



PowerSwap Nucleus[®] MINI Lithium Power System



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PowerSwap Nucleus[®] MINI

Owner's Manual

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Important

Read and Understand this Manual Before Operation!



The Nucleus MINI battery is specifically designed and optimized for the PowerDock MINI and PowerCharge MINI. Do not attempt to use a charger or DC load not manufactured by Newcastle Systems, Inc. with this product.

Special precautions and handling instructions are contained in this manual and should be strictly adhered to for safe and reliable operation. Contact Newcastle Systems, Inc. Customer Service at +1 (781) 935-3450 or customerservice@newcastlesys.com with any questions regarding this product.

System Components

Mounting the PowerDock

For mobile power pack-only applications, the PowerDock MINI is shipped with plastic feet installed. The PowerDock MINI may be placed securely on a flat level surface.

For mobile cart applications, the plastic feet may be removed and the PowerDock MINI may be fastened securely to a cart in the following configurations.

LT Series cart:

Will need to be mounted by customer. Use the screws included with the feet to fasten the PowerDock to the base of the LT Series where holes are pre-drilled.

All other Newcastle Systems carts:

Will be installed by Newcastle Systems before shipping to customer.

Your existing 3rd-party cart:

Place the PowerDock in the desired location and use screws (wood or sheet metal, depending on material) to attach to the cart's surface using the (4) eyelets on the corners of the PowerDock.

PowerDock MINI PowerCharge MINI & Battery



120V model shown

1. PowerDock MINI Station (PWD1M): This may be installed on a Newcastle cart. See [“Mounting the PowerDock” on page 1](#) to view your cart configuration.

2. PowerCharge MINI Station (PWC1M): This is used to charge PSNU1.8M batteries.

3. 18 AH/230 WH LiFePO4 (PSNU1.8M): 1 to 2 units, based on your order.

Make sure batteries are fully charged prior to powering equipment.

Operating Guidelines

Storage and Disposal

Storage Instructions:

- DO NOT SHORT TERMINALS.
- This battery should be stored in a cool, dry, and well-ventilated area. Sustained elevated temperatures are the primary reason for premature failure of batteries. Charge batteries at room temperature. In warm climates, keep chargers in air conditioned rooms for best performance.
- Although our batteries have good self-discharge characteristics, batteries should be stored for long term storage in a fully charged condition.
- It is always a good idea to submit the battery to a discharge/charge cycle from time to time during storage.
- Do not store batteries in temperatures above 140° F/60° C or below -40° F/-20° C. Do not store in direct sunlight or near heating equipment.

Disposal Instructions:

- DO NOT INCINERATE. DO NOT DISASSEMBLE.
- Disposal must be in compliance with applicable regulations which vary depending on national, state/provincial and local basis. This battery contains recyclable materials so recycling is strongly recommended.

PowerDock MINI Operating Instructions (120V model shown)



Step 1: Confirm your device(s) is plugged into the AC outlet(s).



Step 2: Place fully charged batteries in PowerDock MINI Station. **Make sure battery is fully engaged and the LED lights on the battery are lit.** *Batteries should be inserted firmly, but never slammed into place.



Step 3: Turn PowerDock MINI Station on (-) (switch located as shown). LED should light green.

When unit is not in use, turn the PowerDock MINI OFF. Batteries will continue to drain if unit is left on.

Tip: Monitor battery status with the LED meter on battery. When batteries become low, alarm will sound and battery should be swapped with a fully charged one.

PowerCharge MINI Operating Instructions

Step 1: Connect charge cord to rear of charge dock and plug in at wall outlet.

Step 2: Place discharged battery in PowerCharge MINI Station. **Make sure battery is fully engaged.** *Batteries should be inserted firmly, but never slammed into place.

Step 3: Confirm LED changes color from green to orange during charge. Note: LED will turn green once fully charged.




