.3, EN 62619, UL1973
- 

Excellent Safety of Cobalt Free LiFePO₄ Battery
- 

Built-in BMS with Intelligent Monitoring & Multiple Protections

Model	RBmax5.1L	2*RBmax5.1L	3*RBmax5.1L	4*RBmax5.1L	5*RBmax5.1L	6*RBmax5.1L	7*RBmax5.1L	8*RBmax5.1L
Electric Data								
Nominal energy(kWh)	5.12	10.24	15.36	20.48	25.6	30.72	35.84	40.96
Usable energy(kWh)	4.79	9.58	14.37	19.16	23.95	28.74	33.53	38.32
Cell type	Lithium iron phosphate (LFP)							
Nominal voltage (V)	51.2							
Operating voltage range (V)	44.8 ~ 56.8							
Max. continuous charge current (A)	50	100	100	100	100	100	100	100
Max. continuous discharge current (A)	100	100	100	100	100	100	100	100
General Data								
Weight (lbs / kg)	47.5	92.1	136.7	181.3	228.8	273.4	318	362.6
Dimensions (W × D × H) (mm)	650 × 240 × 460	650 × 240 × 790	650 × 240 × 1,120	650 × 240 × 1,450	Double tower			
					650 × 240 × 790 + 650 × 240 × 1120	650 × 240 × 1120 + 650 × 240 × 1120	650 × 240 × 1120 + 650 × 240 × 1450	650 × 240 × 1450 + 650 × 240 × 1450
Operating temperature ^①	Charge: 32 ~ 131°F (0 ~ 55°C), Discharge: 4 ~ 131°F (-20 ~ 55°C)							
Storage temperature	≤1 month: -20 to 45°C (-4 to 113°F), >1 month: 0 to 35°C (32 to 95°F)							
Relative humidity	0 ~ 95%							
Max. altitude (m)	4,000 (> 2,000 derating)							
Ingress rating	IP65							
Mounting options	Indoor/Outdoor, Floor standing or Wall mounted			Communication		CAN, RS485		
Certification	IEC 62619, UL 1973, EN 61000-6-1, EN 61000-6-3, FCC Part 15, UN38.3							

[1] When the ambient temperature is too low or too high, the performance of battery may be limited.

APP & WEB MANAGEMENT

Everything at a glance and under control; the intuitive App / Web allows you to have full visibility into your self-powered home while providing real-time information on solar generation, battery power flow, and household consumption.



Real-time Monitoring & Comprehensive Visualization



Multi-terminal Compatibility & Sharing



Dynamic Power Flow & Generation Report



Backup Function & Data Encryption



Working Mode Switch & Profit Calculation



Integrated After-sales Service



ROYPOW, For One-stop New Energy Solutions

ROYPOW TECHNOLOGY is dedicated to the R&D, manufacturing and sales of motive power systems and energy storage systems as one-stop solutions.

With more than 20 years of combined experience in manufacturing renewable energy and battery systems, ROYPOW provides Lithium-ion Batteries covering most daily living and working fields: for Low-Speed Vehicles such as golf carts, personnel carriers; Industrial Batteries for use in Material Handling Equipment such as forklifts, aerial work platforms and floor cleaning machines as well as renewable Energy Storage Systems for residential, commercial, industrial, vehicle-mounted and marine applications.

ROYPOW has established a worldwide network to serve customers with a manufacturing center in China and subsidiaries in the USA, the UK, Germany, the Netherlands, South Africa, Australia, Japan and Korea to date. ROYPOW owns and operates fully automatic production lines, a full range of test equipment and an advanced MES that collectively address all aspects of its manufacturing process, from electronics, software design to module assembly, battery assembly as well as initial and final testing. ROYPOW focuses on the self-development of power electronics technologies, including PCS, BMS, and EMS as the core competence.

As a renewable energy innovator, ROYPOW is committed to the mission of achieving energy sustainability while creating a better life for human beings.



