



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

User Manual

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Contents

Introduction	3
Overview	3
Dimension	3
Specification	4
Features	4
Installation Guide	5
Preparation	5
Installation Orientation	5
Compatibilities	6
Installation Tools	6
Charging Batteries before Use	7
NPL (SL) Battery Terminal	7
Storage, Safety and Limitations	8
Disengaging the Protection	9
Controller Settings	9
LCD Screen	9
Contact Us	10

Introduction

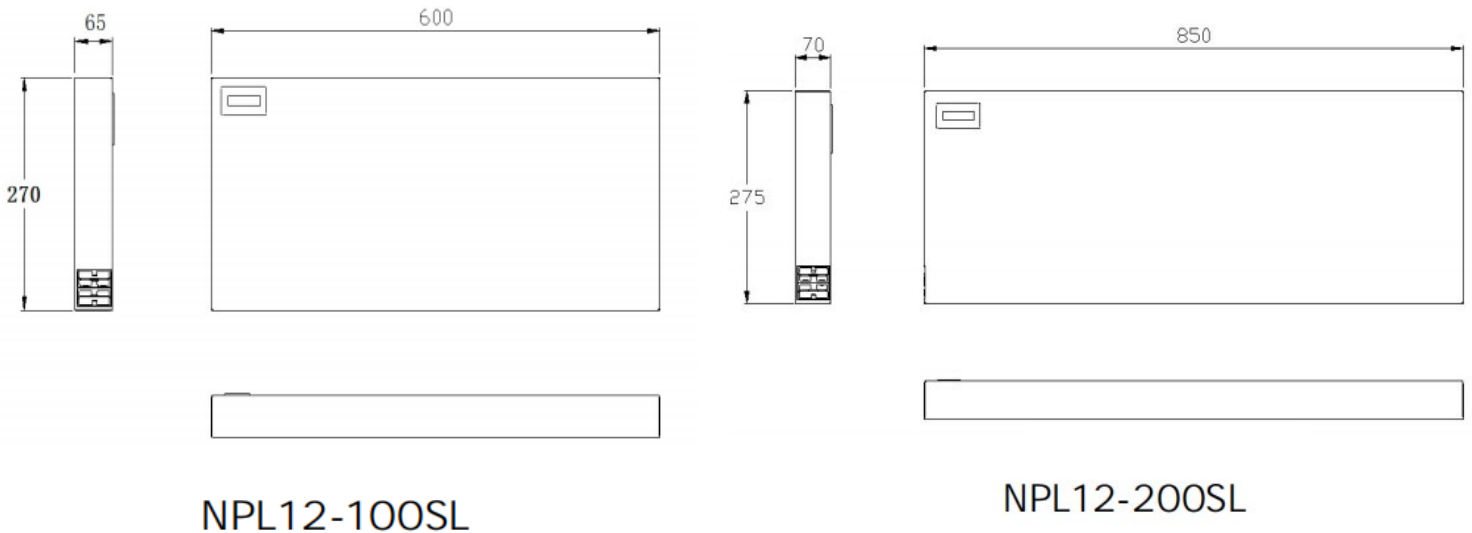
Neuton Power 12.8V LiFePO4 (LFP) Slimline (SL) series are ultra-thin LiFePO4 solutions, which are specially designed for UTE, 4WD and caravan. Constructed with high-quality prismatic cells, these batteries are designed for better consistency and reliability.

The BMS built into the battery system gives it added protection, which is responsible for collecting and analyzing the voltage, temperature and current of each cell. It provides cell balancing and protection against over-voltage, under-voltage, high and low temperature, and short circuit.

Overview

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

Dimension



Included inside the packaging

- 1x Neuton Power LiFePo4 (SL) battery
- 4x brackets
- 8x screws

Specification

Model	NPL12-100SL	NPL12-200SL
Rated Voltage	12.8V	12.8V
Rated Capacity	100Ah	200Ah
Rated Energy	1.28KWh	2.56KWh
Maximum Charge Current	100A	200A
Recommended Charge Current	<50A	<100A
Maximum Discharge Current	200A	200A
Recommended Discharge Cut-off Voltage	11.2V	11.2V
Over Discharge Protection Voltage	8.4V – 10V	8.4V-10V
Recommended Charge Voltage	13.6V – 13.8V	13.6V – 13.8V
Cycle Life (0.5C/0.25C, 80% DOD at 25°C)	4000	4000
Total Weight	15.5Kg	28kg
Internal Resistance Fully Charged at 25°C	≤10mΩ	≤ 5mΩ
Thermal Management	Convection cooling	
Operating Humidity	60 ± 25% R.H.	
Operating Temperature	Charging: 0°C ~ 50°C	
	Discharging: -20°C ~ 65°C	

Features

The NPL (SL) battery includes some of the following features:

- Battery Management System (BMS) for protection and safety
- High acquisition of voltage data collection (5mv).
- Intelligent cell balancing.
- Over charging, over discharging, over temperature, short circuit protection.
- This BMS supports a matrix of 6 batteries in series and 6 batteries in parallel for a total of 36 batteries in the matrix (6x6).

