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Version: July, 21, 2023, ALL-ELECTRIC TRUCK APU



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All-Electric Truck APU



ONE-STOP SOLUTION

Energy Independence for Your Ideal Moving Home



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ROYPOW
Your Trusted Partner





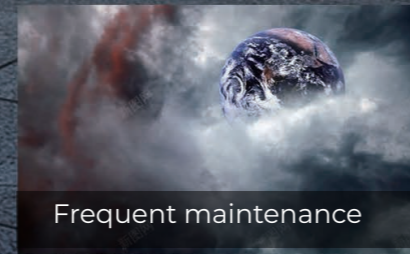
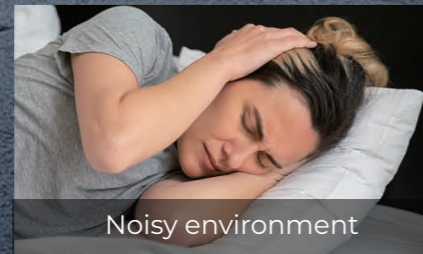
Freedom Down the Road

Say goodbye to power shortage!

Hefty fines associated with idling, increased fuel consumption and emissions as well as escalating maintenance costs have long plagued long-haul truck drivers who live in their trucks for most time of the year.

Here is the solution! ROYPOW all-electric truck APU provides green, safe & reliable power to deliver basic home comforts without running into those issues anymore.

No
worry of

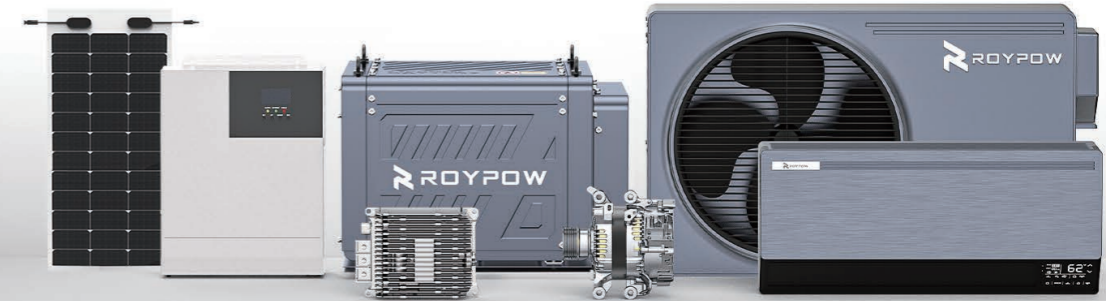


Just enjoy the cool!

Enjoy Exceptional Value with ROYPOW All-electric Truck APU



ROYPOW all-electric truck APU can provide both DC and AC power to run sleeper cab hotel loads – including HVAC – without the need for auto-start or extended engine operation.



A One-Stop Solution for Truck Energy Saving and Energy Storage.

- Long Runtime & Fast Charging**
 No-idling. **14H+** runtime and **2H** charging for continuous power.
- Efficient Cooling**
12,000 BTU / h Cooling Capacity; **>15** Cooling EER
- Emission-Free**
 Meet **CARB** and **EPA** SmartWay standard
- Maintenance-Free**
 Backed by **5** years warranty and **10** years battery life
- Quieter Operation**
 ≤ 35 dB noise level. **No** noise from generator or engine idling.
- Appropriate Temperature Control**
 Battery heating in **low** temperature environment
- Shore Power**
 Available option allows system to be plugged in where possible
- Compact Design**
 Lightweight at around **388** lbs

New-generation All-Electric Truck APU Leader

Cleaner & greener alternative to diesel APUs!

- 48v** lithium system
- Up to **6,000** life cycles
- Safe **LFP** (LiFePO₄) chemistry
- 4°F - 131°F** operating temperature



Zero emission

Virtually maintenance free

Traditional APU VS ROYPOW All-electric Truck APU

	ROYPOW All-electric Truck APU	Traditional APU
Noise	≤35 dB	>100 dB
Emission	0 emission	Severe fuel exhaust
Runtime	* >14 hours	Continuous fuel consumption
Installation	2 hours or so	About 8~10 hours
Fuel/h	0.085 gallon/h	0.3 gallon/h
Charging time	2 hrs or so fast charging	>10 hours
Cooling capacity	12000 BTU/h	8000~13000 BTU/h
Cooling EER	>15, leader of the market	/
Weight	388 lbs	650~700 lbs
Payback period (2000hrs/year idling)	11 months	22 months
Maintenance	0 maintenance	Heavy maintenance: oil filter, fuel water separator, in-line fuel filter and air filter.

