JinKO

Sunny 365

Integrated PV-Storage Solutions for Retail and Supermarkets

Supermarkets | Shopping Centers | Chain Stores | Shopping Complex

Integrated PV-Storage Solutions for Retail and Supermarkets

Key challenges facing the market

From Distributors/Installers

How to choose storage systems for PV?
complex pre-sales, O&M, warranty?

How to choose PV modules for storage?
multiple suppliers to coordinate?

Complex system design and installation.

Finger-pointing among suppliers when faults occur

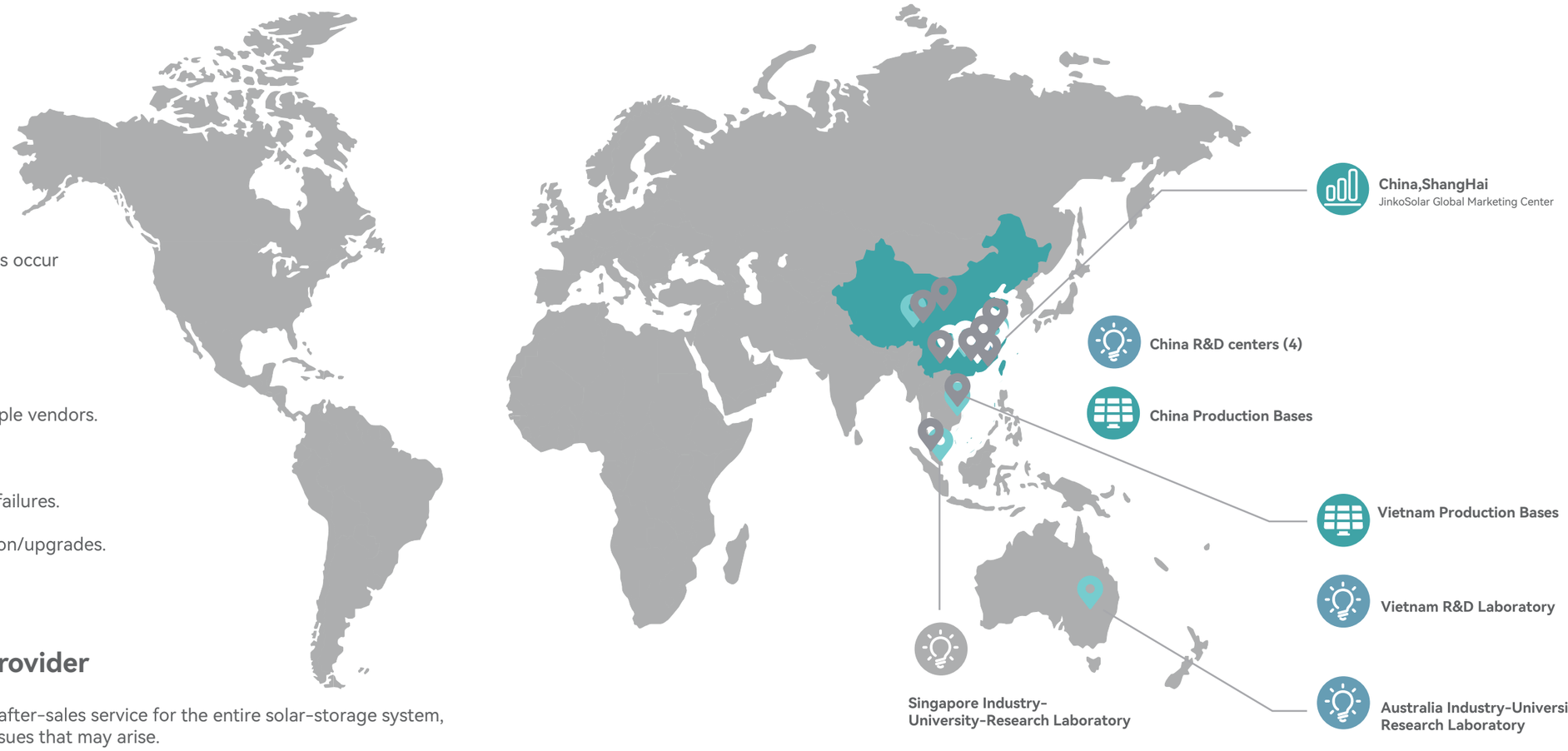
From Plant Owners:

Complex after-sales, O&M, warranty – multiple vendors.

