

# KILOVAULT<sup>®</sup>



## RES-Q User's Manual

Before using this unit, please read ALL of the instructions and information in this user manual.

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**Please read this entire manual before attempting to use this product.**



## **WARNING**

### **Safety Instructions**

1. Avoid dangerous environments. Do not charge this item in rain, snow or other damp environments. Do not use this item in the presence of explosive atmospheres (gaseous fumes, dust or flammable materials) because sparks may be generated when charging or discharging this item, possibly causing fire.
2. Charge in a well-ventilated area. Do not allow smoking or open flames near a charging battery. Vented gases may explode. Caution when charging outdoors; surface of generator may get very hot. Handle with care.
3. Do not burn or incinerate this item. It may explode, causing personal injury and/or property damage. Toxic fumes and materials are created when batteries are burned.
4. Do not crush, drop or damage this item. Do not use this item if it has received a sharp blow or has been dropped, run over, punctured or damaged in any way (e.g., pierced with a nail, hit with a car, etc.).
5. Do not disassemble this item. There are no serviceable parts inside. Disassembly increases the risk of electric shock, fire and exposure to battery chemicals that may cause personal injury or property damage.
6. Battery chemicals cause serious burns. Never allow battery chemicals to come into contact with skin, eyes or mouth. If this item leaks battery chemicals, use rubber or neoprene gloves to dispose of the leaked chemicals. If skin is exposed to battery fluids, wash with soap and water and rinse with vinegar. If eyes are exposed to battery chemicals, immediately flush with water for 20 minutes and seek medical attention. Remove and dispose of contaminated clothing. Do not inhale vented fumes or smoke. Please contact the manufacturer immediately for instructions on returning or disposing of the defective unit
7. Do not short-circuit. This item will short-circuit if a metal object makes connection to the AC or DC output ports. Do not place this item near anything that may cause a short circuit, such as coins, keys or nails. A short-circuited battery may cause fire and personal injury.
8. Never charge or jump-start a frozen battery.
9. Store this item in a cool, dry place. Do not store this unit for more than 10 days in an environment where temperatures may exceed 120 °F (49 °C), such as direct sunlight, a vehicle or a metal building during the summer. Doing so may cause damage to the unit.
10. This product is not intended for commercial applications.

**Before using this product, please read ALL instructions and information in this user manual.**

## About the RES-Q Portable Power System

The RES-Q is a seamless solution that protects you when outages leave you powerless for an extended period of time. This quiet, portable device is all about practicality and endurance, lasting for 3,000+ life cycles. Other system try, but none can match the power of the portable power supply system and still offer all of the following:

### **Safety:**

No emissions — none. Unlike fossil fuel powered generators and lead-acid batteries, the RES-Q a small carbon footprint, emits no greenhouse gases and causes no damage to the environment. It's even safe enough to use indoors. LiFePO<sub>4</sub> battery technology has no thermal run-away issues as with other lithium technologies.

### **Quiet:**

The protected lithium core produces power without the loud, continuous sound made by other gas or diesel generator engines.

### **Renewable:**

Powered and replenished by natural resources such as the sun, wind and water, as well as mechanical devices. Unit retains charge for one year.

### **Portable:**

The RES-Q is a relatively small device measuring just over 2 cubic feet and weighing only 61.7 lb. That's small enough to carry or store just about anywhere. Most generators surpass this weight by more than double yet offer less power.

### **Affordable:**

No other generator offers the same quiet power output and device versatility for the same value.

### **UPS:**

UPS (Uninterrupted Power System), the UPS switch time (between AC & inverter) is only 20ms.

# Symbols and Terms

## Symbols

The following symbols are used in this guide



Warnings are conditions and actions that could result in personal injury.



Cautions are conditions and actions that could result in damage to the unit or other equipment.

## Terms

The following terms are used throughout this guide.

| Term | Definition                               |
|------|--|
| A    | Ampere or amp                            |
| Ah   | Amp-hour                                 |
| AC   | Alternating current                      |
| DC   | Direct current                           |
| Hz   | Hertz                                    |
| kW   | Kilowatt; one thousand watts             |
| kWh  | Kilowatt-hour                            |
| LED  | Light-emitting diode                     |
| mA   | Milliampere; one-thousandth of an ampere |
| PV   | Photovoltaic                             |
| VAC  | Volts AC                                 |
| VDC  | Volts DC                                 |
| W    | Watts                                    |
| Wh   | Watt-hour                                |

## Safety Instructions



### WARNING!

This section provides important safety and operating instructions. Any improper use of the system can result in serious injury and possibly death in extreme situations.




