40Ah 420Wh/kg Solid-State Lithium Pouch Cell

Key Specifications

Capacity	40Ah	Voltage	3.4V
Model	PE40N-EG	Operating Temp	-43℃~55℃

Product Overview

PE40N-EG is a 40Ah solid-state lithium pouch cell for weight-sensitive OEM battery development. It combines a specified cell-level energy density of 420Wh/kg with a 325g weight and dimensions of 9.1 × 87 × 187mm. Its 1C continuous discharge and 3C pulse discharge ratings make it an option to evaluate when energy per kilogram takes priority over sustained high-current output.

Model Number	PE40N-EG
Classification	Ultra-High Energy Density Solid-State
Battery Technology	Solid-State Lithium
Cell Structure	Pouch
Nominal Capacity (Ah)	40
Nominal Voltage (V)	3.40
Cell Weight (g)	325
Energy Density (Wh/kg)	420
Max. Continuous Charge Rate	1C
Max. Continuous Discharge Rate	1C
Max. Pulse Charge Rate	2C
Max. Pulse Discharge Rate	3C
Operating Temperature (°C)	-43 to 65
Dimensions (T×W×H, mm)	9.1 × 87 × 187

Specification notes: Energy density is stated at cell level, not for an assembled battery pack. The operating temperature range does not establish that maximum current is available throughout that range or that charging is permitted at either temperature extreme. Confirm the separate charging and discharge limits, pulse duration, and test conditions before pack qualification.



Other Cells in the Ultra-High Energy Density Solid-State Cell Series

Compare the series below by capacity, weight, dimensions, and listed rate capability. The PE40N-EG provides 40Ah capacity in a 325g cell; the PE36N-EG offers a lighter 295g alternative with 36Ah capacity and an 8.2mm thickness. Selection should account for the complete pack layout and load profile rather than energy density alone.

PE36N-ED	36Ah	3.48V	343g	371Wh/kg	1C/3C	2C/6C	-43℃~65℃	9.0×87×187mm
PE36N-EE	36Ah	3.45V	319g	399Wh/kg	1C/2C	2C/5C	-43℃~65℃	8.3×87×187mm
PE40N-EG	40Ah	3.40V	325g	420Wh/kg	1C/1C	2C/3C	-43℃~65℃	9.1×87×187mm
PE36N-EG	36Ah	3.40V	295g	422Wh/kg	1C/1C	2C/3C	-43℃~65℃	8.2×87×187mm

Solution

In a weight-limited battery system, adding capacity can increase the mass that the equipment must carry. However, selecting only for energy density creates a different risk: the chosen cell may not support the continuous current or short peaks required by the mission. Both energy and power requirements need to be checked before selecting a cell.

The PE40N-EG targets that energy-focused design space. Its 40Ah capacity and 3.40V nominal voltage give a calculated nominal energy of 136Wh per cell. The specified 420Wh/kg figure describes cell-level specific energy; the finished pack will also include the mass of its enclosure, connections, BMS, thermal components, and mechanical supports. Explore LiTrue's battery cell range to compare other capacity and rate options.

At 40Ah, the 1C continuous discharge rating corresponds to 40A, while 3C pulse discharge corresponds to 120A. These are conversions from the listed capacity and C-rates, not additional test results. If the application needs sustained current above 40A per cell, assess a suitable parallel configuration or a different cell rather than treating the pulse rating as continuous capability.

For pack integration, confirm the permitted pouch-cell restraint, swelling allowance, tab connections, cooling arrangement, and voltage limits. LiTrue's battery-pack solutions can support evaluation of the series-parallel configuration around the required energy, current, and installation space.

Application Areas

- Long-Endurance UAV Development: a candidate for designs prioritizing battery energy per kilogram, provided sustained flight current and takeoff peaks remain within the approved cell and pack limits.
- Lightweight Aviation Prototypes: the 325g pouch-cell format allows evaluation of mass-sensitive battery layouts; use in an aviation platform requires application-specific qualification and applicable safety approvals.
- Portable Instrumentation and Field Equipment: the 40Ah capacity can be evaluated for extended operation where equipment weight matters more than sustained high-current output.
- Custom Energy-Focused Battery Packs: the 9.1 × 87 × 187mm cell dimensions provide a starting point for module layout, with additional space required for connections, protection, and mechanical support.

FAQs

Is PE40N-EG a high-power or high-energy cell?

It is positioned primarily as a high-energy cell. Its listed discharge capability is 1C continuous and 3C pulse, corresponding to 40A and 120A at 40Ah capacity. A higher-rate model may be more appropriate when sustained current, rather than energy per kilogram, is the main design constraint.

Does 420Wh/kg describe the complete battery pack?

No. It is the specified cell-level energy density. Pack-level energy density must include the mass of the enclosure, BMS, connections, supports, and thermal components, while usable energy also depends on voltage limits, load, and temperature. Request the measurement conditions when comparing this figure with other cells.

What pack voltage can I build with a 3.40V cell?

A 12S configuration gives 40.8V nominal, and a 14S configuration gives 47.6V nominal. These are calculated nominal values, not charging voltages or discharge cutoffs. Confirm the approved cell voltage limits before specifying the charger, controller, and BMS.

Can the cell charge and deliver maximum current at -43°C?

The stated -43°C to +65°C operating range does not establish either condition. Charging and discharge require separate temperature limits, and available capacity and voltage under load must be evaluated at the intended temperature. Obtain temperature-specific test data before setting pack operating limits.

Can I request samples and qualification data?

Contact LiTrue to confirm sample availability, MOQ, and production lead time for the required quantity and configuration. Include the target voltage, continuous current, peak current and duration, operating temperature, enclosure space, and expected volume. Ask the LiTrue engineering team to confirm the applicable cycle-life data, pulse conditions, and technical documentation for PE40N-EG.