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ANPL

BATTERY ENERGY STORAGE SYSTEM SOLUTION EXPERT

POWERING THE GREEN FUTURE

ANRI POWER LIMITED

CONTENTS

POWERING THE GREEN FUTURE.

Patent Certification

UN38.3

01. About Us

01

About ANPL

ANRI POWER LTD. (ANPL), a subsidiary of KALE, specializes in the integration and research and development of energy storage system and core components. ANPL provides industrial and commercial energy storage, UPS and comprehensive energy solutions to help enterprises reduce electricity costs, ensure energy security and pursue sustainable development.

Our mission is to continuously strive towards the construction of a new power system and the realization of carbon neutrality goals.

10+ years
of Industrial Equipment Manufacturing DNA

10+ years
of R&D Team Experience in ESS Industry

36%
of R&D Personnel

2 GWh
Production Capacity

02

About KALE

Founded in 2010, Kale Environmental Technology Co., Ltd (stock symbol: Kale group; stock code: 301070) is one of the leading company in the HVLS fan industry. KALE have been specializing in manufacture of advanced HVLS FANS for 14+ years. Through constant innovation, Kale Fans has taken a leading position in the global market and served 30,000+ customers including 100+ Fortune Global 500 in worldwide.

Kale Group is committed to provide overall intelligent solution for green industry including HVLS fans, energy storage solution and smart power control system. Kale Group leverages its advantages in technology innovation as well as localized operation and maintenance, which facilitates the rapid development of ANPL.