R&D and Manufacturing Highlights

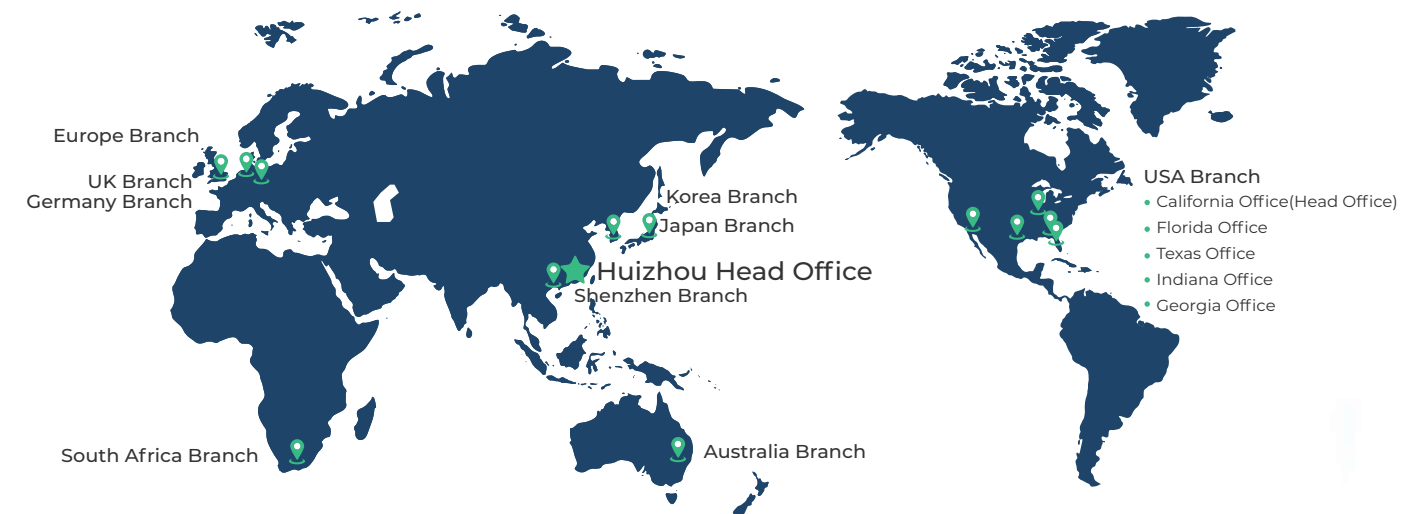
As a result of these investments, ROYPOW is capable of "end-to-end" integrated delivery making our products out-perform the industry norms.

- All-round testing.
- Integrated design.
- Advanced MES system.
- IATF 16949 automotive quality management system certification
- QC system.
- Persistent technology innovation.
- Fully automatic production line.
- ISO12405-2 vibration performance and safety testing of automotive lithium batteries

Global Sales and Service Network System

- Timely Delivery.
- Hassle-free After-sales Service.
- Fast Response Technical Support.

ROYPOW has comprehensively unfolded its overseas market layout to ensure the localization of R&D, manufacturing, marketing and service, becoming one of your most reliable and valuable partners.



Upgrading to New Technology, with Our Turnkey Solutions.

With years of dedication to new energy solutions, we are proud to offer customers professional solutions for:

- ✓ **Low-speed Vehicle Batteries** including golf carts and sightseeing cars;
- ✓ **Industrial Batteries** including forklifts, aerial work platforms and floor cleaning machines;
- ✓ **Vehicle-Mounted Energy Storage Systems & Batteries** Including RV and truck energy storage and air conditioning systems, off-grid solar systems for RV, as well as power batteries for electric motorcycles and airport ground support equipment;
- ✓ **Marine Energy Storage Systems & Batteries** including trolling motors, fish finders, other off-grid energy storage systems for marine, and marine power systems;
- ✓ **Residential Energy Storage Systems & Portable Power Units** including home storage and portable energy storage products, as well as off-grid energy storage (for forest cabin, island homes without electricity, etc.);
- ✓ **Commercial & Industrial Energy Storage Systems** including diesel generator power micro-grid energy storage systems (for tower cranes, air compressors, mixers, crushers, etc);
- ✓ **Chargers** for forklifts, aerial work platforms, floor cleaning machines, golf carts and various marine batteries.

