Ultra-Wide High-Voltage Input New Energy Power Supply How to Ensure Core Power Supply for Commercial & Industrial Energy Storage

KEYNOTE PRESENTATION

Speaker: Xiao Jianliao
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About the Speaker

X i a o J i a n l i a o

Marketing Director

GUANGZHOU AMCHARD-POWER TECHNOLOGY CO., LTD.

Company Profile

AMCHARD Technology is a national high-tech enterprise and a technology innovation giant enterprise. As a veteran industrial power supply manufacturer integrating R&D, production, and sales, we have obtained over 60 patents and inventions during more than 10 years of research and development.

We specialize in developing miniaturized, high-reliability power supplies. Our main product categories include module-type, chassis-type, DIN rail-type, bare board-type, new energy power supplies, charging power supplies, and industry-specific power supplies.

AMCHARD Technology provides customers with complete and reliable power solutions, committed to being a leader in high-density power supplies!

Founded: 2011

Company Founded

Products

Power Range
1-1000W

As the global "Net Zero Carbon Emissions" goal advances, AMCHARD Technology is at a critical moment of the energy revolution. With the continuous increase in new energy penetration, commercial and industrial energy storage, as a key link in regulating grid peak-valley and ensuring stable power supply, is experiencing explosive growth.

However, in photovoltaic, energy storage systems, and high-voltage inverter applications, AMCHARD faces a core challenge:

How to provide extremely stable and safe core power supply for load equipment under high-voltage, wide-voltage input environments?

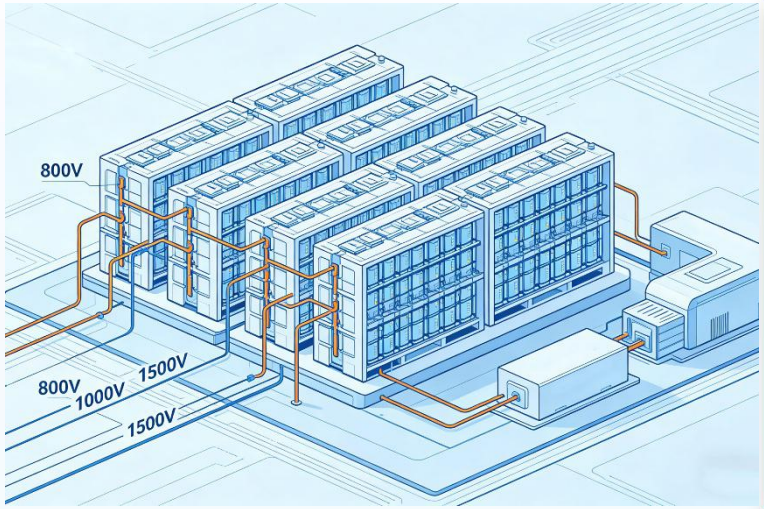
Against the backdrop of dual-carbon goals advancement and high fuel prices, AMCHARD facilitates the development of renewable energy grid integration and energy storage.

In 2026, with the surge of AI data centers and sustained high oil prices, the power supply-demand gap urgently needs to expand. Among these, photovoltaic grid-connected and energy storage are key technologies for improving power system reliability and promoting new energy consumption.

The development of photovoltaic energy storage helps users save electricity costs and ensures power supply stability.