Low system integration, poor synergy.

Finger-pointing among suppliers in case of failures.

Lack of unified standards for future expansion/upgrades.



Jinko: A one-stop solution provider

- We provide a comprehensive warranty and after-sales service for the entire solar-storage system, and will always take responsibility for any issues that may arise.
- We offer an integrated approach covering solution design, product delivery, commissioning and operation and maintenance, to ensure optimal performance.
- Comprehensive technical support for PV-storage systems and partner training.
- We guarantee a stable supply of the latest PV-storage products.
- A standardised quality assurance system for after-sales operation and maintenance.

35
Global Service Centers

4000+
Strategic Customers

200+
Distribution Countries

120+
Global Marketing Branches

Integrated PV-Storage Solutions for Retail and Supermarkets

1. Typical Load Profile

Retail stores (large warehouse clubs / medium chain markets) are typical high-energy commercial complexes with the following consumption characteristics:

Fresh & Cold Chain — "Firm Base Load"

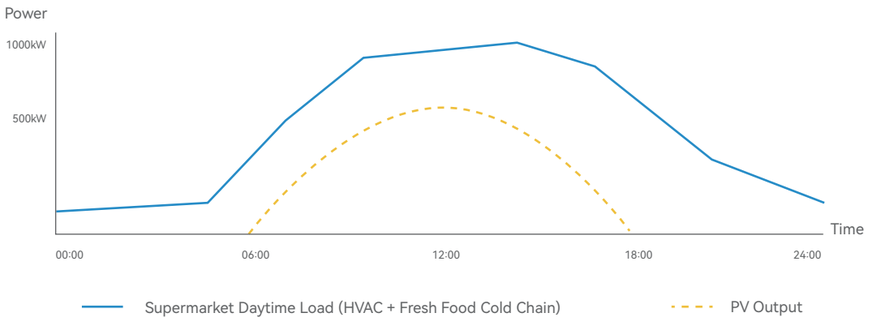
Cold-chain systems must run 24/7 uninterrupted, accounting for 45% – 50% of total energy use.

HVAC System — "Extreme Peak"

Warehouse clubs feature open layouts with ceilings above 8 m. Summer crowds drive explosive HVAC loads, accounting for 30% – 35% of total energy use.

Daytime Load — "PV+ESS Synergy"

Business hours overlap heavily with PV generation, enabling very high self-consumption.



2. Pain Points

Under China's current electricity market (time-of-use tariffs and two-part tariffs) and the summer peak-load grid environment, mid-to-large supermarkets face severe operational cost and compliance pressures:

Daytime Tariffs Eroding Margins	Supermarket operating hours overlap with grid peak hours (summer peaks at CNY 1.2–1.5/kWh), concentrating rigid cooling and lighting loads.
Demand Penalties under Two-Part Tariff	Industrial / commercial HV users operate under two-part tariffs. If summer air-conditioning and cold-chain peak load exceeds the declared demand, the excess is billed at 2× the basic electricity charge.
Extreme-Weather Curtailment & Spoilage	Fresh cold chain is highly sensitive to power continuity. A single multi-hour outage in summer can cause hundreds of thousands of CNY in direct losses from spoiled inventory.

3. PV+ESS Configuration & Product Solution

To meet the high energy demand, limited roof area and high safety requirements of supermarkets, this solution leverages JinkoSolar's high-efficiency PV modules together with C&I liquid-cooling energy storage systems in a fully integrated, standardized configuration.

（1）Standardized Capacity Design

Large-Format Warehouse Club Model (Costco / Sam's Club benchmark)

Floor Area~ 20,000 m²

Usable unshaded roof space: **~15,000 m²**
Annual electricity usage: **~10 GWh**

3.3 MW

Annual generation: **~3.45GWh**, covers **34.5%** of total power demand, 100% self-consumption.

