

SolarInvert Energy Solutions

Standard voltage of lithium battery pack



Overview

What voltage does a lithium ion battery use?

The standard lithium battery voltage ranges between 3.2V to 4.2V depending on chemistry. Most common lithium-ion batteries operate at 3.7V nominal voltage, while lithium iron phosphate (LiFePO₄) batteries use 3.2V per cell.

What should you know about lithium ion batteries?

The most important key parameter you should know in lithium-ion batteries is the nominal voltage. The standard operating voltage of the lithium-ion battery system is called the nominal voltage. For lithium-ion batteries, the nominal voltage is approximately 3.7-volt per cell which is the average voltage during the discharge cycle.

What is a safe voltage for a lithium ion battery?

Lithium-ion batteries function within a certain range at which their voltage operates optimally and safely. The highest range where the fully charged voltage of a lithium-ion battery is approximately 4.2V per cell. The lowest range which is the minimum safe voltage for lithium-ion batteries is approximately 3.0V per cell.

What is the SOC voltage chart for lithium batteries?

The SoC voltage chart for lithium batteries shows the voltage values with respect to SoC percentage. A Li-ion cell when fully charged at 100%SoC can have nearly 4.2V. As it starts to discharge itself, the voltage decreases, and the voltage remains to be 3.7V when the battery is at half charge, ie, 50%SoC.

How does a lithium ion battery charge?

During charging, lithium-ion batteries exhibit distinct voltage characteristics that reflect their electrochemical processes. The charging cycle typically follows a constant current-constant voltage (CC-CV) protocol. Initially, the

battery voltage rises steadily as current flows into the cell.

What is a standard lithium ion/lithium polymer (LiPo) battery discharge curve?

The following Figure 1 is a standard lithium-ion/lithium polymer (LiPo) battery discharge curve. Its nominal voltage is 3.6V or 3.7V, the fully charged voltage is 4.2V, and the discharge cut-off voltage is 3V. You see, from 4.0V to 3.6V, the voltage does not change much, but the power may drop from 80% to about 20%.

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