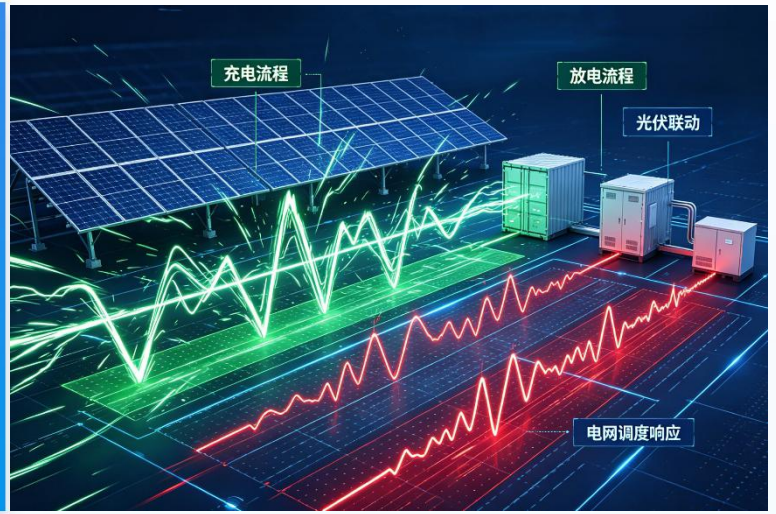
Core Challenges of C&I Energy Storage Power Supply

High Voltage Levels



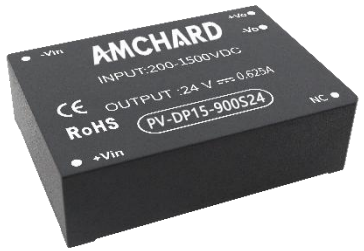
Two Typical Characteristics of C&I Energy Storage Systems

Complex Operating Conditions



Ensuring core power supply for C&I energy storage depends on: the power supply itself must be sufficiently "hardcore."