Note: *14 hours of runtime is achievable when running at a temperature of below 88°F/32°C.

01 Remote Monitoring & Control

- ✓ Monitor and manage all-electric truck APU from mobile phones anytime and anywhere
- ✓ Remotely turn on / off the HVAC system in advance for unrivaled comfort and convenience



02 Wi-Fi Connection Everywhere

- ✓ Automatically switch to available network operators globally with built-in wireless data terminal
- ✓ Reliable Wi-Fi hotspots are available to deliver the best internet experience for truck drivers

All-Electric System for Long-Haul Drivers

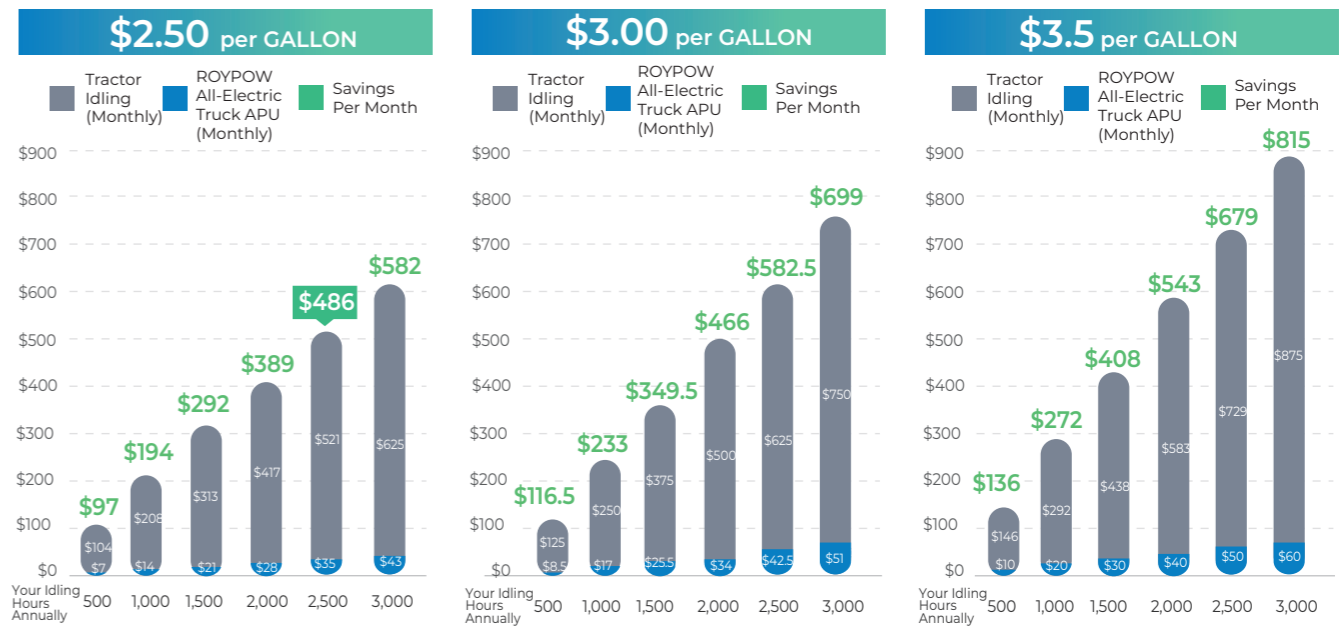
Best-in-class performance, uncompromised safety, and total freedom to roam.

Maximum Cost Savings

- ✓ Lowered Operating Costs by minimizing fuel consumption
- ✓ Reduced Operation of the tractor engine also delivers great cost savings on



How ROYPOW all-electric truck APU saves on fuel bills



Example:
If you idle **2,500** hours per year with a fuel price of **\$2.50** per gallon, you can save up to **\$486** per month on fuel alone with ROYPOW all-electric truck APU!