2.088 MWh

8 liquid cooling cabinets (125kW/261kWh) alternatively 4 cabinets (125kW/522kWh)

Medium Chain Store Model (RT-Mart / Yonghui benchmark)

Floor Area~ 5,000 m²

Usable unshaded roof space: **~4,000 m²;**
Annual electricity usage: **~ 300 MWh。**

880 kW

Annual generation: **970MWh,** offset the base load during daytime

522 kWh

2 liquid-cooled cabinets (125kW/261kWh), mainly used for peak shaving of key electricity loads & basic power backup.

(2) Core Product Advantages

Tiger Neo 3.0 — Seven Core Advantages

- **Ultra-high power:** front power output reaches **670 W** with a conversion efficiency of **24.8%**. Boasting power and efficiency far above industry benchmarks, these modules generate more electricity per square meter of rooftop area, making them ideal for supermarkets with limited roof space.
- **Ultra-high bifaciality:** bifaciality of **85%±5%**, exceeding the national standard requirement of 75%. The modules efficiently capture ground-reflected light and ambient scattered light to greatly boost overall power generation.
- **Excellent temperature coefficient (-0.26%/°C):** maintains stable power generation performance under high-temperature conditions. Supermarket rooftops get extremely hot in summer, and Tiger Neo 3.0 suffers less power degradation at high temperatures to guarantee steady power output.
- **Ultra-low annual degradation (only -0.35%):** the first-year degradation rate is 1%, followed by an annual degradation rate of merely 0.35%, securing power generation revenue throughout its 30-year service life.
- **Strong low-irradiance performance:** the modules perform excellently under low irradiance conditions such as cloudy days, dawn and dusk, delivering a power generation gain of over 4%.
- **Maximum safety:** certified Class A under stringent IEC and UL standards, representing the highest fire resistance level in the photovoltaic industry.
- **Protection against extreme weather:** hail resistance up to **55 mm**, with a rear wind load capacity of **-5000 Pa.** Adaptable to extreme climates, it outperforms the common industry standard of 2400 Pa for wind load resistance.

Uncompromising Safety

- **Cell-Level Thermal Isolation**

  Nano-insulation is embedded between cells to prevent thermal runaway propagation.

- **Electrical Armor Shielding**

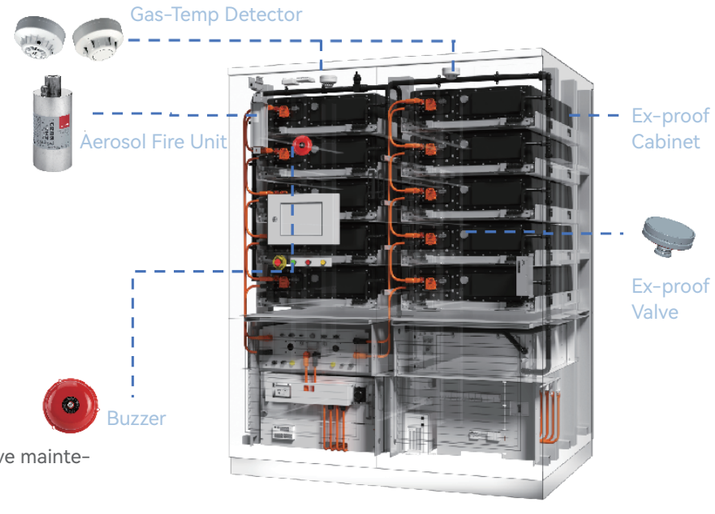
  Full-metal enclosures and FPC sampling boards physically eliminate short-circuit fire risks.

- **Multi-Modal Fire Suppression**

  Multi-dimensional detection paired with a perfluorohexanone (FK-5-1-12) gas system ensures silent, sub-second hazard suppression.

- **Full-Stack Early Warning**

  Real-time BMS monitoring transforms passive maintenance into proactive risk avoidance.