### CAUTION

Check with manufacturer of medical devices before powering any life-support systems or other medical equipment to ensure they are compatible with the power supplied by this system.



### CAUTION

Check with tool and/or equipment manufacturer before powering any of their products with this system to ensure they are compatible with the power supplied by this system.

1. Before using your unit, read ALL instructions and information in this user manual.
2. To prevent overheating, provide a minimum of 6 inches of clearance on all sides of the unit. Take special care not to cover or obstruct the cooling fan or exhaust vents located on each side.
3. When using this unit outdoors, maintain the 6-inch clearance. Shelter the system to prevent rain, snow, dust, dirt, loose debris and other particles from entering the system. Such particles present a fire hazard.
4. You may simultaneously connect up to 2 DC loads and up to 2 AC loads as long as they are within the Output Ports specifications.
5. To reduce the risk of electrical shock while cleaning the unit, disconnect all inputs and power off the system. SWITCHING OFF ALL POWER DISCHARGE PORTS WILL NOT ELIMINATE RISK. TURN OFF MAIN POWER SWITCH.
6. Inspect all power cords and connectors before attempting to connect them to your system. If cords are frayed, burnt, or otherwise damaged, DO NOT connect the cord to your system. Using damaged cords or connectors increases the risk of fire and electrical shock.
7. DO NOT use if your unit has been dropped or damaged in any way. If unit is damaged, contact us for next steps
8.  DO NOT attempt to disassemble the system. There are NO serviceable parts in the unit, and opening the system can expose the user to internal components that could cause severe injury or death. Opening the system is very dangerous and WILL VOID THE WARRANTY.
9. Repairs should be done ONLY by a qualified repair technician.

## Getting Started

Thank you for your purchase Portable Power Supply System. The 1,500-watt pure sine wave AC inverter output in this unit makes it compatible for use with many of today's high-tech electronic devices. It allows appliance motors to operate more efficiently and at cooler temperatures.

Be sure to carefully read this user manual. Even though your RES-Q has many advanced, built-in safety features, it is still important to take some time to become familiar with the Safety Instructions

If you still have any questions, please contact our KiloVault RES-Q support team.

## RES-Q Overview

You should have received the following items in the box:

1. RES-Q Unit
2. User Manual
3. AC wall-outlet charging cord.
4. Anderson DC cable.
5. RES-Q to external battery cable

## RES-Q Interface

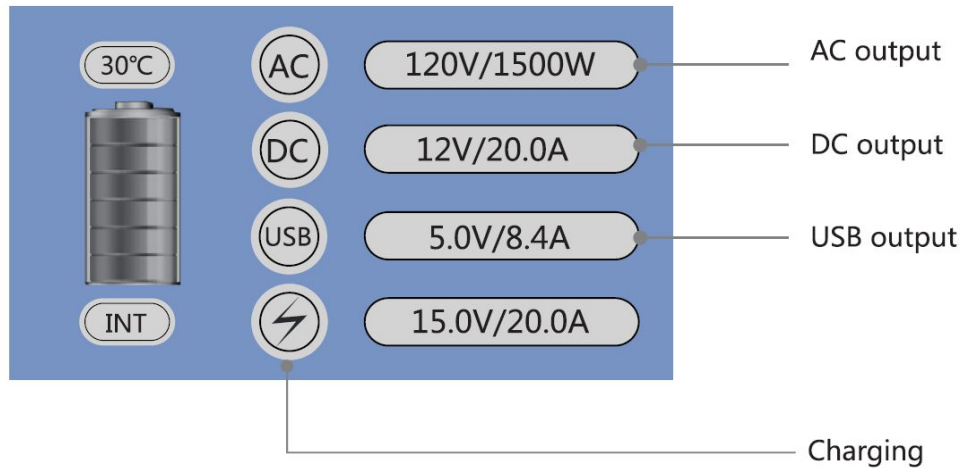


|                          |                           |                        |                     |
|--------------------------|---------------------------|------------------------|---------------------|
| 1. Smart TFT LCD Display | 2. Main Power Button      | 3. AC Outlets (2)      | 4. AC Outlet Switch |
| 5. DC Anderson Outlet    | 6. DC USB Outlets,        | 7. DC Cigarette Outlet | 8. Cooling Fan      |
| 9. AC Charging Input     | 10. External Battery Port | 11. DC Charging Input  |                     |

