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# EFFICIENT ENERGY STORAGE

## QINKUAL, THE LEADER OF FULL TEMPERATURE ADAPTABILITY - HIGH C-RATE CELLS

FOCUS ON BATTERY TECHNOLOGY INNOVATION  
CREATE ZERO-CARBON FUTURE TOGETHER

**Qinkual 顷刻®**

DEVELOP EFFICIENT ENERGY STORAGE WITH  
TECHNOLOGICAL INNOVATION

FIRST-CLASS ENERGY STORAGE BATTERY  
PRODUCT SOLUTIONS

**QINKUAL BATTERY**

**SUPERIOR PERFORMANCE  
QINKUAL CREATION**

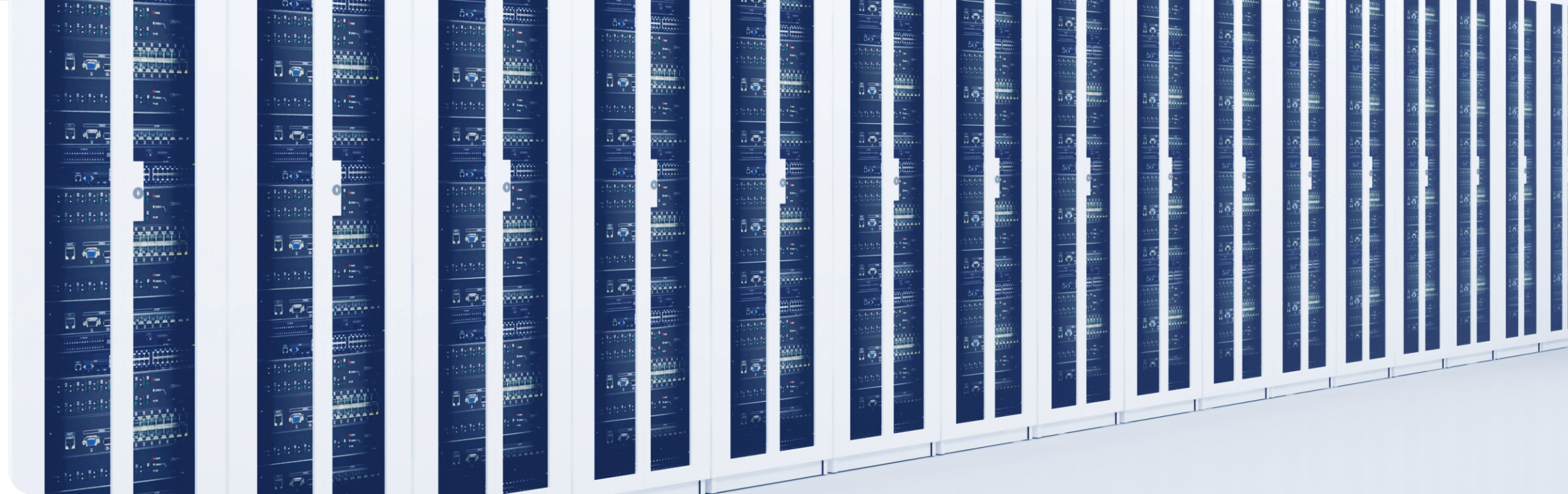
**DARE TO CHALLENGE AND  
BREAK THE LIMIT**





# 01

## ABOUT QINKUAL



POWER GRID ENERGY STORAGE



NEW INFRASTRUCTURE ENERGY STORAGE



HIGH-POWER VEHICLE POWER



SPECIAL APPLICATION

## COMPANY PROFILE

Shaanxi Qinkual Energy Technology Co, Ltd. is a technology company belongs to the largest-scale state-owned energy and chemical group Shaanxi Coal & Chemical Industry Group, focusing on energy storage and application.

After 10 years of technical precipitation, we hold the feature of FULL TEMPERATURE ADAPTABILITY—HIGH C-RATE. Based on two major technology platforms, "ULTRA" and "QUEST", we provide energy storage and power batteries and ESS solutions for various segmented applications including new infrastructure construction, high power automotive power, high power energy storage, and special applications.