Integrated PV-Storage Solutions for Retail and Supermarkets

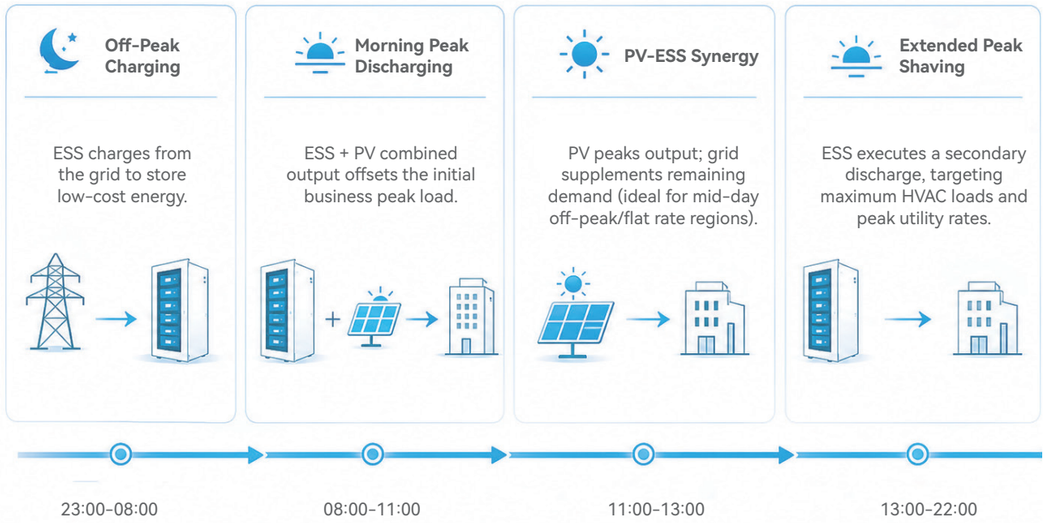
Superior Efficiency & Maximized ROI

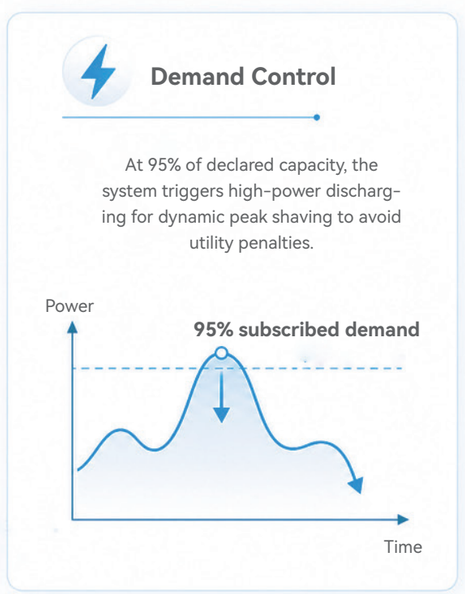
- **90% AC RTE (Round-Trip Efficiency):**
  Ultra-low liquid-cooling power consumption and our in-house PCS boost daily net profit by 2%.
- **Precise Thermal Management (ΔT <2℃):**
  Exclusive 26-point high-density cooling minimizes degradation, ensuring 8,000 cycles and a ≥15-year design life.
- **All-Weather Operation:**
  A wide operating temperature range of -30℃ to 55℃ guarantees uninterrupted yields in extreme climates.

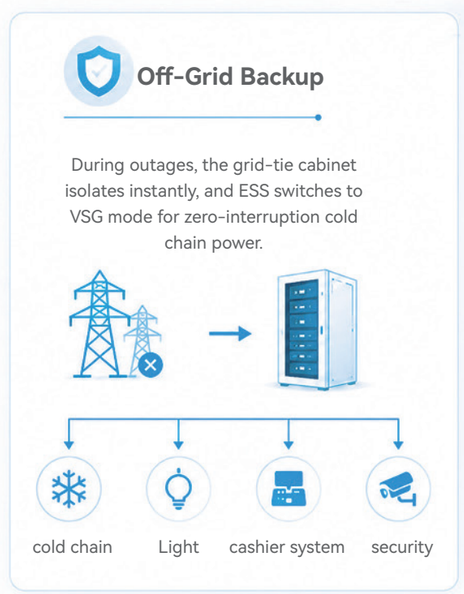
Intelligent O&M

- **AI-Driven Arbitrage:**
  EMS prediction algorithms dynamically optimize charge/discharge strategies based on real-time Time-of-Use pricing and demand.
- **Intuitive Visual Interface:**
  Jinko Cloud (Web/App) syncs seamlessly, tracking daily revenue and asset appreciation in real time.
- **Proactive O&M:**
  Cloud-collaborative remote diagnostics shift operations from reactive downtime to predictive alerts.

