Neuton Power 12.8V LiFePO4 (LFP) Slimline (SL) Series Battery

User Manual

V JUNE 2025

Contents

1. Introduction ---- 3
2. Overview ---- 3
3. Parameter ---- 3
4. Dimensions (mm) ---- 4
5. Performance ---- 4
6. Installation Guide ---- 4
   6.1 Preparation ---- 4
   6.2 Installation Tools ---- 5
   6.3 Series and Parallel Connection Guidelines ---- 5
7. Storage, Safety and Limitations ---- 7
8. Disengaging the Under-Voltage Protection ---- 8
9. Controller Settings ---- 8
10. LCD Screen ---- 9
11. Warnings ---- 9

Contact Us ---- 10

1. Introduction

The NPL SL series is an ultra-thin LiFePO4 battery solution specifically designed for UTE, 4WD, and Marine applications, especially where installation space is restricted. This series incorporates prismatic LiFePO4 cells and a robust steel casing, complete with Anderson connectors, ensuring enhanced reliability and simplified connections. The batteries deliver a 1C discharge rate and are supported by a 5-year warranty* (T&C's apply as stated in the warranty statement).

The built-in Battery Management System (BMS) is responsible for monitoring and analyzing current, temperature, and voltage at the cell level. It provides comprehensive protection features, including over-voltage protection, under-voltage protection, over-temperature protection, under-temperature protection, short-circuit protection, and cell balancing.

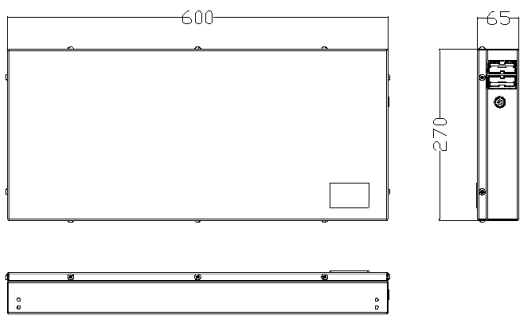
2. Overview

Model	NPL12-100SL	NPL12-200SL
Nominal Voltage	12.8V	12.8V
Capacity	100Ah	200Ah
Cell	3.2V-100Ah	3.2V-100Ah
Cells Grouping	4S1P	4S2P

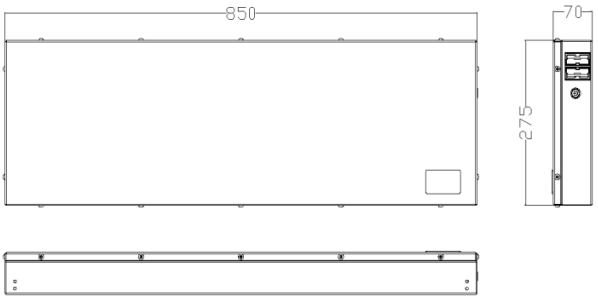
3. Parameter

Model	NPL12-100SL	NPL12-200SL
Rated Voltage(V)	12.8V	12.8V
Rated Capacity(Ah)	100Ah	200Ah
Rated Energy (kWh)	1.28KWh	2.56KWh
Maximum Charging Current(A)	100A	200A
Maximum Discharging Current(A)	100A	200A
Recommended Charging Current (A)	50A	100A
Over-Discharge Protection Voltage (V)	11.2V	
Recommended Charging Voltage (V)	14.4V	
Life Cycle (@25℃ , 0.5C/0.25C, 80%DOD)	Approx 4000 Cycles	
Total Weight(Kg)	15.5Kg	28kg
Internal Resistance Fully Charged@ 25℃	≤10m Ω	≤ 5m Ω
Thermal Management	Natural cooling	
Operating Humidity	60±25%R.H.	
Operating Temperature	Charging 0 ~ 55℃	
	Discharging -20℃ ~ 55℃	

4. Dimensions (mm)



NPL12-100SL



NPL12-200SL

5.Performance

- High-precision voltage data collection (5mv).
- Customized BMS function and parameters.
- Intelligent equalization management.
- Protections against Over-Charging, Over-Discharging, Over Temperature and Short Circuit.
- Supports a matrix of 4 batteries in series and 4 batteries in parallel, totaling 16 batteries in the system.

6.Installation Guide

6.1 Preparation

Before installation, read all safety instructions in this document. If you have any concerns regarding the safe operation of the battery system, contact a technical support engineer for guidance.