**Q** The Leader Of Full-Temperature  
Adapatability-High Rate Cells

**Qinkual** 顷刻®

**THE LEADER OF FULL TEMPERATURE  
ADAPTABILITY - HIGH C-RATE CELLS**

FOCUS ON BATTERY TECHNOLOGY INNOVATION  
CREATE ZERO-CARBON FUTURE TOGETHER





Shaanxi Coal and Chemical Industry Group Co., Ltd. (SHCCIG) is a ultra-large Energy & Chemical group in Shaanxi Province involving coal, coal chemical industry, iron & steel, electric power, equipment, logistics, technology, finance & construction.

500

FORTUNE GLOBAL  
500 COMPANIES

720<sup>Billion</sup>  
Total assets

45<sup>Billion</sup>  
Total profit(2024)

529<sup>Billion</sup>  
Operating income(2024)

170<sup>TOP 500</sup>  
Fortune Global 500(2024)



4 Technology Institutes

Coal, Chemical industry, New energy,  
New materials, Engineering technology

5 Global Scientific Institutions

Xi'an research headquarter  
Shanghai/Shenzhen/Beijing/Japan/Germany branch

100+ Master/PhD  
Core R&D Personnel

800+ Member R&D team

18+ Billion Yuan  
Accumulated R&D Investment

Around 4 billion yuan investmen in new energy

Q 全温域-高倍率电芯领跑者  
The Leader Of Full-Temperature  
Adapatability-High Rate Cells

## RESEARCH INSTITUTE LAYOUT SYSTEM



- Research Institute
- Scientific Research Base



# 02

## TECHNOLOGY INTRODUCTION

4

Major Technologies

100+

Patents

20

Published SCI Articles

Relying on 4 core technologies, covering material-system-product three-dimensional support, QINKUAL has formed 3 technology platforms to promote technological innovation and product iteration more efficiently, and provide customers with comprehensive technical support and product solutions.

### MAJOR TECHNOLOGIES



#### Lithium ion high-speed shuttle conductive network

Supports 3 minutes charging for the fastest and single cell 12 minutes high power discharging in 4600W for the maximum.



#### Full Temperature Range Electrochemical System

Traveling freely in -60~55°C and remains more than 80% range in -40°C. Chargeable in -20°C.



#### Instant Current Guiding Construction

Pioneering STACKING IN WINDING construction and DIRECT WELDING process ensure the dual objective of rate and efficiency of production.



#### Next Generation Battery System

Maintaining the advantages of lithium batteries and planning sodium-ion batteries.

### TECHNICAL CHARACTERISTICS



#### High security

Successfully passed the GB nail penetration safety performance test



#### Wide temperature range use

Operating temperature -60°C~55°C Work in various environments



#### Temperature rise control

Temperature rise of continuous SC discharge < 20°C



#### High c-rate cycle life

4500 times high c-rate cycle life (5C/5C)



#### High c-rate charge & discharge capacity

0.5C~80C charge & discharge performance



#### Ultra-long cycle life

8000 times cycle life(1C/1C)

### TECHNOLOGY PLATFORMS



#### ULTRA Technology Platform

Process:full-tabs winding+stacking-in-winding Rate range:2C-55C



#### QUEST Technology Platform

Process:large-capacity stacking Rate range:0.5C-1.5C



#### Ultra-High Rate Lithium-Ion Capacitor Technology Platform

Process:full-tabs winding Rate range: > 55C



# CELL RESEARCH CENTER & ANALYSIS AND TESTING CENTER



Focusing on the field of "wide temperature range — high C-rate" , the two centers comprehensively carry out cutting-edge battery technology, materials & electrochemical systems, product R&D and iterative optimization, process Know-How, and simulation and testing technology research. They are also equipped with professional trial production center and functional laboratories, which supports QINKUAL brand to create industry leading technologies and products.