4. Charge / Discharge Logic







5.Investment Return Estimation

Economic analysis based on typical domestic industrial & commercial electricity tariffs:

Scenario 1: Financial Model for Large Warehouse Supermarket
(3.3MW PV + 2.088MWh ESS)

Category	Item	Annualized Comprehensive Amount
Investment Estimation	PV+ESS	4.039 million RMB
	Inverter, Step-up Transformer, and Grid-connection Electrical Cabinet	3.500 million RMB
	BOS Auxiliary Materials (Supports/Brackets, Cables, Cable Trays, and Fire Protection Facilities)	2.80 million RMB
	EPC Construction	4.261 million RMB
	Total CAPEX	**14.60 million RMB**
Revenue Estimation	PV Energy Saving Revenue (Daytime Base Electricity Cost Savings)	2.588 million RMB/year
	Energy Storage Arbitrage Revenue (Peak-Valley Arbitrage)	0.588 million RMB/year
	Demand Control Penalty Avoidance & Grid Response Subsidies	0.15 million RMB/year
	Total Annualized Project Revenue (Pre-OPEX)	**3.326 million RMB/year**
Return on Investment	**Static ROI**	**~4.4 years**

Scenario 2: Financial Model for Medium Chain Supermarket
(880kW PV + 522kWh ESS)

Category	Item	Annualized Comprehensive Amount
Investment Estimation	PV+ESS	1.054 million RMB
	Inverter, Step-up Transformer, and Grid-connection Electrical Cabinet	1 million RMB
	BOS Auxiliary Materials (Supports/Brackets, Cables, Cable Trays, and Fire Protection Facilities)	0.95 million RMB
	EPC Construction	1.396 million RMB
	Total CAPEX	**4.4 million RMB**
Revenue Estimation	PV Energy Saving Revenue (Daytime Base Electricity Cost Savings)	0.728 million RMB/year
	Energy Storage Arbitrage Revenue (Peak-Valley Arbitrage)	0.241 million RMB/year
	Demand Control Penalty Avoidance & Grid Response Subsidies	0.05 million RMB/year
	Total Annualized Project Revenue (Pre-OPEX)	**1.019 million RMB/year**
Return on Investment	**Static ROI**	**~4.3 years**

Note: The above data are for illustrative purposes only. Actual economic returns are subject to a detailed assessment based on the local electricity pricing policies, load profiles, and equipment selection specific to the project site.

6.Case | Robinson Lifestyle Ban Chang, Thailand’s National Chain Mall

Configuration:

- PV: 3.16MW (Tiger Neo 3.0 modules), self-use
- ESS: 5×215kWh liquid cooling units, peak shaving & valley filling

TIGER Neo III

JinKO Solar

66QL6-BDV

650-670 Watt

85±5% Bifaciality

BIFACIAL MODULE

Higher Power on Front Side

Leading power class based on the enhanced N-type TOPCon platform, through cutting-edge technology and an optimized layout that captures more sunlight.

Better Generation on Rear Side

Enabling industry-leading bifaciality in TOPCon cells through an improved structure that enhances light absorption and trapping.

Optimized Heat Resistance

Optimized temperature coefficient via advanced graphical patterning, busbar and multi-cells technology.

Proven Low Light Performance

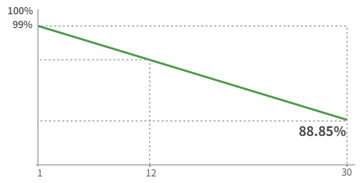
Enhanced cell structure ensures superior module performance under low-light conditions.