Installation Guide

Preparation

Before installation, please read through all safety information provided in this document. If you have any questions about operation and safe use of the battery system, please contact technical support.

Before Operation:

- Work must be carried out by qualified personnel who have completed the required training and are certified to undertake electrical work in their state.
- Remove all metal items, such as jewelry, watch, pen etc. from body.
- To ensure the safety of construction personnel and equipment, disconnect the battery pack from the operating equipment during wiring.
- Follow the connection port description and system connection diagram. Pay attention to the terminal polarity of the battery module.
- Ensure the tools insulation are in proper condition and to use them correctly.
- Do NOT plug or unplug the battery when it is in operation. Necessary work should be conducted after the power supply is disconnected.
- Before its formal operation, ensure whether the power terminals are properly connected and tightened. When it is necessary to take measurements, be careful to use the instruments and tools to avoid short circuit and other accidents.
- Do NOT disassemble the battery without the proper authorisation from manufacturer

Installation Orientation

The battery module can be installed in any orientation **EXCEPT** upside down (LCD screen at the bottom) as shown below. Installing it upside down may risk internal damage if the battery module experiences any excessive shock or vibration.



Compatibilities

Do NOT connect different batches, different types, old and new batteries in one bank. To connect the batteries into a bank (in series and/or in parallel), the batteries should meet the following conditions:

- All batteries must be from the same brand and same model.
- Have the same battery capacity (Ah).
- Are of similar age, preferably manufactured from the same batch.

Installation Tools

Torque Wrench	
Phillip Screwdriver	
Insulating gloves	
Multimeter	

Charging Batteries before Use

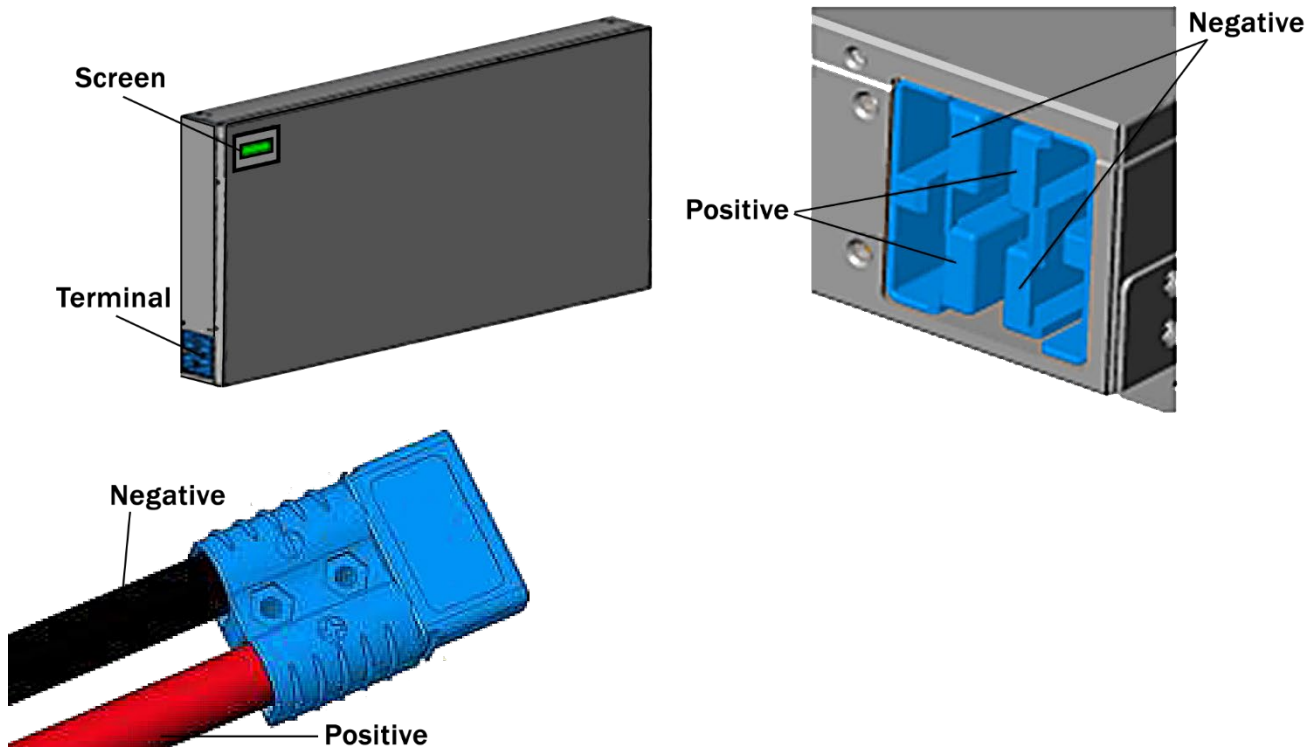
Before connecting the batteries in a matrix, the following steps are necessary to reduce the voltage difference between batteries and thereby optimising its performance.