## Laboratory



Electrolyte Development Lab



Material Evaluation Lab



Cell & System Thermal Simulation Platform



New Product Pilot Line



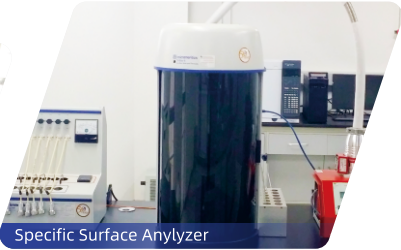
Material Pilot Test

Equipment investment  
60 Million

Area  
3000 m<sup>2</sup>



Gas Chromatography



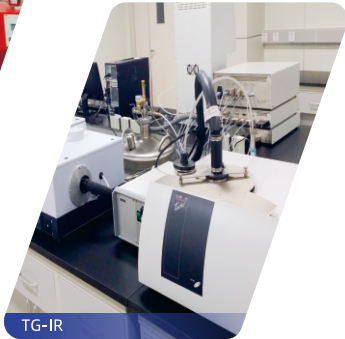
Specific Surface Analyzer



DMTA

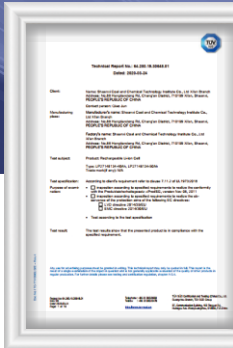


Automatic Chemical Adsorption



TG-IR

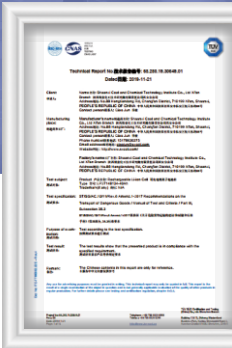
## CERTIFICATION



UL1973



UL1642



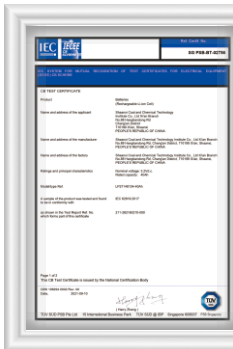
UN38.3



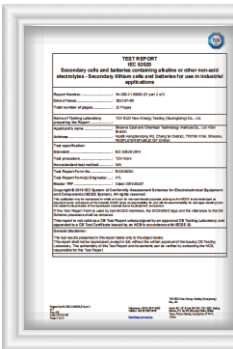
CNAS Laboratory Accreditation Certificate



Second Level Qualification for General Contracting of Power Engineering Construction



IEC62619



IEC62620



IATF16949 Quality System Certification



Mandatory Testing Of Battery



Mandatory Testing Of Battery Packs



Occupational Health and Safety Management System Certification



Environmental Management System Certification Certificate



Nail Penetration Test Report



GB/T 36276



MSDS



# 03

## SMART MANUFACTURE

### LEAN MANAGEMENT



#### Meticulous Quality

Different staff, different jobs, different equipment, different quality control.



#### Intelligent Schedule

Production scheduling, warehousing, and logistics are linked with big data analysis.



#### Flexible Production

Production line compatible with full size of products, with a minimum of 1 hour for type change.



#### Accurate Information

The entire product lifecycle can be traced including R&D, process, manufacturing, and sales information.

### EXCELLENT QUALITY



#### Full Coverage Quality Control

11000+ quality control points and 90% are online



#### Full line semiconductor level environmental monitoring system

Achieved quasi 10,000 class clean workshop and PPb level battery safe standard

### POLISHING PROCESS



**Pioneering STACKING IN WINDING construction and DIRECT WELDING process ensure the dual objective of rate and efficiency of production.**

### IMPLEMENTING ZERO-CARBON



#### Green Production

5 times\* lower NMP emissions  
30% green electricity coverage rate in the factory area  
23% reduction of emissions through waste heat recovery  
23.73%\* reduction of unit product energy consumption  
(\*compared with national standards)



#### Battery Carbon Footprint Passport

2024 Establish greenhouse gas emission inventories and data collection  
2025 Product carbon footprint accounting and declaration and ESG analysis  
2026 Information disclosure and authentication of battery passport