Industry Leading Warranty

Advanced metallization and iterated module encapsulation deliver superior resistance to PID, LID / LeTID, and UV degradation.

Mechanical Load Enhanced

Certified to withstand:
5400 Pa front side max static test load
2400 Pa rear side max static test load



12Year Product Warranty | **30**Year Linear Power Warranty | **1**% First-year Degradation | **0.35**% Annual Degradation Over 30 Years

- IEC61215:2021 / IEC61730:2023
- IEC61701 / IEC62716 / IEC60068 / IEC62804
- ISO9001:2015: Quality Management System
- ISO14001:2015: Environment Management System
- ISO45001:2018: Occupational health and safety management systems

JKM650-670N-66QL6-BDV-F2-EN

66QL6-BDV 650-670 Watt

Mechanical Characteristics

Cell Type	N- type Mono-crystalline
No. of Cells	264 (66×4)
Dimensions	2382×1134×30 mm
Weight	32.5 kg
Front Glass	2.0 mm, Anti-reflection Coating
Back Glass	2.0 mm, Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Protection Class	Class II
IEC Fire Type	Class C
Connector Type	JK03M / JK03M2 / Others*
Output Cables (Including Connector)	4.0 mm^2 (+): 600 mm , (-): 400 mm or Customized Length

*MC4-EVO2 available upon request and subject to availability

Packaging Configuration

Pallet Dimensions	2396×1110×1251mm
Packing Detail (Two pallets = One stack)	36 pcs/pallet, 72 pcs/stack, 720 pcs/ 40'HQ Container

Specifications (STC)

Maximum Power - Pmax [Wp]	650	655	660	665	670
Maximum Power Voltage - Vmp [V]	42.57	42.70	42.83	42.96	43.09
Maximum Power Current - Imp [A]	15.27	15.34	15.41	15.48	15.55
Open-circuit Voltage - Voc [V]	50.26	50.44	50.62	50.80	50.98
Short-circuit Current - Isc [A]	15.98	16.04	16.10	16.16	16.22
Module Efficiency STC [%]	24.06	25.25	24.43	24.62	24.80
Bifacial Factor	85 ± 5%				
Power Tolerence	0 ~ +3 %				
Temperature Coefficient of Pmax	-0.26 %/°C				
Temperature Coefficient of Voc	-0.24 %/°C				
Temperature Coefficient of Isc	0.046 %/°C				

STC: Irradiance 1000W/m^2, Cell Temperature 25°C, AM=1.5

Specifications (BNPI)

Maximum Power - Pmax [Wp]	724	729	735	741	746
Maximum Power Voltage - Vmp [V]	42.52	42.69	42.86	43.03	43.20
Maximum Power Current - Imp [A]	17.04	17.10	17.17	17.23	17.30
Open-circuit Voltage - Voc [V]	50.38	50.56	50.74	50.92	51.10
Short-circuit Current - Isc [A]	17.80	17.87	17.94	18.00	18.07

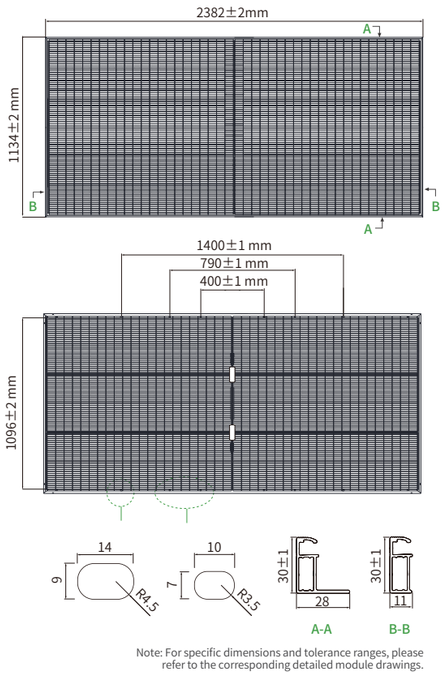
BNPI: Irradiance: Front 1000W/m^2, Rear 135W/m^2, Cell Temperature 25°C, AM=1.5

