

# Outdoor power charging temperature





## Overview

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What temperature should EV batteries be charged at?

15°C–35°C (59°F–95°F) ensures minimal stress on lithium-ion batteries, balancing charging speed and long-term health. At 21.5°C (70°F), EVs often exceed their rated range, achieving up to 115% efficiency. 0°C–30°C (32°F–86°F) is widely cited as the safe charging range, though performance gradually declines near the extremes.

How does temperature affect charging?

High temperatures exacerbate the effects of overcharging, making temperature management and proper charging practices crucial. Temperature ranges affect charging and discharging efficiency; extreme temperatures can lead to reduced performance or damage. Optimal charging typically occurs between 0°C to 45°C.

What temperature should a rechargeable battery be charged?

It lies between about 15° and 35° C. Outside of this range, performance suffers when charging and discharging the batteries. The major requirements for rechargeable batteries are energy, power, lifetime, duration, reliability, safety, and cost — and they can all be affected by operating temperatures.

How does a low ambient temperature affect the charging time?

A low ambient temperature tends to increase the charging time of the fleet via an increased internal battery resistance, even by more than 100% at –10 °C if the batteries are not heated. The charging time at –10 °C can be reduced by around 28% if standby BTM and cabin preconditioning are enabled.



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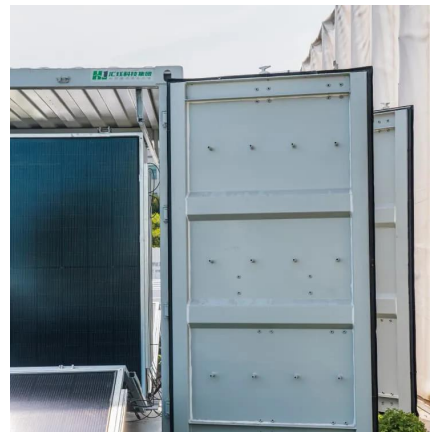


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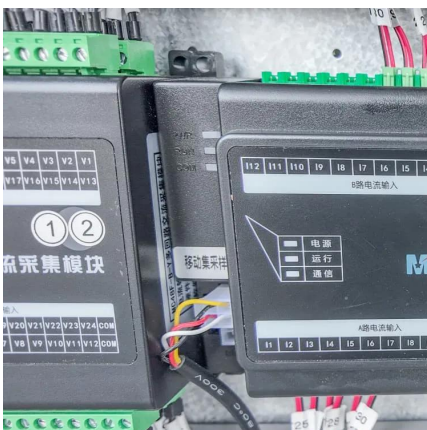
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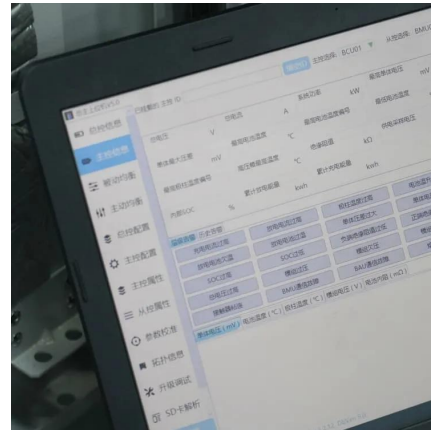
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