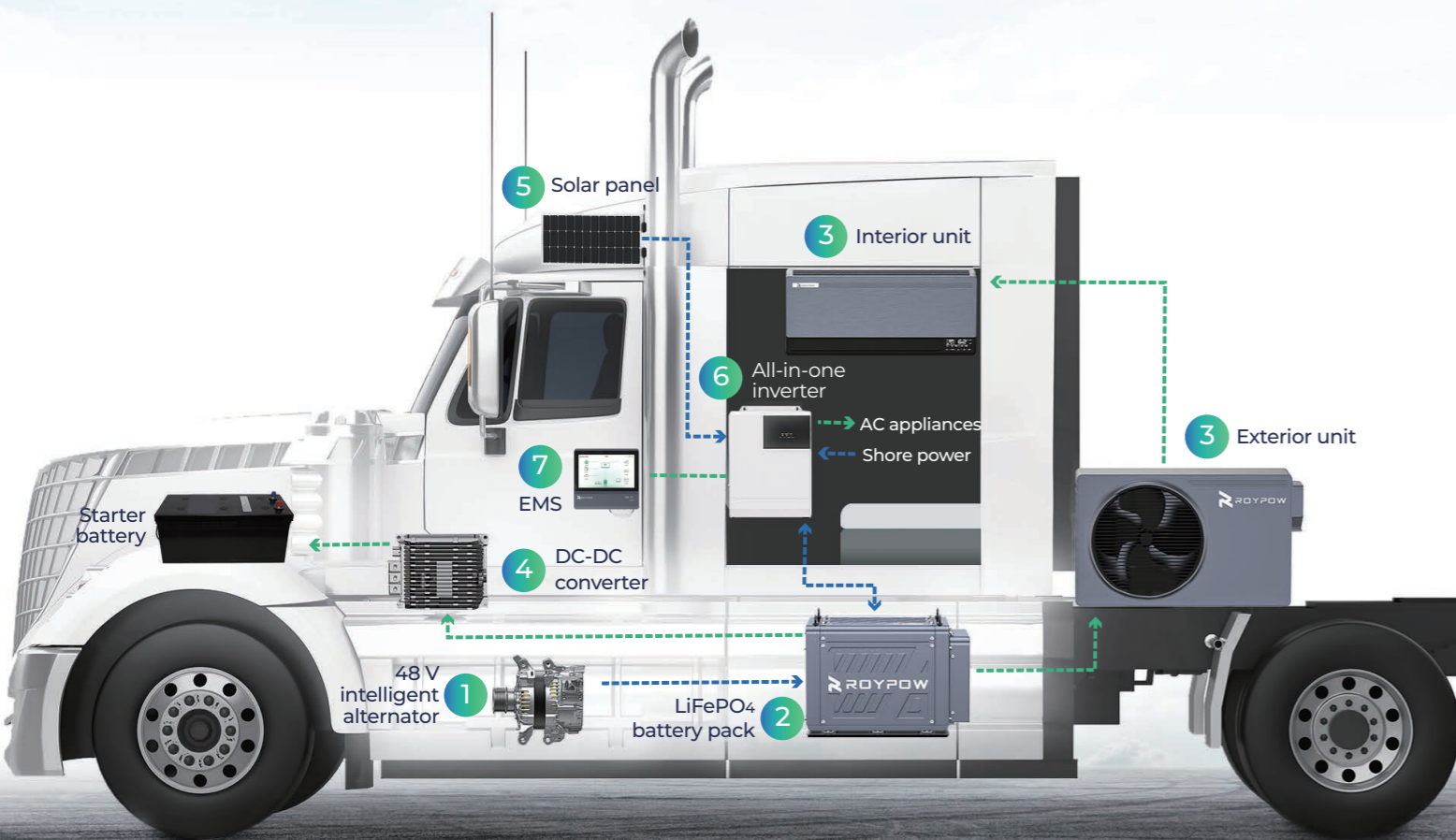
Tractor idling assumptions
Annual miles.....100,000 MI. Idling fuel cost1.0 gph

Save your cost per month with ROYPOW all-electric truck APU
(Based on fuel consumption only). Fuel savings from start / stop off time is not included.
*Fuel consumption will vary based on ambient temperature and tractor cab insulation characteristics.

Note: All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions. The fuel prices above are based on US dollars which is for reference only. Fuel cost will vary from countries and regions

Complete Electric Solutions

Designed to install quickly and easily. The system can be easily customized for different driving conditions and budgets.



Automotive-grade

Truck Energy Storage Packs Included

1 48 V Intelligent Alternator

48 V intelligent alternator's overall popularity is attributed to its high safety and efficiency, which offers the best life experience for truck drivers.