Application Conditions

Level T_{98} ⩽ 70 °C	-40 °C ~ +70 °C*
Maximum System Voltage	1500 VDC (IEC)
Maximum Series Fuse Rating	35 A
Bifaciality Coefficents	φVoc: 98±5 %, φIsc: 85±5 %, φPmax: 85±5 %

*Short-term up to 85°C; higher operation requires IEC TS 63126 testing

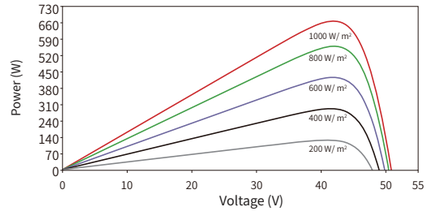
Engineering Drawings



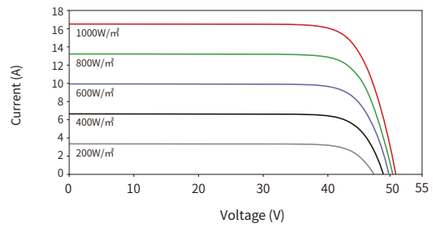
Note: For specific dimensions and tolerance ranges, please refer to the corresponding detailed module drawings.

Electrical Performance

Power-Voltage Curves (66QL6-BDV 660W)



Current-Voltage Curves (66QL6-BDV 660W)



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Note: Please read the safety and installation manual before using the product. We reserve the right of final interpretation. The specifications in this datasheet are subject to change without notice.

SunGiga G2

261kWh

Liquid Cooling ESS Solution

The Jinko 261 kWh Liquid-Cooled Integrated Cabinet is a compact, all-in-one energy storage solution for 1000V applications. It fully integrates the battery, BMS, PCS, and fire protection to deliver 261 kWh of capacity and 130.5 kW of power. Designed for flexible deployment, it ensures high safety, intelligent thermal management, and advanced system control in a single, streamlined unit.

In-house LFP Cell for Longevity & Reliability

Utilizes proprietary 314Ah $LiFePO_4$ cells, ensuring quality control and supply stability. Supports over 8,000 cycles for extended service life and lower lifecycle cost.

Higher Energy Density in Compact Design

Achieves 28% higher energy density with 10% reduced volume. Occupies only 1.5m^2 footprint, boosting system density by 33%.

Pre-integrated & Plug-and-play System

Fully assembled and tested at factory for quick installation. Reduces on-site deployment time and simplifies logistics and commissioning.

Flexible & Safe Operation

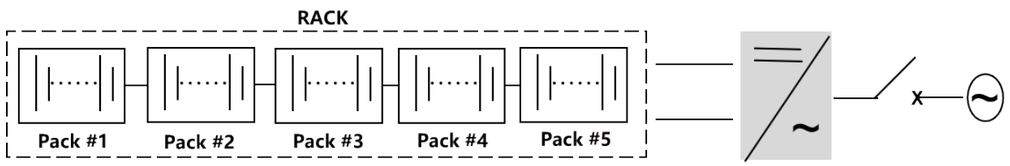
Hybrid inverter (PCS) supports both on-grid and off-grid modes. Features controlled venting for thermal runaway management and integrated fire alarm linkage.

Advanced Thermal Management

Precise temperature control with non-uniform flow channel design. Maintains cell temperature variation within ⩽2°C, enhancing safety and lifespan.

Scalable & Rugged Configuration

Supports expansion of up to 12 cabinets for flexible capacity. Wide operating temperature range ensures performance in harsh climatic conditions.