Shanghai, China headquarter

Zhejiang, China production base

Mexico production base

Indian production base

Global Business

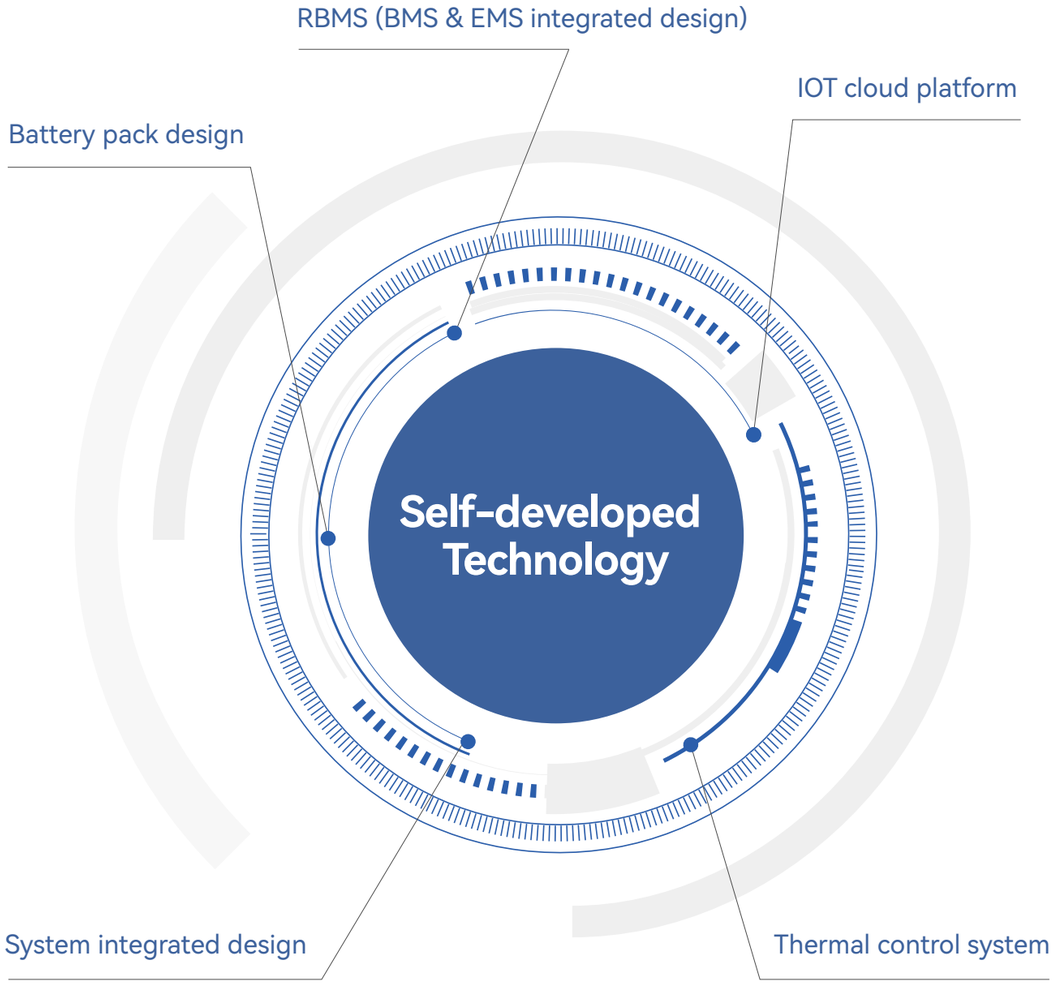
17+
O&M outlets

80+
countries and regions covered by business footprint

30000+
clients worldwide

R&D Strength

ANPL R&D team is formed by experts with 10+ years of ESS experience who account for 36% of the personal. Through independent R&D and cooperation with industry-leading suppliers, ANPL has mastered the all-in-one design concept of「BMS, EMS, TMS, and PCS」full system integration.



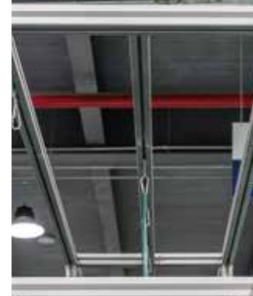
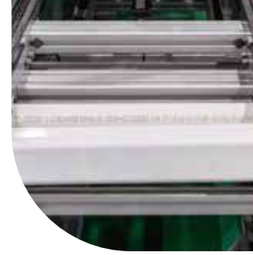
Manufacture Capability

The Zhejiang Haining Production Base has Mature and Advanced ESS Production Line. The comprehensive ESS production lines can operate the whole process from battery cell to system integration, including assembly, testing, delivery and so on. ANPL meets various quality system certification standards including ISO9001. ANPL dedicate to provide products with reliable quality and excellent manufacture to clients.












System Integration

Air-Liquid Intelligent Cooling ESS
[100kW/200kWh]
(PCS Including)

Air-Liquid Intelligent Cooling ESS
[100kWh~200kWh]
(No PCS)

Liquid Cooling Battery Cabinet
[372kWh/418kWh]

System Accessories

Battery Pack
[14.34kWh]

High-Voltage
Part

Hybrid Inverter
[100kW]

02. INNOVATIVE PRODUCTS

UPS Backup Energy Battery Cabinet
48V1000Ah
576V100Ah

5G Base Station Battery Pack
48V10Ah/13Ah/15Ah/20Ah

100kW/200kWh
Industrial Energy Storage System

HULK 200

Safe and Reliable

- CATL Battery Cell
- High IP Protection Rating
- Pack Level Short-Circuit Protection
- Innovative Air Duct Design
- 4 Level of Safety Protection

Intelligent Control

- Optimized Operation Strategy by EMS
- OTA Maintenance and Monitoring
- Unmanned Operation

Flexible Configuration

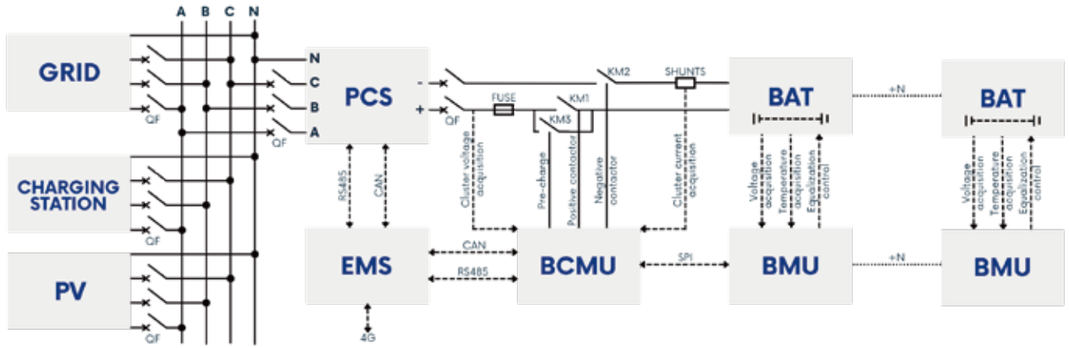
- Standardized Interface for Flexible Access
- Plug and Play Modular Design
- Expandable to MWh
- Integrated Transportation
- On-Grid (Off-Grid Optional)

