100Ah High C-Rate LFP Prismatic Battery Cell

Key Specifications

Capacity	100Ah	Voltage	3.2V
Model	LFL1-100P	Operating Temp	-30℃ ~ +55℃

Product Overview

If you have ever watched a 100Ah cell sag under a hard 400A pull, you already know why this product exists.

The LFL1-100P is a high C-rate LFP battery cell engineered for the jobs that quietly destroy ordinary energy cells—repeated heavy starts, sudden load surges, and shift after shift without a cooldown.

It is a prismatic lithium iron phosphate cell rated at 100.0Ah and 3.20V nominal. We designed it around one stubborn question we kept hearing from integrators: "Why does my pack hit voltage cutoff before it hits empty?"

This page is the honest, engineer-to-engineer rundown. Real numbers from our data sheet, where the cell shines, where it does not, and how it stacks up against the pouch route. No fluff.

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1. Why We Built the LFL1-100P

Most 100Ah LFP cells on the market are tuned for slow, deep energy cycling—such as solar storage and backup banks. They are excellent at that. However, they are miserable when you ask them to dump current fast; their internal resistance climbs, voltage droops, and the BMS trips early.

Our team kept seeing customers oversize their packs by 30–40% just to survive current spikes, not the actual energy demand. That means wasted weight, wasted cost, and wasted space.

So, we took a different design path. As an experienced lithium battery manufacturer that builds both individual cells and finished systems, we get real-world feedback loops fast. The LFL1-100P is what came out of it: a prismatic format optimized for low impedance and aggressive current handling, without sacrificing the bulletproof safety and longevity of LFP chemistry.

2. What "High C-Rate" Actually Means at the Cell Level

C-rate is simply current expressed relative to capacity. For a 100Ah cell, 1C equals 100A. When we say this cell handles a 4C continuous discharge, we mean a sustained 400 amps out of a single cell. A 6C pulse means brief bursts of 600A.

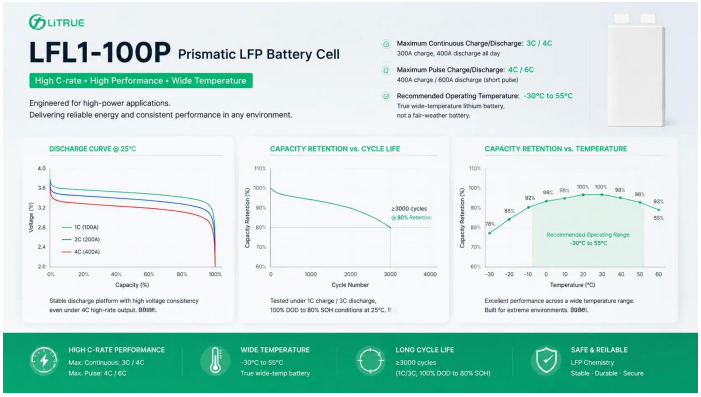
On the charge side, it accepts up to 3C (300A) continuous and 4C (400A) pulse. For a textbook definition and why this matters for system sizing, you can read Battery University's explainer on C-rate.

> The Reality Check: Plenty of vendors print a high C-rate and then bury a footnote saying it only applies for ten seconds at 25°C. We rate the LFL1-100P's continuous numbers as truly continuous. That difference is the entire point of buying specialized high-rate LFP cells instead of repurposing standard energy cells and hoping for the best.

3. The Full Spec Sheet

Model Number	LFL1-100P
Classification	High C-rate
Chemical Materials	LFP (Lithium Iron Phosphate)
Cell Structure	Prismatic Can
Nominal Capacity (Ah)	100.0
Nominal Voltage (V)	3.20
Energy Density (Wh/kg)	145
Max. Continuous Charge Rate	3C
Max. Continuous Discharge Rate	4C
Max. Pulse Charge Rate	4C
Max. Pulse Discharge Rate	6C
Cycle Life (times)	≥3000 @ 1C/3C
Operating Temperature (℃)	-30℃ ~ +55℃
Dimensions (T×W×H, mm)	28.8 × 173.9 × 207.6

We test cycle life under a demanding 1C charge / 3C discharge regime because that is closer to how this cell gets used in the real world. Testing cycle life at a gentle 0.5C would be flattering but dishonest. For a deeper dive into why this chemistry holds up so well structurally over thousands of cycles, see the Wikipedia overview of lithium iron phosphate batteries.



4. Where This Cell Earns Its Keep

The LFL1-100P is not designed for a smartphone or a quiet home battery. It is the right answer when current spikes dominate your design problem. It excels in:

- Electric Motorcycles & High-Performance Vehicles: Delivers real acceleration current without voltage sag at the top of the throttle.
- AGVs & Light Commercial Traction: Perfect for forklifts and loaders that slam between full-load lifts and regenerative braking multiple times an hour.
- Hybrid Powertrains & Engine-Start Systems: Demands a clean 600A pulse to crank, then quickly settles down.
- Industrial Power Tools & Duty Equipment: Supports multi-shift schedules where the 3000-cycle floor translates directly into years of reliable service.