# 04

## PRODUCTS AND APPLICATIONS

### PRODUCT FEATURE



#### Ultra-high Rate

Meet 80C ultra-high rate application requirements



#### Wide Temperature Range System

-60°C cold start



HIGH POWER APPLICATIONS

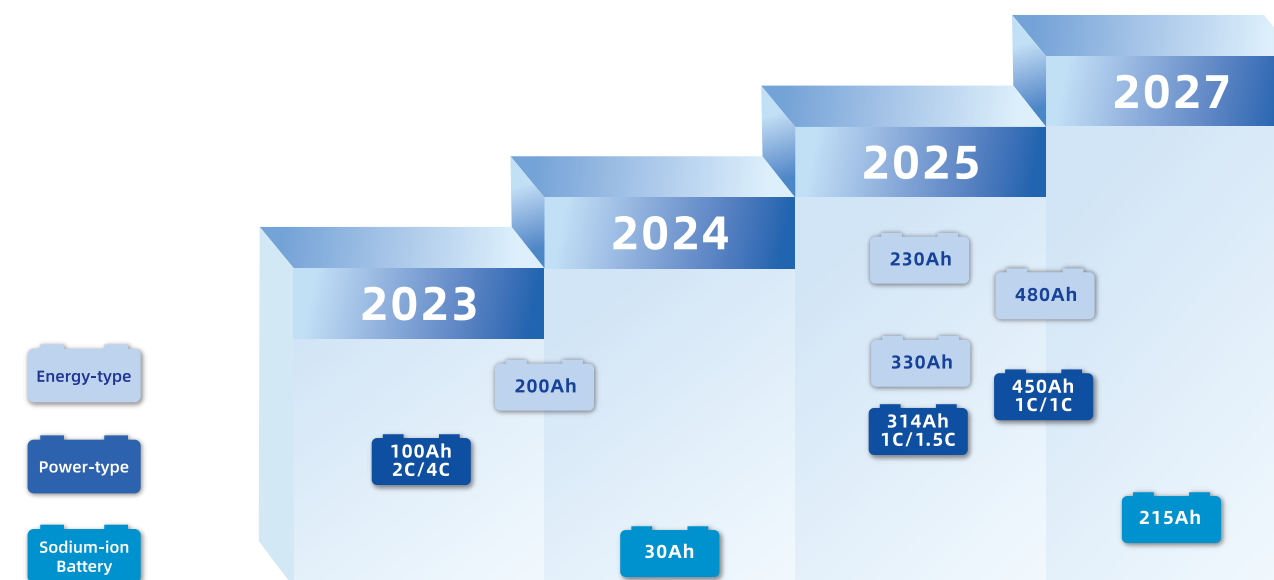


WIDE TEMPERATURE APPLICATIONS



SPECIAL APPLICATION

### MANUFACTURING LAYOUT



QINKUAL focuses on the high power — wide temperature range application requirements, and has laid out a 25GWh high-rate battery manufacturing base. The first phase of 3.5GWh construction has been finished, and the second phase of 22GWh construction will be initiated in 2025. It is expected to be in full production by the end of 2027, and the production line will be compatible with the manufacturing capacity of sodium-ion battery.



High-Power 40Ah Series

Product Performance

2000+  
6C/6C(100% DOD)Cycle Life

Discharge < 20℃  
Temperature rise of continuous 5C

Discharge Power 2000W  
More than 30% Soc 10s

Product Parameters

Model

QPF40CB

QPF45CB

Size/mm

27\*148\*134

27\*148\*122

Weight/g

1085±20

1030±20

Nominal Capacity /Ah@1C

40

45

Nominal Voltage /V

3.2

Maximum Charge & Discharge Current

Continuous 6C/6C

Continuous 3C/5C

Pulse 8C/10C

Pulse 5C/8C

Standard Cycle life /time

4000

4000

IEC

IEC62619

IEC

IEC62620

UL

9540A

UL

UL1973

UN38.3

UN38.3

GB

GB/T 36276

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GB/T 31484

Technical Highlights

High C-rate  
High security  
Long cycle life

Advantages

Passed leading UPS enterprises certification  
Independently developed high-power electrochemical system  
Low temperature rise, high security, good uniformity and reliability

