Product Specification

LFP Cell for ESS

Capacity: 314Ah

Model: PF173-314A

Prepared by / Research Institute	Approved by / Research Institute	Approved by/ Sales Dept.	Approved by/Quality Dept.	Approved by/Product Manager

Address: No.8 Keyuan Street, Xiaonan District, Xiaogan, Hubei Province in China

Content

1 Scope of Application

This product specification defines the performances and notes of the PF173-314A LFP cell for ESS produced by the Cornex.

2 Basic Parameters of the Product

NO.	Parameter	Specification	Condition
2.1	Nominal capacity	≥314Ah	Reference to paragraph 3.3 standard charge and discharge procedure.
2.2	Nominal energy	≥1004.8Wh	Reference to paragraph 3.3 standard charge and discharge procedure.
2.3	Rated power	502.4W	Note:1P=502.4W
2.4	Operating voltage	2.5-3.65V 2.0-3.65V	T > 0℃ T≤0℃
2.5	Impedance (1kHz)	0.17±0.03mΩ	Fresh cell 20%SOC
2.6	Shipping SOC	20%SOC	
2.7	Residual capacity loss	Per month ≤3%	Fresh cell, 20%SOC, 25± 2°C storage 3 months.
2.8	Operating Temp. (charge)	0-55℃	N.A.
2.9	Operating Temp (discharge)	-30-55℃	N.A.

2.10	Continuous operating Temp	15-35℃	Ensure its design performance under this condition.
2.11	Storage Temp	-30-55℃	Storage ambient humidity ≤75% RH, no condensation.
2.12	Energy efficiency @25°C	≥94.5%	1P 2.5V-3.65V
2.13	Cell Weight	5.65±0.084kg	N.A.
2.14	Appearance	Appearance no scratches, deformation and damage, positive and negative poles should be free of rust, polarity identification should be correct and clear	Reference to paragraph 5.2.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
2.15	Altitude	≤6000m	N.A.

3 Standard Test Conditions

NO.	Parameter		Specification			Condition
3.1	Standard charge		1P constant power charge to 3.65 V			25±2℃
3.2	Standard discharge		1P constant power discharge to 2.5 V.			25±2℃
3.3	Standard charge&discharge		1P constant power charge to 3.65 V, rest 10min,1P constant power discharge to 2.5 V.			25±2℃
3.4	Voltage Warning	Charge	Class 1	Class 2	Class 3	25±2℃ 2.5 V~3.65 V
			3.8 V	3.75 V	3.7 V	
		Discharge	Class 1	Class 2	Class 3	
			1.8 V	2.0 V	2.3 V	
3.5	High Temp Warning		Class 1	Class 2	Class 3	25±2℃ 2.5 V~3.65 V
			70℃	65℃	60℃	
3.6	Low Temp Warning		Class 1	Class 2	Class 3	/
			-35℃	-30℃	-25℃	

4 Cell Performance Parameters

4.1 Electrichemical Performance Parameters

NO.	Project	Parameter	Specification	Condition
4.1.1	High temperature, Charge and discharge performance	Energy efficiency @45°C	≥95.5%	Fresh cell 25°C±2°C, reference to paragraph 3.2 standard discharge procedure, 45°C±2°C, rest for 16h, 1P constant power charge to 3.65 V, rest 10min,1P constant power discharge to 2.5 V，rest 10min.
4.1.2	low temperature, Charge and discharge performance	Energy efficiency @5°C retention rate of 2P charging energy relative to 1P charging energy	≥80% ≥100%	Fresh cell 25°C±2°C, reference to paragraph 3.2 standard discharge procedure, 5°C±2°C, rest for 20h, 1P constant power charge to 3.65 V, rest 10min,1P constant power discharge to 2.5 V，rest 10min.