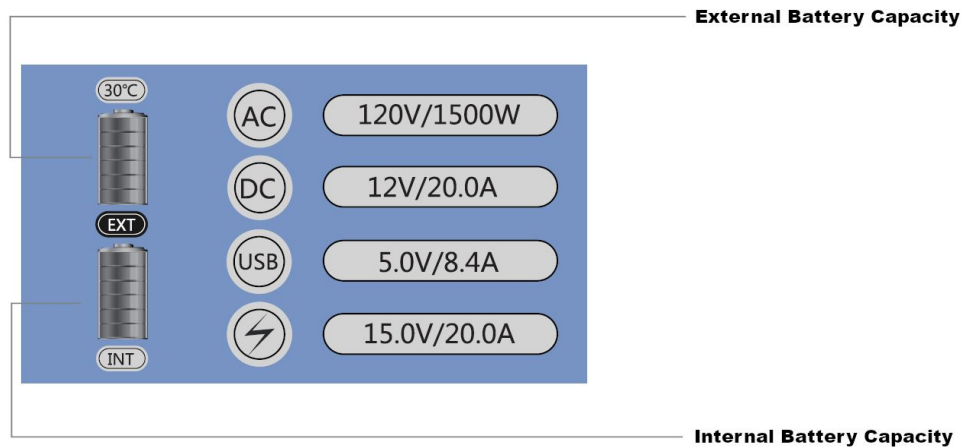


## Interface Details

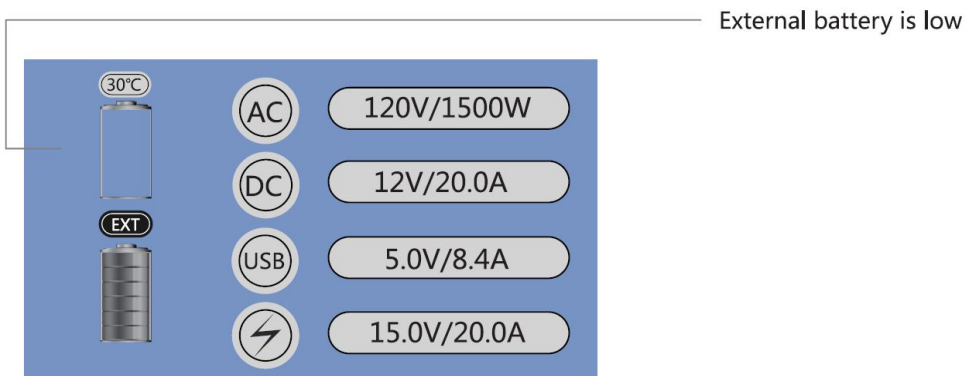
1. The interface looks like this if you are using the RES-Q all by itself, without an external battery.



2. The interface looks like this if you are using the RES-Q with an external battery.



3. When the external battery is less than 10%, the RES-Q automatically switches to the internal battery.



## AC Charging



### WARNING

Check AC cord for damage prior to use. Never use a damaged or frayed AC cord; electrical shock can occur if the AC cord is damaged or frayed. If AC cord is damaged, replace it with a new cord before proceeding with AC use. Improper charging may result in serious injury or death. KiloVault also recommends using a Computer Rated Surge Protector with the RES-Q, especially in situations where grid power is unstable.

### Charging Your RES-Q via AC

- Plug the provided AC cord into the back of the unit (see photo); then plug provided AC cord into a **Computer Rated Surge Protector**; then plug the surge protector into an AC wall outlet.
- While the unit is charging, a lightning bolt will appear at the bottom of the LCD screen on the front of the unit and the six bars of the battery icon will flash from the bottom up until they reach the top indicating the battery is full.
- Wait 10-15 minutes for the battery cells to settle. If you notice the battery indicator drop down to 5 bars, keep the unit plugged into the AC charging source and reset it by pressing the on/off switch. Charging will restart, balancing the cells and completing charging.
- When the RES-Q is fully charged, turn off the unit and then unplug it from the AC charging source.

**Never leave the RES-Q unattended while it is charging.**

**Never let your RES-Q charge via AC for more than five hours at a time. Charging more than five hours may damage the unit.**

If the RES-Q is plugged into an AC outlet at the same time it is being used to power an AC device, it will continue to function normally and charge during use. However, you must still stop

charging the system after five hours.

To speed up charging, you **can** charge via AC and DC simultaneously.

