NMC 48V 50Ah
48V Lithium Battery Pack - Product Manual

Battery Model: ABL-048050P

REV 2.1

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Disclaimer: Please read through this manual prior to use or installation of your battery. Use or misuse of electrical components can cause risk of electrocution, injury or death. Aegis Battery and affiliates are not liable for any injury or damage resulting from the use or installation of Aegis Battery products.

Product Overview

Thank you for purchasing an Aegis Battery product. It is advised to fully read and familiarize with the contents of this manual prior to use as failure to do so may result in degraded battery characteristics.

1.1 Specifications

Battery Chemistry	NMC (Nickel Manganese Cobalt)
Battery Case	PVC Wrapped
Cell Type/Assembly Method	Cylindrical cells / Welded
Voltage (V)	48V
Capacity (Ah)	50Ah
Energy Stored (Wh)	2400 Watt-Hours
Weight	30.4 lbs (13.8 kgs)
Dimension Metric (L x W x H)	295 mm x 202 mm x 142 mm (+/-2mm)
Dimensions Imperial (L x W x H)	11.6 in. x 8.0 in. x 5.6 in. (+/-0.1in)
Discharge Connector	SB50
Charge Connector	PP45 Anderson
Cycle Life	1000+ cycles
Fully Charged Voltage	54.6V
Charge Current	10.0 Amps
Battery Cutoff Voltage	36.4V
Nominal Continuous Discharge Current	25.0 Amps
Maximum Continuous Discharge Current	50.0 Amps
Maximum Peak Discharge Current	100.0 Amps (2 Seconds)
Charge Temperature	0°C to 45°C

Discharge Temperature	-20°C to 60°C
Operating Humidity	60±25%R.H
Storage Humidity	60±25%R.H
Automatic Protection with Battery Management System (BMS)	Low Voltage Disconnect, Over Voltage Disconnect, Short Circuit Protection, Reverse Polarity Protection, Cell Balancing

1.2 Operation

For optimal operation of our NMC lithium battery please follow best practices for battery operation.

1. Ensure your battery connections are correctly setup for your application
    a. Positive to Positive & Negative to Negative
    b. Secure connections with no exposed wires or contacts
2. Within specified operating voltages, amps and environments
    a. Do not exceed the specified max amp draw and voltages.
    b. Do not operate in environments beyond specified temperatures and humidity.
3. Note: Fully charged voltages may be higher than listed voltages. This is completely normal for lithium batteries and normalizes to listed voltage during operation. Do ensure your device and application can handle the specified fully charged voltage and voltage ranges for this battery.

1.3 Discharging

1. Ensure your application is designed for the specified nominal voltage and can operate within the full voltage range from fully charged to cutoff voltages.
2. Ensure the connections between the battery and application can handle the max current amp draw from the battery. Please consult references for appropriate wire and connector types.
3. Do not exceed the specified max continuous discharge current amp. Please make sure your total electrical load consumes less than the specified max amp and wattage for this battery.
4. Our lithium batteries are designed to output a steady voltage range until little capacity remains. A regular voltage meter alone may not be an accurate gauge of capacity, we recommend an inline watt meter for more accurate measuring.

1.4 Charging

1. Ensure you are using the correct charger for this specific battery. Each battery type may have unique voltages and charging profiles. Use of a generic battery charger is not advised.
    a. Ex. 48V NMC Battery -> 48V NMC Charger
    b. Ex. 48V LFP (LiFePO4) Battery -> 48V LFP (LiFePO4) Charger
2. Prior to initial use, ensure the battery is taking charge and fully charged. Our batteries are shipped in a partially charged state for safety.
3. After fully charging, it is advised to wait for 30 min before unplugging for the battery to stabilize and be ready for use.
4. Proper charging sequence example:
    a. Attach battery to charger connector
    b. Plug in the charger to outlet (120V)
    c. When charging, the LED should be a solid red indicating constant charge
    d. Once charged, the LED should be a solid green indicating constant voltage
    e. Advised to wait 30 min before unplugging to stabilize and fully charge the battery.
    f. For safety, please unplug from the outlet after charging.

