SPECIFICATIONS AND OPERATING RULES

LiFePO4 cell 3.2V 360Ah 1152Wh

Prismatic lithium iron phosphate cell (LiFePO4) for building batteries · 3.2 V · 360 Ah · 1152 Wh



In brief

3.2 V rated voltage	**360 Ah** minimum capacity	**1152 Wh** energy per cell
2.5–3.65 V operating voltage (above 0 °C)	**8000 cycles** to 70 % energy, 25 °C, 0.5P	**5.41 kg** weight · 174.2 × 71.6 × 204 mm

The cells work only with a BMS. Every battery built from these cells must have a battery management system (BMS) that constantly monitors, controls and protects each cell. Without a BMS a cell is easily overcharged or deeply discharged.

1. Purpose of the document

This document describes the specifications, conditions and measurement methods for the prismatic lithium-ion LiFePO4 cell 3.2 V 360 Ah, so that test results do not differ due to different measurement conditions. Values follow the manufacturer's specification.

Type and model

- Type: prismatic lithium-ion cell, LiFePO4 chemistry (lithium iron phosphate)
- Model: 3.2V 360Ah (1152Wh)

2. Main specifications

№	Parameter	Value	Note
1	**Minimum capacity**	360 Ah	standard charge and standard discharge
2	**Rated voltage**	3.2 V	energy 1152 Wh
3	**Operating voltage range**	2.5–3.65 V 2.0–3.65 V	above 0 °C at 0 °C and below
4	**Maximum charge voltage**	no more than 3.75 V	upper limit of overcharge protection
5	**Standard charge current**	0,5P (≈ 180 A)	constant power, temperature 25 ± 3 °C

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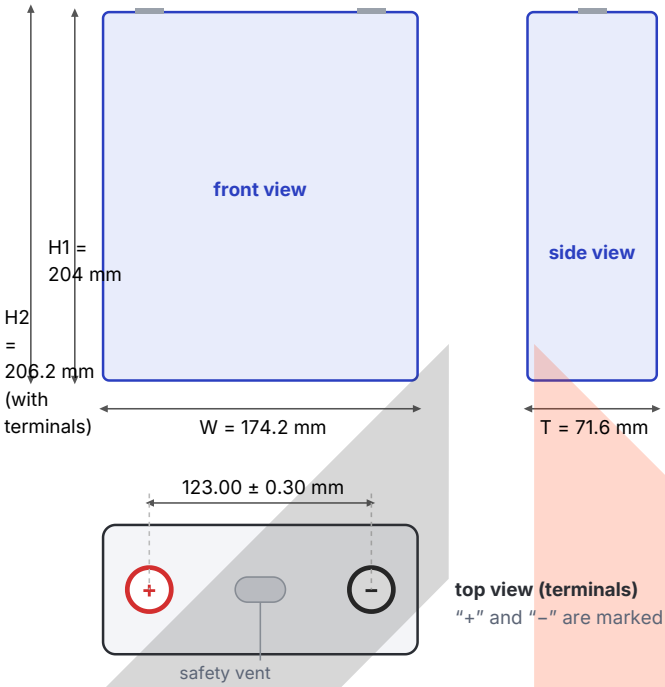
6	**Standard discharge current**	0,5P (≈ 180 A)	constant power, temperature 25 ± 3 °C
7	**Maximum continuous charge current**	1P (≈ 360 A)	temperature 25 ± 3 °C
8	**Maximum continuous discharge current**	1P (≈ 360 A)	temperature 25 ± 3 °C
9	**Maximum pulse charge current**	1.5P, up to 10 s	50 % charge (SOC), 25 °C
10	**Maximum pulse discharge current**	2P, up to 10 s	50 % charge (SOC), 25 °C
11	**Operating temperature and humidity**	charge: 0…55 °C discharge: −20…55 °C humidity below 85 %	permitted currents by temperature: see the “Discharge map” table (section 4)
12	**Storage temperature and humidity**	up to 1 mo: −20…60 °C up to 3 mo: −20…45 °C up to 6 mo: −20…45 °C up to 1 yr: −20…30 °C up to 18 mo: −20…30 °C humidity below 95 %	if the cells are unused for a long time, run one standard charge-discharge cycle every 3 months (recommended)
13	**Voltage consistency at shipment**	±10 mV	within 60 days of manufacture
14	**Maximum installation altitude**	up to 5000 m	
15	**Weight**	5.41 ± 0.15 kg	

P is current expressed as power relative to cell energy: 1P = 1152 W per cell (≈ 360 A at 3.2 V), 0.5P = 576 W (≈ 180 A). Standard charge and discharge use constant power of 0.5P.