1. Fully charge your batteries separately.
2. Disconnect the batteries, then let them rest for approximately 12-24 hours.
3. Connect your batteries in series, and then you can connect your battery strings in parallel.

NPL (SL) Battery Terminal

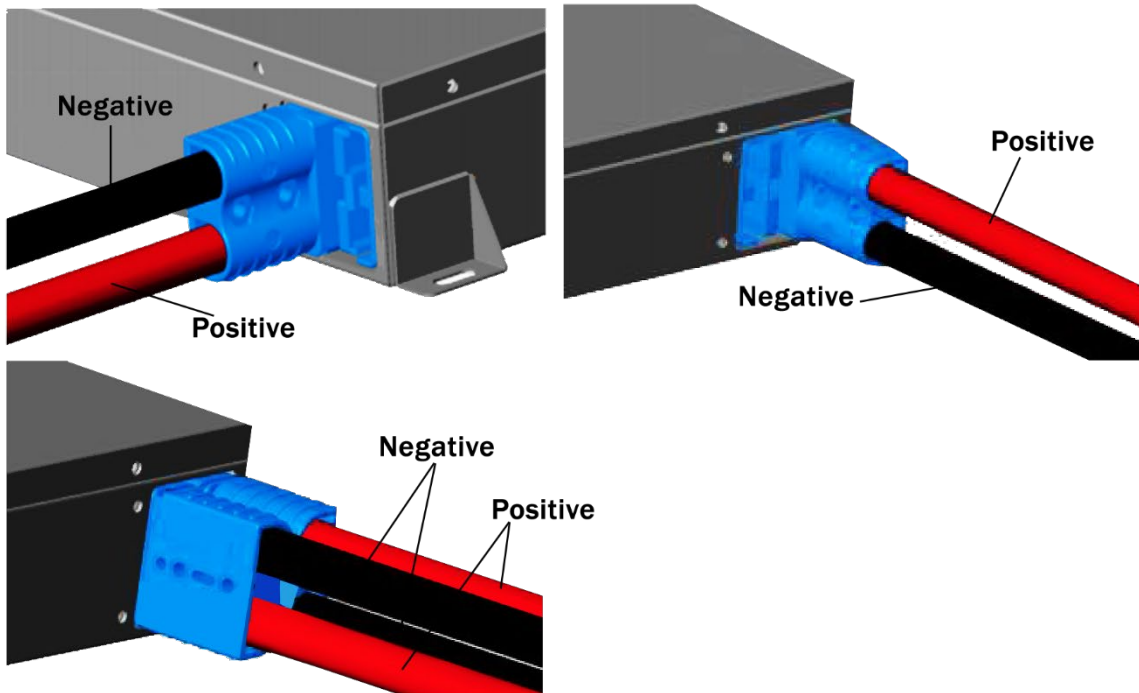
NPL (SL) series have two terminals for Anderson 175A blue plugs (as shown below).

Note: Anderson cables not included with the purchase of the battery



Only use the same plug model type together (Blue Anderson 175A).

The Anderson plugs will only insert in one orientation. If the orientation is wrong, it will not connect.



Storage, Safety and Limitations

- Charging current must 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 must be less than the maximum discharge current specified in the data sheet.
- 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 pack should not be used or placed in high temperature. Do NOT use or store under direct sunlight. It may cause overheat, function failure and shorter life.
- Battery pack should be placed in dry and cool environment when not in use.
- Do NOT immerse into water.
- Do NOT install or disassemble the battery pack when it is live.
- For optimum performance, you must charge at 14.6V. If you do not, you will not be able to reach the full usable capacity of the battery.
- To ensure the best performance of the battery when stored for a long time, the battery should be charged and discharged every 3 months.

Disengaging the Protection

To disengage the BMS protection, follow the following steps:

- 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 constant voltage (CV) charger to charge the battery for 5min **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.

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.

Max charge voltage: 14.6V

Overcharge protection voltage: 14.8V

Overcharge recovery voltage: 14.2V

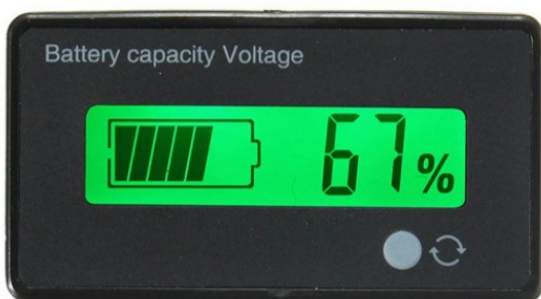
Discharge cut-off voltage: 11.2V

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.

LCD Screen



1. Press the function key once and the screen will light up to display the battery voltage.
2. Press the function button again to display the State of Charge (SOC).
3. On the third press, the display screen will turn off.

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