Up to **5kW** continuous generated output

Up to **85%** conversion efficiency

2 LiFePO₄ Battery

ROYPOW LiFePO₄ battery pack provides high power capacity for your truck to run appliances, such as microwave, HVAC system, and more without the need to idle or run the generator.



Up to **10** years battery life

0 maintenance

>6,000 life cycles

3 12,000 BTU HVAC

Designed for sleeper cabs, this HVAC with variable speed expels the heat out of the cab effectively and runs quietly, creating a cozy resting environment.



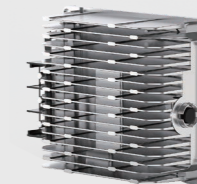
14 hours+ of runtime

12,000 BTU / h cooling capacity

As low as **35** dB noise

4 DC-DC Converter

Designed specifically for truck use, the DC - DC converter is vibration-tested to ensure it can withstand the rigid road conditions with high performances retained.



✓ Automotive-grade

✓ Max. efficiency at **95%**

5 Solar Panel (Optional)

ROYPOW solar panel is designed to provide long-lasting durability and performance in the extreme trucking conditions.



✓ Foldable

✓ Lightweight

✓ Ultra-thin

6 All-in-one Inverter (Optional)

The all-in-one solar charge inverter is a combination of an inverter, a battery charger and an MPPT solar charge controller into one complete system to reduce component and simplify installation.

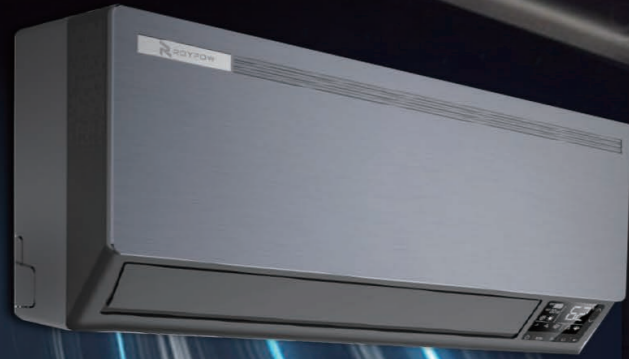


ALL IN ONE

Inverter

+ Battery Charger

+ MPPT Solar Charge Controller



Stay cool
in the harshest
of climate!

14 hours+ of runtime

12,000 BTU / h
cooling capacity

As low as
35 dB noise

>15 EER
high efficiency

ECO FRIENDLY
R-410A
REFRIGERANT

Mobile Comfort
Just Like Home

Air Purifying
boosts air circulation and
leaves the air that is always
clean and fresh



Super Quiet
allows for smooth operation
and ensures complete peace
of mind

Intelligent Control
with Voice Assistant, remote controller,
APP monitoring or touch panel

Technical Specifications



Model	XKF-12-FTT
Rated input voltage	DC 48 V
Inverter / Non-inverter	Inverter
Mode	Cooling / Heating
Refrigerating capacity	5,000 ~ 12,000 BTU / h (1,500 ~ 3,500 W)
Refrigerating power	300 ~ 830 W
Rated cooling capacity	12,000 BTU / h (3,520 W)
Rated cooling power	750 W
Energy efficiency ratio (EER)	15 BTU / w.h
Max. rated input current	25 A
Heating capacity	2,700 BTU / h (800 W)
Input power of heating	800 W
Air flow	≥294 CFM (≥500 m ³ /h)
Temperature range	61°F - 86 °F (16°C - 30°C)
Refrigerant	R410A
Outdoor unit waterproof level	IPX4
Indoor unit noise level	35 dB
Outdoor unit noise level	52 dB
Indoor unit dimension (L x W x H)	26.1 x 7.7 x 11.7 inch (663 x 197 x 296 mm)
Outdoor unit dimension (L x W x H)	35.5 x 9.4 x 20.4 inch (902 x 240 x 519 mm)
Indoor / outdoor unit weight	13.2 lbs (6.0 kg) 66.1 lbs (30.0 kg)

Note: All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions

LiFePO₄ Battery - More Power, Less Weight

High energy storage capacity of ROYPOW LiFePO₄ battery meets the power requirements for sleeper cabs without needing to idle, greatly saving the fuel, money and time.