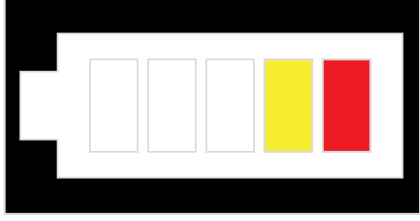
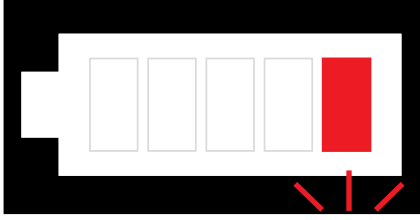
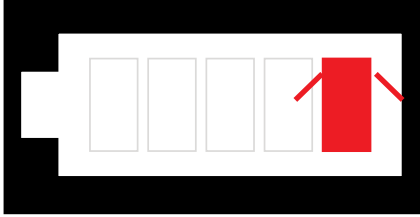


Charging time of the PWC1M takes approximately 3 hours to charge fully depleted batteries.

Replaceable Fuse: This is located on the front of the PowerCharge MINI to protect from DC overload. The AC fuse is internal and non-replaceable. If DC fuse blows, replace with equivalent, fast-acting, 125 V, 15A rated 5 mm x 20 mm glass fuse. **CAUTION:** Installing non-rated fuses could cause equipment damage and void your warranty.

Fuel Gauge

The following graphics illustrate the amount of battery power and corresponding LED lighting sequence.

Illustration of Fuel Gauge	LEDs	Battery Fuel
	5	81-100%
	4	61-80%
	3	41-60%
	2	21-40%
	1 solid	11-20%
	1 flashing	1-10%

Preventative Maintenance

Damaged connectors, contacts and cables may present hazards, resulting in inefficient battery and charger operation. To avoid these problems, conduct the following maintenance checks at least once annually. If you see any of the following problems, take corrective action immediately.

Inspection

Check contact surfaces for signs of “pitting” caused by dirt or disengaging connectors under load. One badly pitted contact, particularly in a connector attached to a battery charger, can lead to pitting on surfaces of other contacts. If not corrected, this can result in an epidemic of bad connectors throughout a fleet of batteries and in chargers and batteries.

Check to see if batteries are being disconnected while the charger is still on. This may cause the contacts to arc at the tips, resulting with progressive pitting and silver removal from tip to crown. If this practice is occurring, discontinue it now to avoid major repairs in the future.

Service/Warnings

Service

In the event the Nucleus battery fails to deliver acceptable performance, it must be returned to Newcastle Systems, Inc. No other facility is qualified and equipped to service the Nucleus battery and calibrate the electronic components and sensors. Any attempt by the user or any other unauthorized persons may result in improper calibration of the electronic components causing severe battery damage and/or safety hazards, including potential personal injury and/or damage to property. Any such attempt will void any/all warranties.

Warnings/Precautions

1. **NEVER** attempt to service this battery. Incorrect assembly may result in electric shock or fire. If there is a problem, send this battery only to Newcastle Systems, Inc. for evaluation.
2. **NEVER** attempt to open this battery. The electronic circuits inside the battery can be damaged, causing malfunction and/or potential hazard to person and property.
3. **NEVER** attempt to replace the cells in this battery - it cannot be rebuilt or refurbished. At the end of its useful life, contact Newcastle Systems, Inc. Customer Service at +1 (781) 935-3450 or customerservice@newcastlesys.com.
4. It is recommended that you return the Nucleus battery interface to a qualified dealer for any service or repair.
5. To reduce risk of electric shock, unplug the DC input (battery) and AC input (charge cord) before attempting any maintenance or cleaning.
6. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting anything from the unit.
7. The use of an extension cord is not recommended. If an extension cord is used, make sure that it has a 3-prong, male plug and 3-prong female receptacle. The size of the current carrying conductors should be such that they are able to carry at least 5.0A for the length of the extension.
8. Place components in an area that will allow air to flow freely around them. DO NOT block or obstruct vent openings or install the unit in an enclosed compartment.
9. Keep the unit away from moisture and water.
10. Never operate two or more units in parallel.
11. **WARNING:** To avoid risk of electric shock, the charge dock must only be connected to a supply mains with protective ground.
12. **WARNING:** No modification of this equipment is allowed.
13. Do not expose this battery to extreme high (above 140° F /60° C) or low (below 32° F/ 0° C) temperatures. This includes storage in direct sunlight, in cars in hot or cold weather, or in close proximity to heating/cooling devices. This may cause electrolyte leakage, impaired performance and shortening of battery service life.
14. When not using the battery for prolonged periods, the Nucleus battery should be fully charged.
15. ALL BATTERIES have a finite life. If the battery exhibits noticeably shortened run-time, the battery should be replaced immediately. Shortened run-time is indicative of at least one cell which has reached end of life. UNDER NO CIRCUMSTANCES should one attempt to “recondition” this battery by repeated charging and discharging.
16. This battery contains specialized electronic circuits, which are designed to protect the cells from overcharge, over discharge and over current. Redundant protection devices are designed to operate if the battery voltage is abnormally high or low and if the temperature of the battery exceeds operating specifications. These electronic devices can be damaged if the battery is subject to abuse or damage. Do not use a battery that has been subjected to excessive mechanical shock or water damage.
17. Do not drop, puncture or crush this battery. Do not use the battery if the case is damaged or broken. Do not open or attempt to service this battery if damaged.