Before Operation：

- Installation must be carried out by a qualified electrician.
- Remove all metal items such as jewellery, watches, other metal belongs or tools in pockets etc.
- To protect personnel and equipment, disconnect the battery pack from the operating equipment before wiring.
- Pay attention to battery terminal polarity.
- Ensure installation tools are insulated and used correctly.
- Follow the connection port descriptions and system diagrams.
- Do not plug, unplug, or remove the battery while charging or discharging. This may cause sparks, equipment damage, or injury. Always disconnect the power supply or load before performing any connection or removal operations to ensure safety.
- Ensure power terminals are securely connected before operation. When measuring, use instruments and tools carefully to prevent short circuits and accidents.
- Do not disassemble the battery without authorization from the manufacturer's technician.

6.2 Installation Tools

Torque Wrench	
Phillips screwdriver	
Insulating Gloves	
Multimeter	

6.3 Series and Parallel Connection Guidelines

To connect batteries in series or /and in parallel, batteries should meet below conditions:

- the same battery capacity (Ah).
- from same brand (to prevent BMS compatibility issues due to different BMS models used).
- purchased within a similar timeframe (within one month of each other).

6.3.1 Necessary Steps Before Connecting

To minimize voltage differences between batteries and ensure optimal performance in series and parallel configurations, follow these two essential steps:

1). Fully charge each battery separately.

2). Allow all the batteries to rest for 12–24 hours.

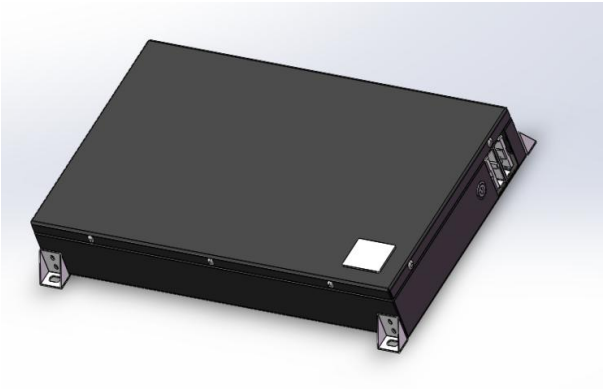
After completing the above steps:

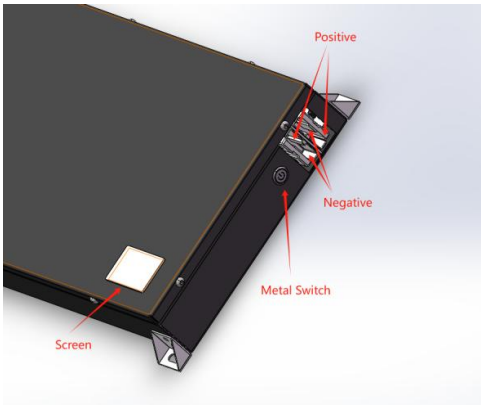
- Connect the batteries one by one in series.
- Once series connections are complete, proceed with parallel connections.
- After completing the connections, turn on each battery one by one to ensure proper operation.

This battery's BMS supports a configuration of 4 batteries in series and 4 batteries in parallel, allowing a total of 16 batteries in the system.

6.3.2 Operating Instructions For NPL Series Terminal

1). SL series terminals are 2 sets of Anderson 120A blue plugs (as shown below).

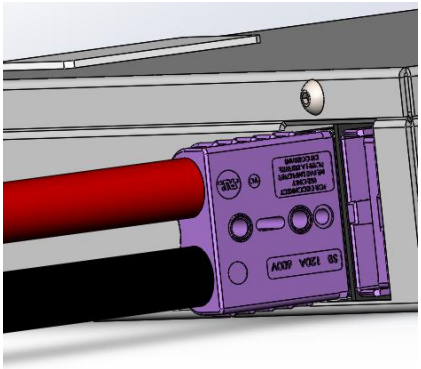


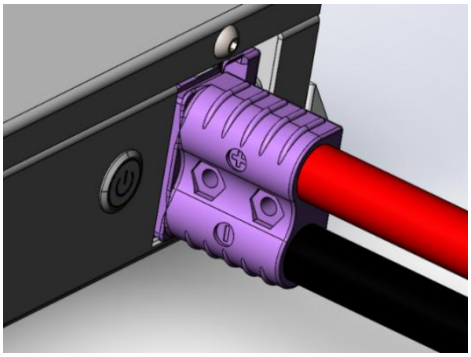


Note: The metal switch is the on/off switch that controls discharge. The battery can only be discharged when the metal switch is in the closed position, while charging is unaffected by the switch's position.

2). The customer should use 1 or 2 sets of Anderson 120A blue plugs, ensuring they are the same model and color. Both plugs can be used for charging or discharging.