Long-lasting, Long Runtime

- ✓ Up to 10 years battery life
- ✓ >6,000 life cycles
- ✓ Withstand the rigors and abuse of a deep discharge



Zero Maintenance

- ✓ No regular filling of distilled water
- ✓ Saving costs on labor and maintenance
- ✓ No frequent battery replacements



Ultra-safe, Ensures Peace of Mind

- ✓ Automotive-grade lithium iron phosphate cells (LiFePO₄ cells)
- ✓ More thermal & chemical stability
- ✓ Engineered to resist vibration & shock

! Tips: Why choose LiFePO₄ batteries for trucks?

Except for providing longer life, LiFePO₄ batteries have higher energy density and are more stable and reliable. They are environmentally "green" and lightweight to reduce the overall weight on the truck.



Technical Specifications



Battery system specifications

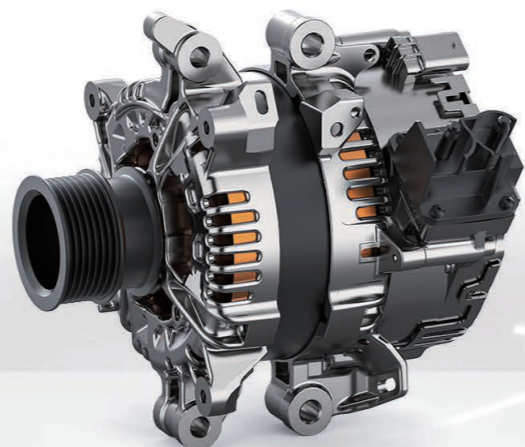
C48230A

Configuration	14S1P	
Rated capacity (@ 0.5C, 77°F/ 25°C)	230 Ah	
Rated voltage (cell 3.2 V)	44.8 V	
Maximum voltage (cell 3.65 V)	51.1 V	
Minimum voltage (cell 2.5 V)	35 V	
Standard capacity (@ 0.5C, 77°F/ 25°C)	≥ 10.3 kWh	
SOC status before shipment	SOC 30% ± 3%	
Self-discharge rate (@SOC 100%, 77°F/ 25°C, Loss/Month, @BOL)	Max.3%	
Safe reliability (Cell)	GBT Certified	
Insulation resistance (@77°F/ 25°C ± 41°F/ 5°C, RH 50%)	Min 20 M / 1,000Vdc	
Cooling mode	Natural (passive) convection	
Working range of SOC	5% - 100%	
Protection rating	IP65	
Life cycle (@77°F / 25°C, 0.5C charge, 1C discharge, DoD>50% (SOC 30 - 100%))	6000*	
Remaining capacity at the end of life (according to warranty period, driving pattern, temp. profile, etc)	EOL70%	
Operating temperature	Charging working temperature	-4°F ~131°F (-20°C ~ 55°C) (under heating state)
	Discharge working temperature	-4°F ~131°F (-20°C ~ 55°C)
Storage temperature	Short-term (within one month)	-4°F ~ 113 °F (-20°C ~ 45°C)
	Long-term (within one year)	32°F ~ 95°F (0°C ~ 35°C)
Weight	253.5 lbs (115 kg)	
Dimension	21.9 x 17.7 x 14.8 inch (555 x 450 x 376 mm)	

Note: 1. Only authorized personnel are allowed to operate or make adjustments to the batteries
 2. All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions
 3. All information provided is subject to change without prior notice.
 *6,000 cycles achievable if the battery is not discharged below 50% DoD. 3,500 cycles at 70% DoD.

48 V Intelligent Alternator

48 V intelligent generator's overall popularity is attributed to its high safety and efficiency, which offers the best off-grid living experience.



It can achieve

Automotive-grade, safe and reliable

Wide working temperature range: -4°F ~ 221°F (-20°C ~ 105°C)

- ✓ Smooth start-stop, torque boosting during vehicle acceleration
- ✓ Power generation efficiency management and rate optimization prevent lithium battery's over-heating / over-charging damages, etc
- ✓ Energy saving and emission reduction