Technology Pillar 1: Ultra-Wide High Voltage

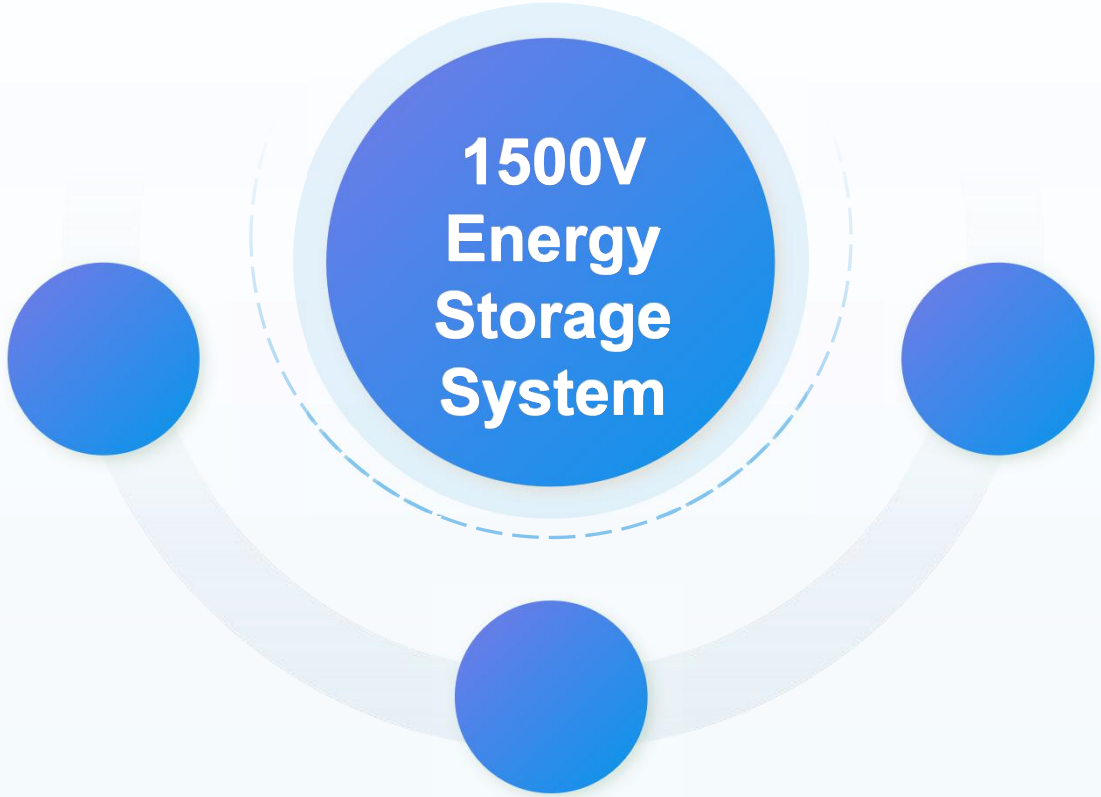


Input Voltage Range

200-1500VDC

Technology Pillar 1: Ultra-Wide High Voltage

Fully charged battery pack: up to 1500V



PV input on cloudy days: as low as 200V–300V

Discharge cut-off voltage: down to 900V or lower

Technology Pillar 2: Multi-Layer Protection

Full-Link Safety Barrier from Input to Output

- Reverse Polarity Protection
- Overload Protection
- Undervoltage Protection
- Overvoltage Protection
- Short Circuit Protection
- Over-Temperature Protection

Technology Pillar 2: Multi-Layer Protection

Overvoltage + Undervoltage

Overvoltage: Cuts off internal power path, protects power devices from breakdown.

Undervoltage: Actively disables output, prevents abnormal operation & battery over-damage.

Over-Temperature

Over-Temperature: Auto derating or protective shutdown, prevents performance loss & thermal runaway from overheating.

Overload + Short Circuit + Overvoltage

Overload: Auto reduces Vout & limits Iout, prevents device damage, sustains min power to critical loads.

Short-Circuit: Hiccup mode with periodic recovery attempts, reduces manual on-site maintenance.

Overvoltage: Suppresses output voltage spikes, protects downstream loads.

Technology Pillars: Ultra-Wide High Voltage + Multi-Layer Protection

Ultra-Wide High Voltage Input Series – Key Advantages

Input range:
80VDC – 1500VDC
(ultra-wide)

Temp. range:
-40°C to +85°C

Isolation:
3000V/4000V reinforced

Protections:
SCP / OLP / OTP / OVP

Form factors:
Module / DIN-rail / Enclosed

Applications:
PV/Energy storage/
Equipment/Systems

Rich Product Portfolio for Flexible Selection

Module

Enclosed

DIN-Rail

Semi-Potted

Power Range:
6W-350W

Multiple Physical
Package Forms

Ensuring Product Reliability: Proprietary Patented Structure

What if critical device stress fails under extreme conditions?

Photovoltaic Superposition Redundancy Design
(Patent Pending)

By introducing an intelligent parallel redundancy architecture in the core power path, when the main power device fails, it can seamlessly take over all or part of the load power supply, ensuring the output circuit operates normally.