## DC Charging



### WARNING

**Never use a damaged or frayed DC cord; electrical shock can occur if the DC cord is damaged or frayed. If DC cord is damaged, replace with a new cord before proceeding with DC usage. Contact KiloVault to request replacement DC cords.**

### Charging your RES-Q via DC

- **Attention: the RES-Q will accept ONLY 12-volt DC sources. Any other DC voltage source will damage the RES-Q.**
- Plug the provided Anderson extension cable into the back of the unit (see photo); then plug the cable into the output of your 12V charging source (for example, solar panel, hand crank, windmill, etc.).
- While the unit is charging, a lightning bolt will appear at the bottom of the LCD screen on the front of the unit and the six bars of the battery icon will flash from the bottom up until they reach the top indicating the battery is full.
- Wait 10-15 minutes for the battery cells to settle. If you notice the battery indicator drop down to 5 bars, keep the unit plugged into the DC charging source and reset it by pressing the on/off switch. Charging will restart, balancing the cells and completing charging.
- When the RES-Q is fully charged, turn off the unit and then unplug it from the DC charging source.

## AC Outlets



**Check cord for damage prior to use. Never use a damaged or frayed AC cord; electrical shock can occur if the AC cord is damaged or frayed. If AC cord is damaged, replace it with a new cord before proceeding with AC usage.**



To use your AC outlets, plug in the devices you want to run. Then turn on the inverter by switching the main AC power switch (see photo) to the ON position. Once on, the outlets will work like normal AC wall outlets in your home.

In order to protect the inverter and battery, any sustained discharge over 1500W will activate the overcurrent protection and shut down the RES-Q. Unplug the device causing the overcurrent protection. Reset the RES-Q by turning it off and on.

The watt meter, found on the top row of the LCD display, shows the amount of energy being used by the inverter. Please note this energy output is an estimation, and actual output may vary from displayed values.

Because the watt meter measures inverter output, it will show wattage only for loads plugged into the AC output ports. This meter will never display energy output from DC ports.

The watt meter cannot detect loads accurately under 25 watts and will display 0 watts for loads under 10 watts.

## DC Outlets



### WARNING

**Never use a damaged or frayed DC cord; electrical shock can occur if the DC cord is damaged or frayed. If DC cord is damaged, replace with a new cord before proceeding with DC usage. Contact KiloVault to request replacement DC cords.**

How you use the DC Anderson Powerpole outlets (see left photo above) depends on the amperage of your chosen load. For loads between 0 and 15 amps, you will need an Anderson Powerpole extension cord. First, plug the extension cord into the desired device. Then, plug the other end of the extension cord into the Anderson Powerpole outlets on the back of the system (see right photo above). Plug black into black and red into red. Do not use an Anderson Powerpole extension cable for loads greater than 15 amps. For loads greater than 15 amps but less than the 20-amp max, plug the device directly into the Anderson Powerpole outlets on the front of the system (see left photo above).

To use the DC cigarette outlet (see left photo above), simply plug in any 12-volt device (10 A maximum) and operate as normal.

## USB Outlets



To use your USB outlets (see photo), simply plug the device(s) you want to use into the 5V, 2.1 A outlets. Total current draw for all four outlets combined is limited to 8.4 A.

## Use With an External Battery



The RES-Q has an external battery expansion port (see #10 in the photo above).

When the RES-Q is connected to a 12V external lead acid battery using the included external battery cable (see photo above), it functions as if you had two internal batteries. Use only the external battery cable included with the RES-Q.

## Adding an External Battery to Your RES-Q

- Turn off the RES-Q unit.
  - If the RES-Q is currently being used to power AC loads
    - Turn off the AC Outlet switch, then turn off the RES-Q using the RES-Q power button.
  - Otherwise, just turn off the RES-Q using the RES-Q power button.
- Connect the RES-Q external battery cable to your external battery.
- Connect the external battery cable to the RES-Q unit.
- Turn on the RES-Q unit, if needed, turn on the AC Outlet switch and resume normal operations.

While discharging, the RES-Q will drain the external battery first. Once the external battery is empty, it will immediately switch to using the internal battery.

While charging, the RES-Q will fill its internal battery first. When the internal battery is full, it will immediately switch over and start charging the external battery.