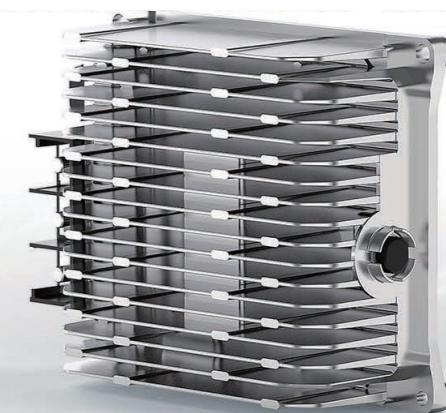
Technical Specifications

Model	XGen4850Z
Nominal operating voltage	40 V ~ 57.6 V
Generator performance	Peak: 11.5 kW @ >4000 rpm, 105°C, 20 s Continuous: 5.5 kW @ >6000 rpm, 105°C
Efficiency	Peak: ≥85%
Rotor inertial	≤37 kg · cm ²
Max operational speed	12000 rpm
Anti-reverse connection	Mechanical poka-yoke
Communication	CAN 2.0B
Motor type	Claw pole machine
Cooling type	Air
Motor overall protection	Motor: IP25 Inverter: IP6K9K
Nominal operating temperature	-30°C~105°C
Motor diameter	≤150 mm
Motor length	≤ 160 mm (without shaft and pulley)
Weight	≤ 19.84 lbs (9 kg)

Note: All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions

Automotive-grade DC-DC Converter

Designed specifically for truck use, the DC-DC Converter is vibration-tested to ensure it can withstand the rigid road conditions with high performances retained.



It can achieve

High efficiency & reduced switching losses

Rugged design for mobile environments

Wide operating temperature range -40°F ~ 185°F (-40°C ~ 85°C)

Technical Specifications

Model	XDC2500-12
48 V Voltage range	24 V - 36 / 48 / 54 V - 57 V
12 V Voltage range	8 V - 8.5 / 14 / 15.5 V - 16 V
Max. Rated Power	Buck: 2.5 kW (178 A @14 V), Boost: 2 kW (41 A @48 V) Buck mode: The derating factor is 15.5 V - 16 V , 8.5 V-8 V corresponding to 100% - 0 load Boost mode: The derating factor is 54 V - 57 V, 36 V-24 V corresponding to 100% - 0 load
Over-temperature protection range	248°F (120°C)
CAN communication	CAN communication
Wake-up type	KL15
Precharge time	Once pre-charge instruction is received, the 48 V side busbar capacitor voltage is expanded from 12 V to rated 48 V set by the controller in 150 ms.
Working temperature range	1. At temperature below -40°F (-40°C), the output is turned off. 2. At temperature between 104°F - 140°F (40°C - 60°C), full power output is reached. 3. At temperature between 140°F - 185°F (60°C - 85°C), linear reduced output of 2,500 W - 0 W is provided. 4. At temperature above 185°F (85°C), output is turned off.
Ingress protection rating	IP67
Weight	< 6.6 lbs (3 kg)
Dimension	9.4 x 6.9 x 3.0 inch (238 x 175 x 75 mm)

Note: All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions.

All-in-one Inverter

Featuring higher response speed, reliability and industrial standard, this all-in-one solar charge inverter integrates an inverter, a battery charger and an MPPT solar charge controller into one complete system, largely simplifying off-grid solar installation and ideal for mobile applications!

Features

Around **30%** MPPT energy efficiency improvement

94% Maximum inverter efficiency

All-in-one Design

- ✓ Seamless switching of uninterrupted power supply to meet electricity demand in versatile scenarios

Power Saving

- ✓ Power saving mode automatically reduces power consumption at zero-load

Instant Viewing of Operation

- ✓ The LCD panel displays data and settings, which can also be viewed using the app and webpage

Multiple Safety Protections

- ✓ Short circuit protection, overload protection, reverse polarity protection, and so on



ALL IN ONE



Inverter



Battery Charger



MPPT Solar Charge Controller

Technical Specifications

Model

R3500S-U



Battery input

Battery type	Lithium Ferro-Phosphate (LFP)
Rated battery input voltage	48 V (minimum startup voltage 44 V)
Hybrid charging maximum charging current	120 A
Battery voltage range	40 Vdc - 60 Vdc ± 0.6 Vdc

Solar input

Maximum PV open-circuit voltage	145 Vdc	Maximum PV input current	50 A
PV working voltage range	60 - 145 Vdc	Maximum PV input power	4,400 W
MPPT voltage range	60 - 115 Vdc	Maximum PV charging current	80 A

AC input (generator/grid)

Mains maximum charging current	40 A	Mains charging efficiency	> 95%
Rated input voltage	110 / 120 Vac	Switching time	10 ms (typical value)
Maximum bypass overload current	40 A	Frequency	50 Hz / 60 Hz (automatic detection)
Input voltage range	(90 Vac - 140 Vac) ± 2%		