Economical and Efficient

- Efficient Thermal Management Design
- High-Performance Batteries and PCS
- Replaceable Pack for Easy O&M
- Longer Battery Life Cycle

Internal Construction

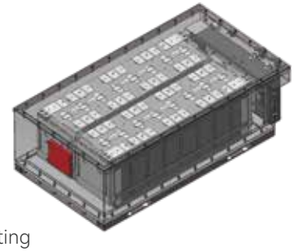
Electrical Topology Diagram



4 Level of Safety Protection

Cell Safety

- CATL LFP Cell
- Strict Incoming Inspection
- Thermal Insulation Pad Between Each Cell (Aerogel)



Pack Safety

- IP67 Protection Rating
- Pack-Level Short Circuit Protection (fuse)
- Pack-Level Fire Suppression Module

System Safety

- IP54 Protection Rating
- Explosion-Proof Fans for the Entire Cabinet
- System-Level Fire Suppression Module

Cloud Monitoring

- Real-Time Data for Each Cell
- Remote Monitoring and Predictive Diagnosis of SOH

Scene Application

Off Grid Island

Commercial Buildings

Industrial Parks

Solar Storage
ChargingIntegration System

Distribution
Grid Expansion

Product Type	ANPLHULK100200
DC Parameters	
Battery Type	Lithium-ion battery (CATL)
Battery Rated Capacity	3.2V / 280Ah
Battery System Configuration	1P224S
Battery Rated Capacity [kWh]	200
Rated Voltage [V]	716.8
Voltage Range [V]	627.2 ~ 806.4
Depth of Discharge	90%
Life Cycle	≥8000 (EOL>60%, 25℃)
AC Parameters	
Grid Voltage Range [V]	AC400 (-15%~+10%)
Grid Frequency Range [Hz]	50 / 60 (±2.5)
AC Mode	3-Phase 3-Wire (3P3W)
Isolation Mode	No isolation connected to the grid
Rated Charge / Discharge Power	100kW / AC
Operating Mode	On-grid / off-grid (optional isolation transformer)
System Parameter	
Rated Charging and Discharging Rate	0.5P
System Efficiency	≥88%
Wiring Method	Bottom in and bottom out
Anti-Corrosion Grade	C4-H
Operating Temperature Range [℃]	-20 ~ +55
Relative Humidity Range	0 ~ 95% RH, no condensation
Cooling Method	Air-Liquid Intelligent Cooling
Protection Rating	IP54
Noise [dB]	≤70 (1m)
Operating Altitude [m]	2000 (>2000 derating)
Weight [kg]	≤3000±100
Dimension [W*D*H] [mm]	(1546±5) × (1593±10) × (2260±5)
Communication Protocols	ModBus-TCP
Communication Interface	RS485 / CAN
Standard	IEC62619 / IEC63056 / IEC61000 / IEC62477 / UN38.3 / EN50549 / VDE4105

372kWh/418kWh Liquid Cooling Battery Cabinet

HULK 372/HULK 418

Flexible Capacity

- Optional Capacity from 4~8 Packs

Adapted to Various PCS

- Communication System Compatibility (Modbus-TCP ; RS485 / CAN)

High Security

- Full Liquid Cooling Heat Dissipation
- Four-Level Fire Protection

Economic Value

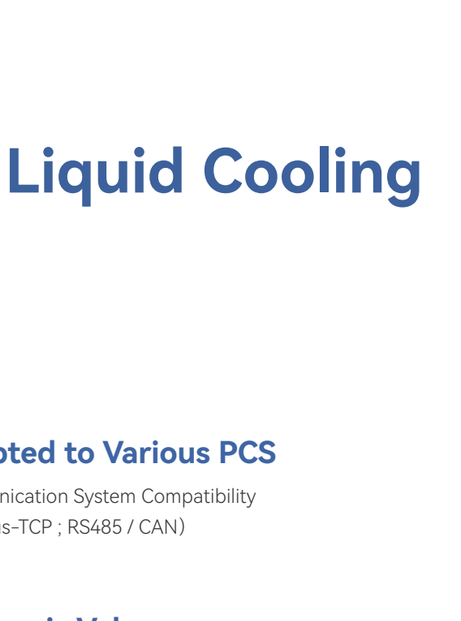
- Longer Life Span from Liquid Cooling
- More Profit from Larger Capacity