EU Waste Electrical and Electronic Equipment (WEEE) Directive



Figure 1: WEEE symbol – crossed out wheeled bin

For private households: Information on Disposal for Users of WEEE:

This symbol (Figure 1) on the product(s) and/or accompanying documents means that used electrical and electronic equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

For professional users in the European Union:

If you wish to discard electrical and electronic equipment (EEE), please contact your dealer or supplier for further information.

For disposal in countries outside of the European Union:

This symbol is only valid in the European Union (EU). If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

ENVIRONMENTAL HAZARD

Contains Lithium-Ion.










Disposal: DO NOT dispose of the Nucleus components and its associated components and/or accessories in municipal waste at the end of their expected service life. Consult Newcastle Systems, Inc. Customer Service for information on disposal/recycling of the Nucleus battery interface and its associated components and/or accessories.

FCC NOTICE





This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense. This equipment has been approved by one or more agencies. All changes and/or modifications not expressly approved by Newcastle Systems, Inc. could void the users' warranty and authority to operate this equipment. There are no serviceable parts in this equipment.

Specifications





Battery Specifications

Output Voltage	12.8 V Nominal 10.0 V - 14.6 V Operating	
Capacity	18 Ah	
Chemistry	Lithium Iron Phosphate (LiFePO ₄)	
Maximum Discharge Rate	12.0 A	
Cut-off Charge Current	2000 mA	
Typical Run-Time (Assuming Constant Load)	@ 10W	20 hrs
	@ 26W	8 hrs
	@ 41W	5 hrs
	@ 69W	3 hrs
Weight	6 lbs (2.7 kg)	
Size	6" L x 11" W x 3.375" H (152 x 279 x 86 mm)	
Operating Temperature	32-104° F (0-40° C) Discharge 32-131° F (0-55° C) Charge	
Regulatory Approvals	      	

PowerDock MINI Specifications

	PWD1M	PWD1Mi
Voltage	120 VAC ± 3% Pure Sine	230 VAC Pure Sine
Current	1.0 A	0.5 A
Frequency	60 Hz ± 1%	50-60 Hz
Regulatory Approvals		  

PowerCharge MINI Specifications

	PWC1M	PWC1Mi
Power Input	115 VAC/60 Hz 2.5 A	230 VAC/50-60 Hz 1.2 A
Output	7.5 A DC	7.5 A DC
Charge Time	3 hrs	3 hrs
Regulatory Approvals		  

Operating, Transportation, and Storage Environment

Temperature Range	32 to 104° F (0 to 40° C)
Relative Humidity	20-70% non-condensing
Pressure	985 hPa to 1040 hPa
Device intended for indoor use only.	
Never use flammable or combustible solvents around batteries or chargers.	

Transportation Regulation

Transportation Regulation

Requirements for shipping Lithium-Ion batteries in the US are located in 49CFR173.185. Please refer to local, state, and/or Federal regulations before offering Lithium-Ion batteries for transport.

OWNER'S MANUAL



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