AC output

Output voltage waveform	Pure sine wave	On-load motor capacity	2 HP
Peak power	3,500 VA	Maximum efficiency	> 91 %
Output frequency range (Hz)	50 Hz ± 0.3 Hz / 60 Hz ± 0.3 Hz		
Rated output voltage (Vac)	120 Vac (180 / 185 / 110 Vac)		
Rated output power (VA)	3,500 VA (2,900 / 2,050 / 3,200 VA)		
Rated output power (W)	3,500 W (2,900 / 2,050 / 3,200 W)		
No-load loss	Non energy-saving mode: ≤ 50 W Energy-saving mode: ≤ 25 W (manual setup)		

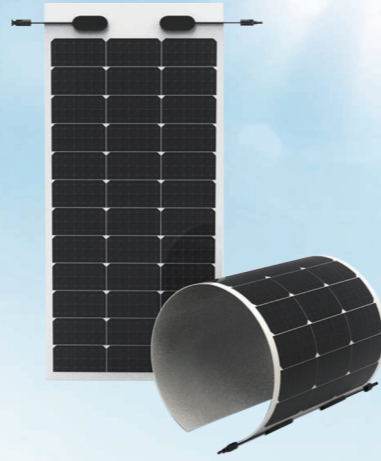
General

Certificate	CE (IEC 62109-1) / CETLCUL1741 / CSA C22.2 NO.107.1		
EMC certification level	EN61000, C2	Storage temperature range	-13°F - 140°F (-25°C - 60°C)
Humidity range	5% - 95%	Working temperature range	5°F - 131°F (-15°C - 55°C)
Weight	23.8 lbs (10.8 kg)	Dimension	16.8 x 12.7 x 4.9 inch (426 x 322 x 124 mm)

Note: All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions

Solar Panel

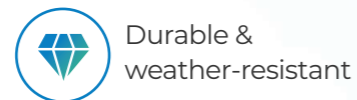
Maximize your savings and enjoy the peace of mind that comes with solar panel's top durability, reliability and efficiency. Ideally suited for truck applications.



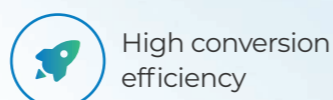
Features



Flexible & foldable



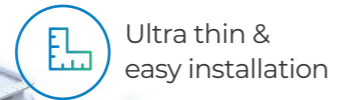
Durable & weather-resistant



High conversion efficiency



Compact & lightweight



Ultra thin & easy installation



Technical Specifications

Electrical performance

ASP100M36S

Model	ASP100NH36S
Maximum power	100 W
Power tolerance	+5 W
Optimum operating voltage	20.12 V
Optimum operating current	5.01 A
Open circuit voltage	24.45 V
Short circuit current	5.31 A
Module efficiency	20.74%

STC: AM=1.5, Irradiance 1.000W / m², Module temperature 77°F (25°C).

Temperature coefficient

Nominal module operating temperature	109°F ± 36°F (43°C ± 2°C)
Power temperature coefficient	- 0.36% / °C
Voltage temperature coefficient	- 0.28% / °C
Current temperature coefficient	- 0.06% / °C

Mechanical behavior

Backplane color	White
Solar cell	36 (3 x 12) / monocrystalline - PERC / 162.75 mm
Encapsulating materials	EVA / POE
Frame	Frameless
Protection grade of junction box	IP68
Cable (length / sectional area)	90 mm / 4 mm ²
Connector	MC4
Module actual size (L * W)	39.0 x 19.3 inch (990 x 491 mm)
Module assembly size (L *W *H)	1,070 mm x 520 mm x 1.7 mm (excluding junction box)
Module weight	3.1 lbs (1.4 kg)

Note: All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions

ROYPOW, Your Trusted Partner

For One-stop 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, Europe, South Africa, Australia, and Japan 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.

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

By virtue of all this, ROYPOW is capable of "end-to-end" integrated delivery, and makes our products out-performing 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 realize the localization of R&D, manufacturing, marketing and service, then become your most reliable partner.



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;
- ✓ **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 villa without electricity, etc.);
- ✓ **Vehicle-Mounted Energy Storage Systems** including RV and truck energy storage and air conditioning system, as well as off-grid solar system for RV;
- ✓ **Marine Energy Storage Systems & Batteries** including trolling motors, fish finders, other off-grid energy storage systems for marine, and marine power system;
- ✓ **Chargers** for forklifts, aerial work platforms, floor cleaning machines, golf carts and various marine batteries.