4.1.3	Rate charging and discharging	The energy retention rate of 2P discharge energy relative to 1P discharge energy	≥97.5%	Reference to paragraph 6.4.3.1 of 36276-2023 Lithium Ion for Electric Energy Storage
		2P constant power charge and discharge energy efficiency	≥92%	GB/T Battery
4.1.4	100%SOC, 45℃ storage	Charge retention rate	≥95%	Reference to paragraph 3.1 standard charge to 100% SOC , 45±2°C , storage under 300±20Kgf preload for 30 days.
		Energy recovery rate	≥95%	

4.2 Environmental adaptability

NO.	Project	Parameter	Specification	Condition
4.2.1	High temperature adaptability	Energy efficiency	≥94.5%	Reference to paragraph 6.5.1.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
4.2.2	Low temperature adaptability	Energy efficiency	≥94.5%	Reference to paragraph 6.5.2.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
4.2.3	Initial charge-discharge performance at high altitude	Energy efficiency	≥94.5%	Reference to paragraph 6.5.3 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage

4.3 Durability

NO.	Project	Parameter	Specification	Condition
4.3.1	Storage performance	Energy recovery rate	≥97.0%	Reference to paragraph 6.6.1.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
4.3.2	Cyclic performance	6000cls@80%SOH 8000cls@70%SOH		25℃±2℃，1P，2.5V-3.65V

4.4 Safety Performance Parameters

4.4.1 Safety performance

No.	Parameter	Specification	Condition
4.4.1.1	Over charge	No fire, no explosion, no rupture outside the explosion-proof valve or pressure relief point	Reference to paragraph 6.7.1.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
4.4.1.2	Over discharge	No leakage, no smoke, no fire, no explosion, no rupture outside the explosion-proof valve or pressure relief point	Reference to paragraph 6.7.1.2.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
4.4.1.3	Over duty	No leakage, no smoke, no fire, no explosion, no rupture outside the explosion-proof valve or pressure relief point	Reference to paragraph 6.7.1.3.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
4.4.1.4	Short circuit	No fire, no explosion, no rupture outside the explosion-proof valve or pressure relief point	Reference to paragraph 6.7.1.4.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy storage

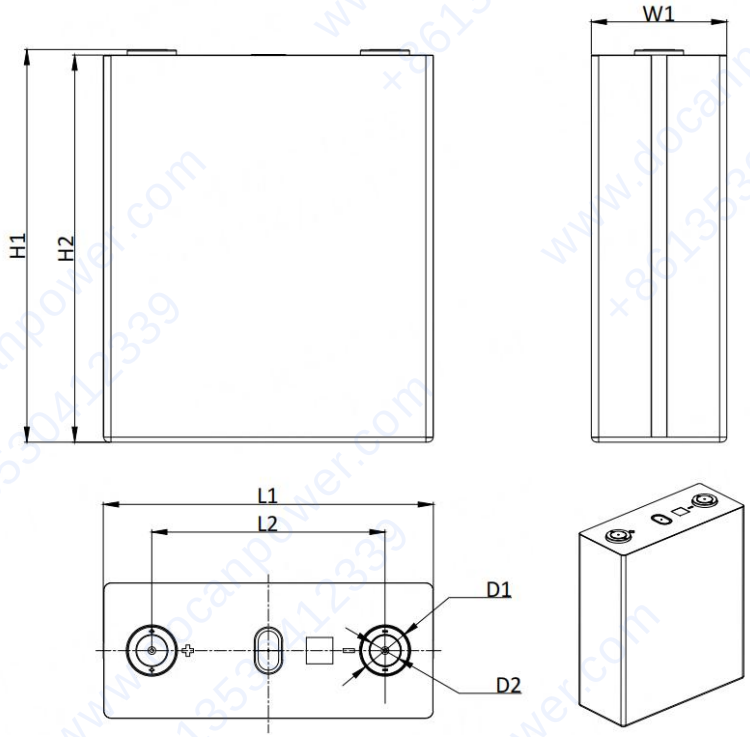
4.4.2 Mechanical safety performance

No.	Parameter	Specification	Condition
4.4.2.1	Crush	No leakage, no smoke, no fire, no explosion, no rupture outside the explosion-proof valve or pressure relief point	Reference to paragraph 6.7.2.1.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
4.4.2.2	Drop	No smoke, no fire, no explosion, no rupture outside the explosion-proof valve or pressure relief point	Reference to paragraph 6.7.2.2.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage

4.4.3 Thermal safety performance

No.	Parameter	Specification	Condition
4.4.3.1	Adiabatic temperature rise	No fire, no explosion, no rupture outside the explosion-proof valve or pressure relief point	Reference to paragraph 6.7.4.1 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage
4.4.3.2	Thermal runaway	No fire, no explosion, no rupture outside the explosion-proof valve or pressure relief point	Reference to paragraph 6.7.4 of GB/T 36276-2023 Lithium Ion Battery for Electric Energy Storage

5 Cell Appearance Dimensions



No.	Item	（mm）Dimensions
1	L1	Top：174.0±0.5 Bottom：174.7±0.5
2	L2	123.0±0.5
3	H1	207.2±0.5
4	H2	204.3±0.5
5	W1	71.7±0.5 300±20kgf 压力 Thickness test condition: 20%SOC，pressure of 300±20kgf
6	D1	26.0±0.2
7	D2	16.0±0.2

6 Label, Packing, Transportation, storage

6.1 Labeling

Each product should have a clear QR code on it.6.2 Packing

The product has outer packaging to ensure that the product is not mechanically damaged duri ngtransportation, loading, unloading and stacking.

6.3 Transportation

During transportation, violent loading and unloading should be strictly prohibited, to preventserver vibration, impact or squeeze, and to prevent from the sun and rain.

6.4 Storage

The product should be stored in a clean, dry and ventilated warehouse with an ambienttemperature of -30℃ ~ 55℃ and a relative humidity of ≤75％. The warehouse should not containcorrosive gases; the product should be away from fire and heat sources (not less than 2m.)

It is recommended that the cell should be stored at 20% to 50% SOC.

When the cell is not usedfor a long time, charge and discharge it every three months, and charge to 20%~50% SOC to avoidover discharge and affect its performance.

7 safety & warning

7.1 Before using, you should read the specifications in detail.

7.2 Do not immerse the cell into water or other conductive liquids.

7.3 It is forbidden to put the cell into fire or expose it to the environment beyond its working temperaturerange for a long time. If the working temperature of the cell exceeds 60℃, stop its operation!

7.4 Connect the positive and negative poles of the cell strictly in accordance with the signs and instructions. No reverse charging!

7.5 When the electrolyte leaks, avoid contacting the electrolyte to skin and eyes. In case of contacting,wash with plenty of water and seek medical advice. It is forbidden for any person or animal toswallow any part of the cell or the substance contained in the cell.

7.6 Protect the cell from mechanical vibration, collision and pressure impact, otherwise the cell might beshort-circuited, causing high temperature or fire.

7.7 Strictly forbidden to subject the cell to excessive mechanical shock.

7.8 Squeeze, drop, short circuit, leakage and other abnormal problems is strictly forbidden during cell operation.

7.9 During use, it is strictly forbidden to contact the cover of cells directly or connect them together via conductors to form a circuit.

7.10 Cells should be stored and used in a place away from static electricity

7.11 During operation, charge, discharge or storage, if the cell suddenly heats-up, emits odor, discolors,deforms or has other reactions, it should be stopped immediately and treated accordingly.

8 End of life management

For the sake of the security operation of the cell, the clients should establish an effective tracking system to monitor and record the voltage and internal resistance of each cell. The measurement and calculation methods should be discussed and commonly agreed by the clients and the Cornex when the capacity of the termination condition, and the use of the cell can’t be operated. Otherwise, our enterprise will not bear the product quality assurance responsibilities based on the product sales agreement and this specification.