

## How to Estimate the Battery SOC?

The SOC values listed below are estimated based on the open circuit voltage when the battery is at rest for 30 minutes, not in charging or discharging state.

SOC	Open Circuit Voltage	SOC	Open Circuit Voltage
100%	13.6V	30%	12.9V
99%	13.4V	20%	12.8V
90%	13.2V	14%	12.7V
70%	13.1V	9%	12.6V
40%	13.0V	0%	10.0V

**i** The table above is for reference only because slight variations in battery voltage may occur among different batteries.

## Self-Heating Function

The normal operation of the self-heating function requires a stable charge current greater than 4A for each battery in the parallel battery bank. The self-heating function will start operating automatically once the battery and the battery temperature drops below 41°F (5°C) and stop operating automatically once the battery temperature rises above 50°F (10°C). The temperature rise rate is approximately 51.8°F (11°C) per hour when running at full power of 55W (4A).

## Battery Management System

This smart battery management system has more than 60 fault alarms and protections to fully protect your battery safety. Below we list some common faults and protections for reference.

Battery Operating Status		Condition (For Reference Only)	
Battery Cell Overvoltage	Protection	Trigger	Battery Cell Voltage $\geq 3.7V$
		Recover	Battery Cell Voltage $\leq 3.45V$
Battery Cell Undervoltage	Protection	Trigger	Battery Cell Voltage $\leq 2.7V (> 0^\circ C)$ Battery Cell Voltage $\leq 2.2V (\leq 0^\circ C)$
		Recover	Battery Cell Voltage $\leq 3.1V (> 0^\circ C)$ Battery Cell Voltage $\leq 3.0V (\leq 0^\circ C)$
Cell Undervoltage Permanent Failure	Protection	Trigger	Battery Cell Voltage $\leq 1.8V$
Charge High Temperature	Protection	Trigger	Battery Temperature $\geq 131^\circ F (55^\circ C)$
		Recover	Battery Temperature $\leq 122^\circ F (50^\circ C)$
Discharge High Temperature	Protection	Trigger	Battery Temperature $\geq 140^\circ F (60^\circ C)$
		Recover	Battery Temperature $\leq 122^\circ F (50^\circ C)$