3. Dimensions and appearance

Size	Thickness T	Width W	Case height H1	Height with terminals H2
mean value	71.6 mm	174.2 mm	204 mm	206.2 mm

Tolerance ±0.5 mm.



Dimensions, mm
tolerance ±0.5 mm
weight 5.41 ± 0.15 kg
terminal spacing 123.00 ± 0.30

top view (terminals)
"+" and "−" are marked on the case

Appearance: no cracks, scratches, deformation, dirt or traces of electrolyte leakage.

4. Electrical specifications

№	Parameter	Normal	Test conditions
1	**Open-circuit voltage (on receipt)**	3250–3300 mV	measured at 25 ± 3 °C
2	**Internal resistance (AC 1 kHz)**	0.16 ± 0.05 mΩ	AC resistance meter 1 kHz, 25 ± 3 °C, on receipt
3	**Discharge capacity**	0.5P: at least 360 Ah	first a standard cycle for initial capacity; after standard charge at 25 ± 3 °C, discharge at various currents to 2.5 V
4	**Temperature dependence**	remaining capacity: 60 °C: at least 298 Ah 45 °C: at least 307 Ah 0 °C: at least 204 Ah −10 °C: at least 172 Ah no deformation, rupture or leakage	after standard charge the cell is held 2–4 h at 60, 45, 0 and −10 °C (±2 °C) and given a standard discharge at that temperature; inspection after 2 h at room temperature. Discharge cut-off: 2.0 V at 0 °C and below, 2.5 V otherwise
5	**Cycle life at 25 °C**	at least 70 % energy after 8000 cycles	charge to 3.65 V, discharge to 2.5 V; charge and discharge 0.5P; preload 300 ± 20 kgf
6	**Long-term storage**	10 years: recoverable capacity at least 287 Ah, no leakage 20 years: at least 234 Ah, no leakage	after standard charge, discharge 0.5P to 50 % SOC and store; at 25 ± 3 °C thickness, appearance and internal resistance are checked; monthly the cell is held 2 h at room temperature and recoverable capacity is measured with a standard cycle

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7	**Recommended clamping force**	250–450 kgf	for a cell block in a module
8	**Expansion (swelling) force**	no more than 4500 kgf at 70 % SOH no more than 5500 kgf at 60 % SOH	SOH: remaining cell life
9	**Warranty**	per the warranty terms	

Discharge map by temperature

Temperature, °C	−20…−10	−10…0	0…5	5…50	50…55	55…60
window 2.0–3.65 V	0,5P	0,5P	0,5P	0,5P	0,5P	idle
window 2.5–3.65 V	—	—	0,5P	0,5P	0,5P	idle

Values are the permitted current in each temperature range. “Idle”: no charge or discharge. Below 0 °C the cell is used only in the 2.0–3.65 V window.

Energy efficiency (per GB/T 36276-2023)

Temperature	25 °C	45 °C	5 °C
charge-discharge efficiency	at least 93 %	at least 93 %	at least 80 %

5. Safety: tests

№	Test	Requirement	Test conditions
1	**Over-discharge**	no fire or explosion	after standard discharge the cell is discharged at 0.5C (≈ 180 A) to 0 V or for 1 h; observed 1 h or until surface temperature drops by 10 °C
2	**Overcharge**	no fire or explosion	after standard charge the cell is charged at 0.5C (≈ 180 A) to 1.5 times the end voltage; observed 1 h or until surface temperature drops by 10 °C
3	**Oven heating**	no fire or explosion	a charged cell is placed in an air-circulating oven, heated at 5 ± 2 °C/min to 130 ± 2 °C and held 30 min
4	**Drop**	no fire, explosion or leakage	a charged cell (terminals down) falls freely from 1.5 m onto concrete; observed 1 h or until surface temperature drops by 10 °C
5	**Crush**	no fire, explosion or leakage	pressure perpendicular to the cell plates with a half-cylinder of radius 75 mm at 5 ± 1 mm/s up to 50 kN; held 10 min

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6. Reliability

№	Test	Requirement	Test conditions
1	**Storage 7 days at 55 °C and 100 % SOC**	remaining capacity at least 324 Ah recoverable capacity at least 342 Ah	1) initial capacity by a standard cycle at room temperature; 2) the charged cell is stored 7 days at 55 °C; 3) after 2 h at room temperature a 1.0C discharge gives remaining capacity, a standard cycle gives recoverable
2	**Vibration**	no current interruption or sharp voltage drop, no leakage or deformation; joints and structure intact	the charged cell is vibrated in turn along three perpendicular axes: amplitude 1.6 mm, frequency 10 → 55 → 10 Hz, 1 octave/min, 10 cycles, 3 h in total

Terms

- **Initial state:** appearance, open-circuit voltage, internal resistance, thickness and weight of the cell before the test.
- **Final state:** the same values after the test.
- **Remaining capacity:** the first discharge capacity after the test.
- **Recoverable capacity:** discharge capacity after several charge-discharge cycles that return the cell to normal.