Characteristics

Complete coverage of high-rate scenarios  
Great product compatibility  
Effectively decrease integration cost

Applications

PHEV

ENERGY STORAGE FREQUENCY MODULATION

DATA CENTER UPS  
AI COMPUTING CENTER

The Leader Of Full-Temperature Adapatability-High Rate Cells

High-Power 50Ah Series

Product Performance

3000(1C/1C)

8C Pulse discharge

Passed 1000+ real vehicle test and obtained MIIT announcement

产品参数

Model

QPF50CC

QPF52CA

Size/mm

27\*148\*134

27\*148\*133

Weight/g

1135±20

1100±30

Nominal Capacity /Ah@1C

50

52

Nominal Voltage /V

3.2

Maximum Charge & Discharge Current

Continuous 3C/6C

Continuous 1C/2C

Pulse 5C/8C

Pulse 3C/4C

Standard Cycle life /time

3000

2000

IEC

IEC62619

UL

UL1973

UL

9540A

UN38.3

UN38.3

GB

GB/T 31484

GB

GB/T 31486

Technical Highlights

High C-rate  
High energy density  
High reliability

Advantages

TOP5 PHEV enterprise certification, 90+ vehicle announcements  
Independent patent system, guaranteeing R&D strength  
Low temperature rise, high security, good uniformity and reliability

Characteristics

High energy density, more cost-effective  
Great product compatibility  
Sophisticated modular technical scheme

Applications


PHEV

ENERGY STORAGE FREQUENCY MODULATION


DATA CENTER UPS  
AI COMPUTING CENTER

13 14


Ultra-Low Temperature Series




-60°C  
Discharge




-20°C  
Charge




-40°C/10C  
Discharge at low  
temperature




Successfully passed the  
nail penetration  
safety performance test




Product Parameters			
Model		QPF40DA	
Size/mm		27*148*134	
Nominal Capacity /Ah@1C		40	
Nominal Voltage/V		3.2	
Charge Current	25°C	3C	
	-20°C	0.5C	
Low Temperature Discharge	25°C	12C	
	-20°C	12C	
	-40°C	10C	
Standard Cycle life /time		2000	




GJB4477



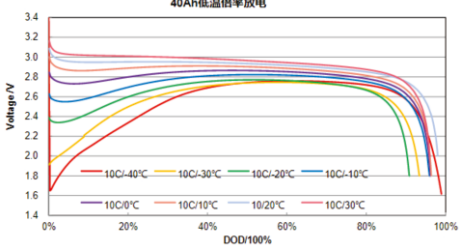
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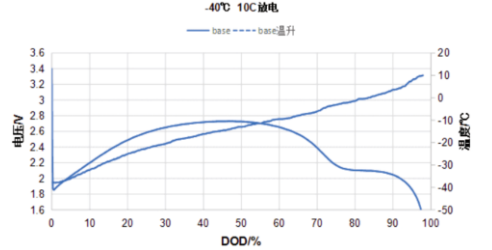
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GB/T 31485