Scenario Enablement – Energy Storage Deep Dive

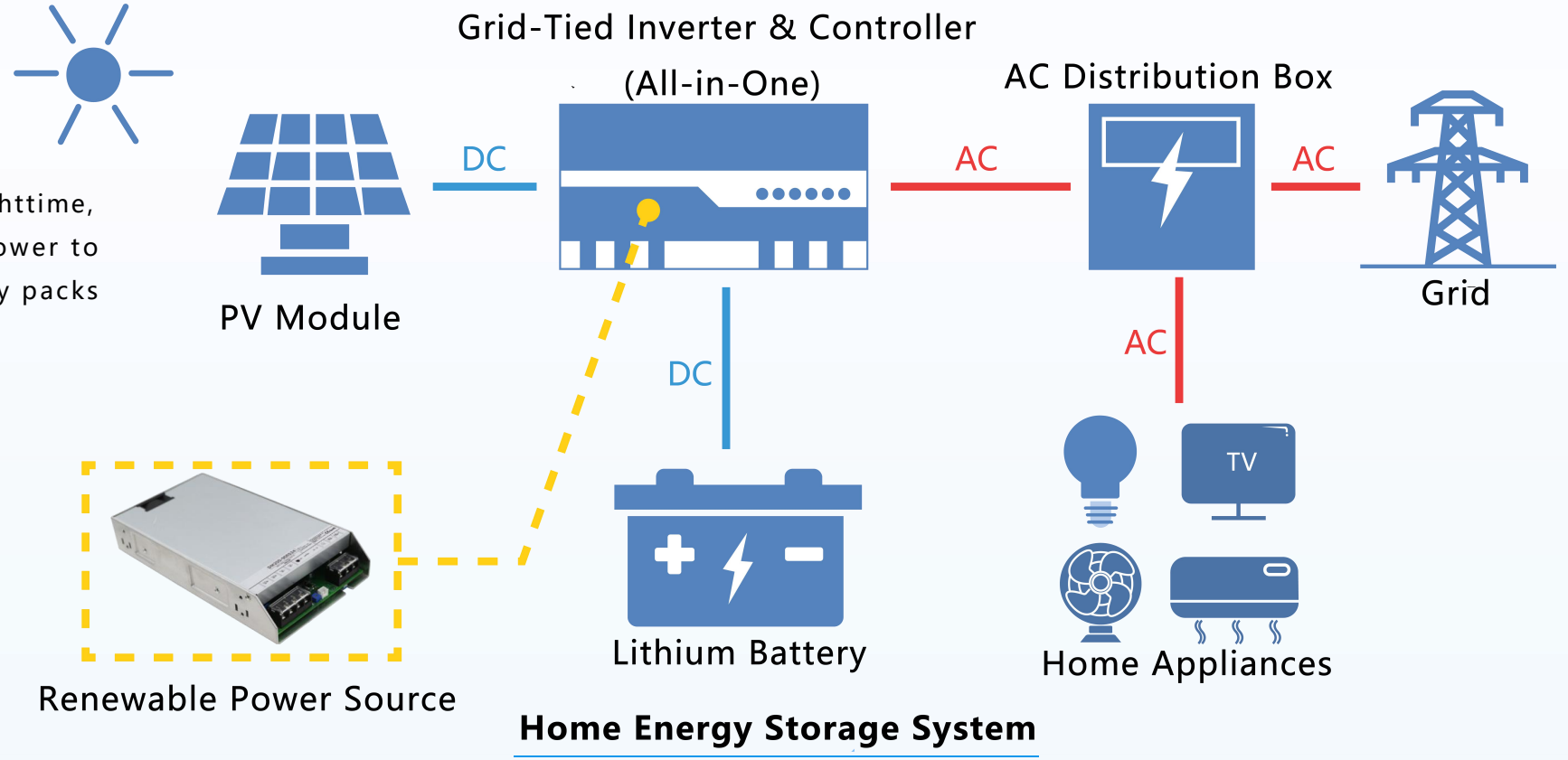
Residential & C&I Energy Storage Systems: The "Dispatcher" for Peak Shaving and Valley Filling

Valley Charging

When electricity prices are low during nighttime, the power supply works to convert AC power to stable DC power, charging lithium battery packs for energy storage.

Peak Discharging

During daytime when grid load peaks and electricity prices are high, lithium battery packs output energy in reverse through this power supply, feeding back to the power system or directly supplying household appliances.



Home Energy Storage System

Summary: The Guarantee of Stability, Safety & Reliability

Whether it's front-end access for photovoltaic power generation, voltage stabilization for DC bus control systems, or backup support for energy storage systems (ESS) and charging piles, ultra-wide high-voltage input new energy power supplies are always ensuring core power supply for C&I energy storage.

01 Stable

200-1500V ultra-wide input voltage range adapts to various complex DC bus fluctuations. Complete reliability verification and mature product design ensure stable operation of load equipment.

02 Safe

Complete multiple protection mechanisms: input side quickly responds to abnormal voltage; output side triple protection ensures load safety, greatly improving reliability and safety under complex operating conditions.

03 Complete

Multiple power segments and package product libraries available, eliminating the need for special customization in design selection—ready to use out of the box.

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THANK YOU

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