If your application is closer to pure energy storage with mild current, you are paying for headroom you will not use—and we will happily tell you that on the phone rather than oversell you.

5. Thermal Behavior and Cycle Life

One thing our lab data makes clear: this cell tolerates cold better than most. At −30°C it still delivers meaningful power, placing it among our genuinely wide-temperature lithium cells.

On the hot end, sustained operation up to 55°C is within spec. However, we always coach integrators to design airflow or a cold plate when planning to live near 4C continuous for long stretches. Heat is the ultimate enemy of cycle life—give the cell a path to shed it, and the 3000-cycle rating becomes conservative, not optimistic.

A practical note from our bench: The rigid prismatic aluminum can does the structural work that a soft format cannot. Under repeated high-current pulsing, there is no pouch swelling to manage and no need for aggressive external compression fixtures. This simplifies mechanical pack assembly—a real cost-saver when scaling to custom battery pack manufacturing in high volumes.

6. Pros and Cons

What We Love About It

- True High-Rate Capability: Genuine 4C continuous and 6C pulse from a 100Ah LFP cell is rare.
- Extreme Cold Resilience: Operates down to −30°C where standard cells quit.
- Inherent Safety: LFP chemistry offers top-tier thermal stability without oxygen-releasing runaway.
- Simplified Mechanics: The rigid prismatic case eliminates the need for heavy compression fixtures.

The Trade-Offs

- Energy Density: At 145 Wh/kg, it is not your lightest option. If your project is weight-obsessed and current-light, a higher-energy density chemistry will beat it.
- Voltage Profile: The 3.20V nominal means you need more cells in series to reach your target pack voltage compared to NMC.
- Thermal Management: Like all high-rate designs, you must pay a small thermal-management tax (proper cooling) to fully exploit the continuous 4C rating.

7. LFL1-100P vs. the Pouch Alternative

The most common cross-shop we see is prismatic versus pouch. Our own high C-rate LFP pouch cells (the PJ20F-E at 20Ah and PA50F-E at 50Ah) hit a higher energy density (164 to 167 Wh/kg) and a thinner stacked profile—fantastic when packaging is tight and weight is king.

But notice the current trade. Those pouch cells run 2C–3C continuous and 4C pulse. The LFL1-100P pushes all the way to 4C continuous and 6C pulse at a full 100Ah in a single rigid can.

The decision is rarely "which is better"—it is "which problem are you solving":

- Tight, light, moderate current? Go pouch.
- High capacity per cell, brutal continuous current, simple mechanical pack? Go prismatic with the LFL1-100P.

8. Customization, OEM, and Manufacturing

We do not just ship a cell and disappear. The LFL1-100P is the foundational building block for specialized OEM programs. We can match, grade, and laser-weld these cells into modules tailored exactly to your voltage and footprint targets.

Our engineering team supports customized busbars, integrated module BMS, and rigorous validation testing against your specific duty cycle. You can browse the broader catalog of every high-rate battery cell we produce, or kick off a fully bespoke project through our custom lithium battery pack development program. Either way, you are dealing directly with the team that manufactured the cell.

9. FAQs

Can the LFL1-100P really sustain 400A continuously?

Yes. 4C is the verified continuous discharge rating (equal to 400A), provided you operate within the recommended temperature window and implement adequate heat dissipation. The 600A figure is the 6C pulse rating reserved for short bursts, such as engine cranking.

What pack voltage can I build with it?

At 3.20V nominal, a 16S string lands near 51.2V and a 24S near 76.8V. We routinely configure series-parallel (S/P) arrangements to hit standard 48V, 72V, and high-voltage industrial system rails.

How does cold weather affect performance?

The cell is rated down to −30°C. While you will see some capacity and power taper at the extreme low end due to standard electrochemistry physics, it keeps delivering where many standard cells fail completely.

What is the minimum order, and can I get samples?

Sample quantities are readily available for engineering qualification. Production MOQs depend on whether you require bare cells or fully assembled, welded modules. Reach out to our team to scope your project.

Is it certified for shipping and safety?

Yes. LFP chemistry is inherently the most thermally stable lithium option on the market. Our cells are produced and tested to recognized international and GB safety standards. We provide all necessary UN38.3 test reports and transport documentation required for your market.

Ready to spec it into your design or request engineering samples? Talk to a real applications engineer at LiTrue. Reach out to your trusted lithium battery supplier today, and we will turn your duty cycle into a build sheet.