LOW TEMPERATURE DISCHARGE TEST




LOW TEMPERATURE CHARGE TEST



STARTUP POWER SUPPLY




ENERGY STORAGE SYSTEM IN ALPINE REGION




LOW TEMPERATURE POWER IN WELLHEAD

The Leader Of Full-Temperature Adapatability-High Rate Cells


Ultra-High Rate Series




80C  
Discharge




-40°C  
Discharge



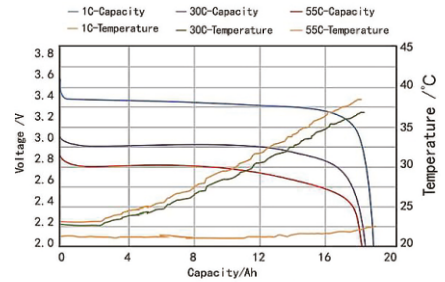
4000+  
Cycle life 5C High-rate



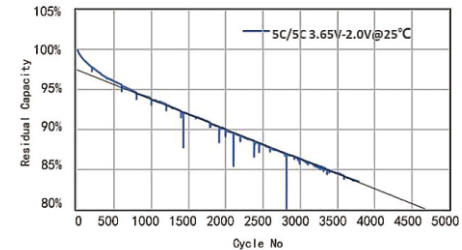
Successfully passed the  
nail penetration  
safety performance test




Product Parameters		
Model	QPF18GA	QPF25GA
Size/mm	27*148*95	
Nominal Capacity /Ah@1C	18	25
Nominal Voltage/V	3.2	
Maximum Continuous Charge Current	10C	5C
Maximum Pulse Charge Current	12C(10s)	10C(10s)
Maximum Continuous Discharge Current	80C	15C
Maximum Pulse Discharge Current	100C (2s)	20C(10s)



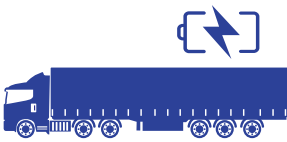
HIGH-RATE DISCHARGE TEST



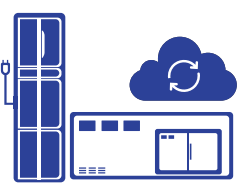
HIGH-RATE CYCLE LIFE TEST



STARTUP POWER SUPPLY



HIGH-POWER TRACTION POWER SUPPLY



DATA CENTER UPS

15 16



MAINSTAY Series



**Product Performance**



8C  
Pulse Discharge



1C/1C 4500+  
Ultra-long Cycle Life



200Ah  
High capacity

Product Parameters				
Model	QPF100CA	QPF100CB	QPF200CA	QPF200CB
Size/mm	54*173*116	54*173*116	54*173*207	54*173*207
Weight/g	2230±60	2150±60	4250±80	4000±80
Nominal Capacity /Ah@1C	100	100	200	200
Nominal Voltage/V	3.2			
Maximum Charge & Discharge Current	2C/6C	Continuous 1C/2C	1C/2C	Continuous 1C/1C
Maximum pulse charge & discharge current Charge/discharge	2.5C/8C	2C/4C	2C/3C	2C/4C
Cycle Life/time	4500	3000	4500	3000



IEC62619



9540A



UL1973



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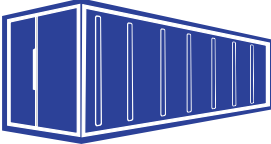


GB/T 36276


Applications



DATA CENTER UPS  
AI COMPUTING CENTER



ENERGY STORAGE SYSTEM IN  
ALPINE REGION



HEAVY MACHINERY

PREMIUM Series



**Product Performance**



Cycle performance  
12000+ cycle life



Rate performance  
314Ah battery cell supports 1.5P discharge



Appearance Features  
Differentiated dimension with lower internal resistance

Product Parameters		
Model	QPF314CA	QPF330CA
Size/mm	48*365*158	
Weight/g	6250±300	6300±300
Nominal Capacity /Ah@1C	314	330
Nominal Voltage/V	3.2	
Maximum Charging & Discharging C-rate	1P/1P	0.5P/0.5P
Maximum Pulse Charging C-rate@50%SoC	1P	0.5P
Maximum Pulse Discharge C-rate@50SoC	1.5P	0.5P
Cycle lefe@70%SoC	8000	12000

Applications



ENERGY STORAGE  
FREQUENCY MODULATION



RENEWABLE ENERGY  
PEAK SHAVING



BACKUP POWER FOR MINES

# QINKUAL, THE LEADER OF FULL TEMPERATURE ADAPTABILITY - HIGH C-RATE CELLS

In the future, QINKUAL will continue to take technological innovation as driving force, and join hands with global customers to embark a zerocarbon society, guiding the world towards a green future.