## Specifications

|   |  |
|---|--|
| Dimensions  | 18.9" x 15.7" x 9.3" (480 x 400 x 238 mm)  |
| Weight  | 61.7 lb (28 kg)  |
| Operating Temperatures                                    | 23 to 111 °F (-5 to 45 °C)   |
| Operating Conditions:                                     | Keep out of the rain, snow, or damp conditions.<br>When charging outside with a solar panel, use the panel to shade the unit for better charging efficiency.<br>Do not store in a hot vehicle for extended periods of time (i.e. anything over 5 hours).<br>Maximum altitude: 3000 meters. |
| Battery Type  | Lithium Iron Phosphate (LiFePo4), Prismatic Cell   |
| Capacity  | 100 Ah (1280 Wh)   |
| Rating  | 2,500+ cycles @ 80% Depth of Discharge   |
| Charge Retention  | 1 year (85%)   |
| Inverter  | 120 VAC, pure sine wave, 1500W continuous output with integrated slow-start to protect the RES-Q from overcurrent. 3000W surge for 5 min.  |
| DC Output   | Maximum 20 A   |
| Maximum charging current from AC or DC circuitry          | 25 A at 12 V, Approximately 4.5 hours for a full charge at 25A. Do not charge the RES-Q with AC for more than 5 hours.   |
| Maximum combined charging current from AC and DC circuits | 35 A @ 12 VDC, Approximately 3.4 hours for a full charge at 35A.   |
| Case  | Steel with back mounted fan  |

|                      |  |
|----------------------|--|
| LCD Display          | 6-bar battery shaped gauge.<br>Displays wattage while the AC switch is on for easy run time calculations. Wattage is zero when the AC switch is off.   |
| Front Panel Controls | On/Off switch in the upper left hand corner.<br>AC power on/off switch between the two AC outlets.   |
| Input ports          | AC: 110 to 240V, 50 to 60 Hz<br>DC: Anderson Powerpole connector ports; 1 set, 12V, max 25 A   |
| Maximum PV Input     | 300W   |
| Output Ports         | AC: 110V-120V, 50Hz-60Hz; 2 with a combined total current limit of 1500W.<br>Includes an integrated slow-start to protect the RES-Q from overcurrent.<br>DC: 4, 5V, 2.1A USB outlets; total shared current 3.1A<br>DC: Anderson Powerpole connectors; 1 set with a total shared current limit of 20A @ 12VDC (240W max output)<br>DC: 12V cigarette lighter adapter capable of 10A (120W) max output |

## Warranty

2 years from the date of delivery

### What is covered?

1. Defects in materials or workmanship.
2. Non-cosmetic, normal wear and tear related damages.
3. Units authorized for return. To receive authorization, please contact our customer service team . We will assign a return merchandise authorization (RMA) number and arrange a scheduled pickup. Under no circumstances should you return a unit without prior authorization. Authorized returns are not subject to a restocking fee.
4. The warranty restarts with the replacement unit.

### What is not covered?

1. Damage or defect caused willfully or through negligence.
2. Damage caused through excessive wear and tear. Cosmetic blemishes, scratches, or dents acquired through the course of regular use.
3. Damage caused by using the unit with unsafe, unregulated or inappropriate products, devices, power sources or power consumption including grid or generator power surges.
4. Damage resulting from using the product for anything other than what it is intended for. This warranty does not cover damage caused when the unit is used as a footstool, wheel chock, doorstop or flotation device (it does not float, is not waterproof and may cause bodily injury or death if used as a flotation device).
5. Any return not previously authorized by our team. Unauthorized return shipments will be rejected or restocked without notification to the sending party.
6. Upgrade to a newer model. All damaged units will be replaced with a unit of the same model that was originally purchased.



**Additional Terms:**

1. Damage caused willfully or by negligence will void the warranty at any point in the period. Willful or negligent damage is determined upon receipt and inspection of the unit. All refunds/returns will be processed after inspection for willful or negligent damage.
2. Any unit that has been altered or repaired by an unauthorized service is voided of any warranty.
3. All products must be returned with all included attachments and accessories unless otherwise directed when obtaining an RMA number. The customer will be billed/charged for any missing attachments or accessories.
4. If proof of purchase, purchase order, receipt or record of purchase is not available upon request, we will not be responsible for any warranty service.
5. Any returned unit must be packaged safely and labeled clearly. Any damage caused by poor packaging when returning the unit is the responsibility of the customer and may void the warranty.
6. Customers should keep a record of the serial number of any unit sent in for replacement. To facilitate the return process, clearly write the serial number on the shipment box as well. Products that are not authorized for return as per the RMA will not be accepted.
7. At our discretion, units will be repaired or replaced.
8. If the customer sends a unit in for repair and it is found to be free of defect or damage after inspection, the customer will be responsible to pay a \$50 service charge, actual handling and shipping costs to and from our facility and any other necessary costs incurred during processing.