3). When inserting the Anderson plugs into the battery terminals, ensuring the correct orientation. The plugs will not fit if oriented incorrectly. (as shown below)





6.3.3 Installation Orientation:

The battery module can be installed in any orientation except upside down (with the LCD screen at the top) as shown below

Installing upside down may risk internal damage if the module experiences excessive shock or vibration.

7. Storage, Safety and Limitations

- Charging current shall be less than the maximum charging current specified in the data sheet. Charging current exceeding the recommended current may damage the battery.
- The discharge current shall be less than the maximum discharge current specified in the product specifications; Discharge current bigger than the recommended current may damage the battery.
- Non-qualified personnel are not allowed to disassemble the battery.
- Do NOT reverse charge the battery.
- Battery should not be used or placed at high temperature. Do NOT use or store under direct sunlight. It may cause overheating, function failure and shorter life.
- Battery pack should be placed in a dry and cool environment when it is not in use. Immersing into water is prohibite

- It is strictly prohibited to install and disassemble the battery pack when it is live.
- For optimal performance, charge the battery to 14.6V. Failure to do so may prevent the battery from reaching its full usable capacity.
- When stored for extended time, the battery should be fully charged and then discharged to 50% soc every 3 months to maintain optimal condition.

8. Disengaging the Under-Voltage Protection

When the battery UV protection occurs during discharge, it can be removed by the following ways:

1). Disconnect the battery from the load and allow it to rest for 15-20min. If the problem persists, go to the next step.

2). Use a charger with 0V charging function (It can charge the battery starting from 0V) or a constant voltage (CV) charger to charge the battery for 5 min ONLY. Constantly monitor its voltage until it reaches the recovery voltage of 11.2V, then disconnect the CV charger. Do NOT let it charge unsupervised.

Alternatively, you can use another 12V lithium battery with the same capacity to connect in parallel with the battery and let them piggyback each other for approximately 12hours.

3). To fully charge the battery, use a LiFePO4 charger.

9. Controller Settings

- When charged with a controller, and the controller output is used to connect load:

It is recommended that the controller is set to the following parameters to avoid failure of the battery to recover when the BMS cut off the battery for protection after a continuous small current discharge.

Overcharge Protection Voltage Range:14.6V

Overcharge Recovery Voltage:14.2V

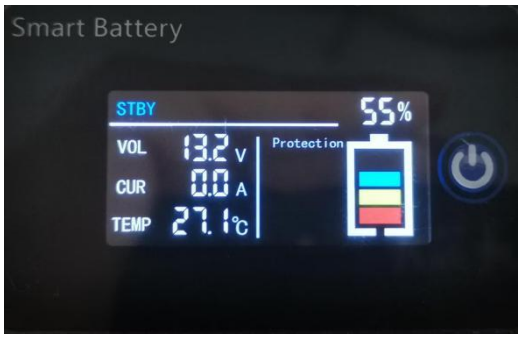
Over-discharge Protection Voltage:11.2V

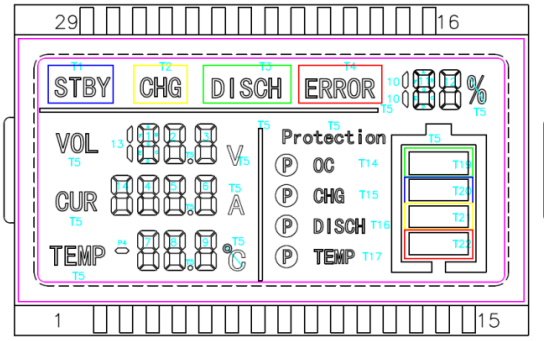
Over-discharge Recovery Voltage: 11.6V

The above settings ensure that the controller triggers its protection before the BMS does, thereby prolonging the service life of the battery.

- If solar charging is used, please set the regulator to LiFePO4 charging mode.

10. LCD Screen





1). Press the ON/OFF button to turn the display on.

2). The screen displays battery SOC, voltage, current and temperature.

3). Sleep conditions:

- The screen enters sleep mode after 3-4 minutes in the absence of current.
- Press the power button for 5 seconds to enter sleep mode manually.
- The LCD display stays active (won't enter sleep mode) while the battery is charging or discharging.

11.Warnings

Ensure all batteries in a bank have same SOC for proper performance. Discharging beyond 80% Depth of Discharge shortens battery life. Over discharge constitutes misuse and voids the warranty. Use a cut-off control or SOC monitor with control function for protection. Do not store the battery in a discharged state, and recharge ASAP within 24 hours after discharge. Disconnect or remove battery from application when not in use (considered in storage).

Contact Us

YHI Power Pty Ltd

Address: 20 - 22 Venture Way, Braeside, VIC 3195

Telephone: 1300 722 028

Email: inquiry@yhipower.com.au

Website: www.yhipower.com.au