1.5 Maintenance / Storage

1. For long term storage, it is recommended to charge and discharge the battery every 1-2 months.
2. Please store the battery in a dry place with temperatures 4°C - 35°C (39°F - 95°F).
3. For our standard batteries, please do not use chargers or amp loads greater than the rated capacity (Ah) or the battery.
4. For longevity, it is recommended to charge at ⅛ capacity rate and discharge at no greater than the rated capacity (Ex. 100Ah Battery -> 20 Amp Charger)

1.6 Series / Parallel

1. For series or parallel connections, only certain models support these connections.
    a. It is often better to purchase a single battery with higher capacity or voltage; however, if series / parallel is required please contact our support technical team to confirm this battery supports your connections and configuration.
    b. For series connections, each battery must be charged separately and given a full charge and ensure matching voltages before connecting in series.
    c. For parallel connections, each battery must be in an equal state of charge and matching voltage before connecting. The internal resistance of the same make, model and batch origin is recommended to ensure matching internal resistances. You may want to utilize resistors to achieve equal internal resistance and add fuse(s) for circuit safety.

1.6 Troubleshooting / Diagnostics

Battery has no power output and/or reads 0V: If the battery BMS protection was triggered and now needs to be reset, you may need to wait 30+ minutes and then connect a charger to reactivate the BMS.

Battery won't charge:

1. Connect the charger's AC plug to an outlet and check that the charger has a solid green light before connecting to your battery and that all connections are securely connected.

2. Check that the battery and charger connectors are properly connected. If the connector is damaged, deformed or if it has poor contact, replacing or cleaning the connector may resume charging, but we do not recommend self-repair.

3. Check that the battery voltage is within the operating voltage range and fully charged. If the battery is fully charged, further charging will not work. If the battery voltage is below the operating voltage range, the internal cell may be damaged or the battery has reached the end of its life. Contact customer service.

4. If the battery voltage is normal but the battery will not charge, the internal battery management system may be damaged. Contact customer service for repair or battery replacement.

2. General Safety

- Do not attempt to use or charge batteries with any visible damage, including but not limited to swelling, dents, and punctures.
- Do not short circuit lithium batteries. Please avoid any situations or environments where short circuits could occur.
- Do not operate or charge in extreme or unventilated environments. Temperatures above 60°C (140°F) can cause multiple issues including personal injury and damage to device and battery.
- Do not exceed discharge specifications of each battery voltage and amp.
- Do not charge above rated voltages and only use the correct battery charger.
- Do not expose batteries to water and avoid high humidity exposure.
- Do not clean or expose batteries to chemicals or chemical sources.
- Do not store batteries near heat sources and high temperatures.
- Do not attempt to change the connectors or bridge connectors with adapters without proper consultation from both the battery and your device manufacturer.
- Do not attempt to dismantle, open, self-repair, puncture, burn, drop, crush or damage the battery or modify the battery in any way.
- Do not charge or discharge batteries in an unventilated area.
- When handling batteries, it is recommended to use insulated gloves and safety equipment and not have any metallic jewelry or objects around the battery.
- In case of fire, you must use a Class D extinguisher or one designed for lithium batteries. Do not use water or a general fire extinguisher.

3. Transportation

Lithium-ion batteries are classified as UN3480. For international, please refer to your IATA/ICAO, IMDG and ADR shipping regulations. Please always ship in approved boxes for lithium batteries with the required labeling.

4. Disposal & Recycling

Do not dispose of lithium batteries in household waste or general trash. Please consult your local authority in the disposal and recycling center for more information on proper handling and disposal of lithium batteries.

5. Emergency & First Aid

In case of thermal runaway or fire: evacuate area, call emergency services. Only use Class D or lithium battery extinguishers. Electrolyte Skin Contact: Rinse with water for 15+ minutes, seek medical advice. Eye Contact: Flush with clean water for 15+ minutes, seek immediate medical help. Smoke Inhalation: Do not breathe in smoke, immediately move to fresh air and seek medical assistance.

6. Support

Please contact us for any questions or issues with using our lithium battery products.

Email: contact@aegisbattery.com

Phone: 1) 949-469-1776

Warranty: www.aegisbattery.com/pages/warranty

Website: www.aegisbattery.com