7. Battery management system (BMS)

A battery built from these cells must have a BMS that strictly monitors, controls and protects each cell: each cell’s voltage, charge and discharge current, temperature.

8. Busbar welding (for module assembly)

- Weld area on a terminal: no more than Ø16 mm.
- Busbar temperature 120–130 °C during welding: no longer than 5 s.
- Penetration depth: no more than 2 mm.

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Building a battery from cells (for reference)

Cells in series	Rated voltage	Energy	Charge limit (3.65 V × n)	Discharge limit (2.5 V × n)
4	12.8 V	4.6 kWh	14.6 V	10.0 V
8	25.6 V	9.2 kWh	29.2 V	20.0 V
16	51.2 V	18.4 kWh	58.4 V	40.0 V

- Use only identical cells of this model in one battery. Do not mix with cells of another type, capacity or brand.
- At shipment cell voltages differ by no more than ±10 mV (up to 60 days from manufacture). If the cells were stored longer, balance their voltage before assembly.
- Clamp the cell block with end plates at the recommended force of 250–450 kgf.
- Charge and discharge limits in the table are the cell limits. Set the inverter and BMS with a margin from these limits.

9. Battery design and packaging

a. **Impact protection.** The battery case must protect the cells from mechanical shocks: collisions, drops, twisting and bending. A strong impact can cause electrolyte leakage and a short circuit.

b. **Secure mounting.** Cells must be fixed in the case so they do not shift when dropped or hit. Otherwise cells, the protection board and wires can be damaged. Take special care of the cell bottom: it is the easiest to damage by impact.

c. **No sharp objects.** The cell's insulating film is easily cut, which can lead to electrolyte leakage. If the protection board lies on a cell, put an insulating spacer between them. Do not place sharp objects, protruding board parts (PTC, current strips) or wires on a cell. Do not compress a cell over a small area: this degrades its performance.

d. **Thickness change.** During charge and discharge the cell thickness changes slightly. The case design must allow for this, otherwise the cells will press on the case and wires and performance will degrade.

e. **Away from heat.** Outside the permitted temperature range the cell loses capacity, grows thicker, and may leak.

f. **Ultrasonic welding of the case.** If the battery case and lid are ultrasonically welded, there must be no gap between them, so that welding energy is not passed to the cells or protection board.

g. **Cooling.** The battery design must remove heat from the cells. Overheating due to poor cooling is not covered by warranty.

h. **Water and dust.** The battery case must be protected against water and dust per current standards. Damage to cells by water or dust (corrosion, rust) is not covered by warranty.

10. Charge and discharge

- Charge and discharge cells only within the temperature and voltage limits in the specification table. Voltage above maximum degrades capacity, mechanical properties and safety, and may cause overheating and leakage.
- Connect "+" and "−" correctly. Charging with reversed polarity is forbidden: the cell will be ruined and a hazard arises.

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11. Safe handling rules

Use the cells strictly according to this document. Improper handling may cause heating, fire, explosion, damage or loss of capacity. The manufacturer is not liable for consequences of actions contrary to this document.

Danger

- Charge only with a suitable charger or inverter via a BMS and under the stated conditions.

- Do not heat, burn or wet the cell.
- Do not short “+” and “–” with metal objects.
- Do not install a cell with reversed polarity.
- Do not pierce the cell with sharp objects.
- Do not disassemble the cell.
- Do not solder or weld directly on the cell case (busbars to terminals only per the procedure in section 8).
- Do not use cells with deep scratches or deformation.
- Keep cells away from heat sources and fire.
- Do not throw or hit the cell, avoid drops and impacts.

Warning

- Do not put the cell in heaters, a washing machine or pressure vessels.
- Do not use with batteries or cells of another case, type or brand.
- If charging has not finished in the specified time, stop charging.
- If during use, charging or storage the cell gets unusually hot, smells, changes colour or shape, stop using it.
- If you notice a leak or a sharp smell, move away from the cell at once.
- If electrolyte gets on skin or clothing, rinse at once with clean water.
- If electrolyte gets in the eyes, do not rub them: rinse with clean water and see a doctor immediately.

Caution

- Children may use the cells only after adults explain the rules.
- Read this manual and the handling rules carefully before use.
- Cells have a limited life. If the device runs on the battery much less than before, replace the cells with new ones of the same model.
- If cells are unused for a long time, disconnect them from the device and store in a cool dry place.
- During charging, use and storage keep cells away from objects and materials with static charge.
- If the terminals get dirty, wipe them with a dry cloth before use.

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