DC Side

Cell Type	LFP 3.2V/314Ah
Max. Charge/Dischage Power	0.5P
System Configuration	1P260S
Pack Quantity	5 pcs
Nominal Capacity	261 kWh
Rated Voltage	832V
Nominal Voltage Range	728V~936V

AC Side

Rated AC Power	130.5 kW
Rated Voltage	400 Vac
AC Connection	3P4W
Rated Frequency	50/60 Hz
THDi	＜3%

General Data

Operating Temperature	-30°C~55°C, derating＞45°C
Operating Humidity	⩽95%RH, without condensation
Operating Altitude	⩽3000m
Ingress Protection	IP55
Cooling Method	Liquid cooling
Max Parallel Quantity	12 units in parallel
Fire Suppression System	System aerosol gas extinguisher + Smoke detection + Temperature sensing +Flammable gas detection
Corrosion Protection Class	C3 (C5 Optional)
Communication	RS485/CAN/Ethernet
Dimensions（W×D×H）	1100x1430x2400 mm
Weight	≈2,850 kg
Compliance Standards	IEC 62619, IEC 62477, IEC 60730, IEC 63056, IEC 61000, IEC 62040, IEC 62933, UN 38.3, UL 9540A, NFPA 69

Version: IEC_2026_A2

SunGiga G2 Plus

520kWh

Liquid Cooling ESS Solution

The Jinko ESS 520 Liquid-Cooled Integrated Cabinet is a high-density, modular 1000V energy storage system. It consolidates battery modules, BMS, PCS, and fire protection into one cabinet, providing 522 kWh of capacity and 130.5 kW of power. Engineered for scalable and diverse applications, it offers exceptional safety, reliability, intelligent cooling, and smart software management.

High Integration, Flexible Deployment

All-in-one design integrating PCS (Power Conversion System) simplifies transportation, installation, and operation & maintenance. Modular architecture supports parallel connection of multiple units for scalable capacity expansion.

Enhanced Safety and Reliability

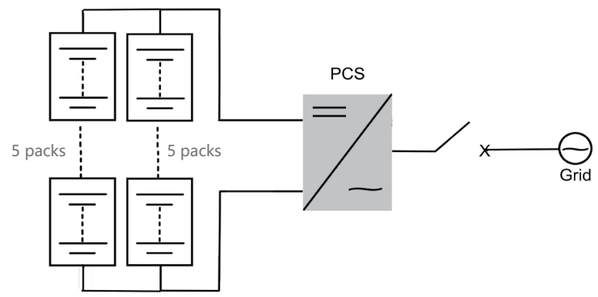
Comprehensive intelligent monitoring ensures real-time protection of the battery system. Built-in heating function maintains optimal operating temperatures, improving performance and reliability in varying climates.

Advanced Liquid Cooling Technology

Non-uniform liquid cooling pipeline design minimizes temperature differences between cells (ΔT ⩽ 2℃). Multiple cooling control modes adapt to operational needs, reducing auxiliary power consumption.

Intelligent Cloud-based Operation

Remote firmware updates ensure continuous system optimization. Cloud monitoring platform enables multi-device access for real-time oversight, analytics, and control.



DC Side

Cell Type	LFP 3.2V/314Ah
Nominal Capacity	522 kWh
Rated Voltage	832 Vdc
Nominal Voltage Range	728V~936V
Pack Quantity	10 pcs
Max. Charge/Dischage Power	0.25 P
System Configuration	2P260S

AC Side

Rated AC Power	130.5 kW
Rated Voltage	400 Vac
AC Connection	3P4W
Rated Frequency	50/60 Hz
THDi	＜3%

General Parameters

Life cycle	8000 @70%EOL
Operating Temperature	-30°C~55°C, derating＞45°C
Operating Humidity	⩽95%RH, without condensation
Operating Altitude	⩽3000m
Ingress Protection	IP55 (Cabinet); IP66 (PCS)
Corrosion Protection Class	C3 (C5 Optional)
Fire suppression system	System aerosol gas extinguisher + Somke detection + Temperature sensing + Flammable gas detection
Cooling Method	Liquid cooling
Max. Parallel Quantity	6 Units in parallel
Communication Protocol	RS485/CAN/Ethernet
Dimensions（W×D×H）	1920x1430x2400 mm
Weight	≈5,000 kg
Compliance Standards	IEC 62619, IEC 62477, IEC 60730, IEC 63056, IEC 61000, IEC 62040, IEC 62933, UN 38.3, UL 9540A, NFPA 69

Version: IEC_2026_A3