Multi-Scenario Application

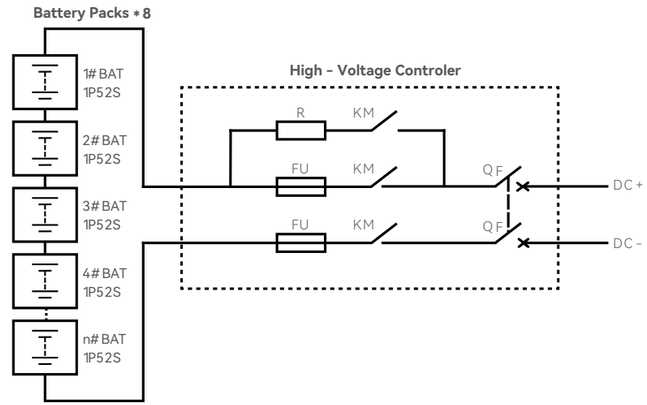
- Full Power Operation from -20℃ to 55℃
- Parallel use of Multiple Units

Intellectual Management

- Self-Developed **BMS** & **EMS**
- Smart **ANPL-CLOUD**



Electrical Topology Diagram



Technical Parameters	ANPLHULK372	ANPLHULK418
Item	Parameter	Parameter
Pack Type	52S*8	52S*8
Battery Type	280Ah	314Ah
Battery Material	LFP battery	LFP battery
Rated Voltage [V]	1331.2	1331.2
Voltage Range [V]	1164.8 ~ 1497.6	1164.8 ~ 1497.6
Configuration	1P416S	1P416S
Rated Capacity [kWh]	372kWh	418.0kWh
Max Charge/Discharge Power	0.5P/0.5P	0.5P/0.5P
Cooling Method	Liquid cooling	Liquid cooling
Depth of Discharge	90%	90%
Charging Temperature [℃]	0 ~ 45	0 ~ 45
Discharging Temperature [℃]	-20 ~ 55	-20 ~ 55
Storage Temperature [℃]	-30 ~ 60	-30 ~ 60
Storage Humidity	RH 0 ~ 95%, on condensation	RH 0 ~ 95%, on condensation
Life Cycle	8000 (SOH70%)	8000 (SOH70%)
Altitude [m]	≤2000	≤2000
Communication	CAN/RS485 / Modbus-TCP	CAN/RS485 / Modbus-TCP
Protection Class	IP54	IP54
Rack Weight [kg]	≤3500	≤3700
Dimensions [mm]	1320*1387*2350	1320*1387*2350

Battery Pack [14.34kWh]

Product Model	ANPL-PACK-14
Product Parameters	
Battery Type	LithiumIronPhosphateBattery（LFP）
Rated Voltage/Capacity of Battery Cells	3.2V/280Ah
Grouping Method	1P16S
Rated Capacity	≥14.3kWh
Rated Voltage	51.2V
Voltage Range [V]	44.8 ~ 57.6
Protection Level	IP67
Weight [kg]	≤110
Dimensions Width * Depth * Height [mm]	≤461×844×262
Power Harness	70-square wire harness
Communication Method	Chrysanthemum Chain Communication

High-Voltage Part

Technical Parameters	ANPL-KZX-003	
Operating voltage range [V]	≤900	
Maximum continuous operating current [A]	≤140	
Dimension Width * Depth * Height [mm]	≤254.5×400×600(without mounting bracket)	
Unit overcharge voltage	Cell overcharge alarm voltage [V]	3.6
Environment Temperature	Operating temperature range [℃]	-20~55
	Storage temperature range [° C]	-30~60
External communication methods	Communication methods	485/CAN/Ethernet
Internal communication methods	Communication methods	485/CAN

Hybrid Inverter [100kW]

All-in-one Hybrid Inverter

Touchscreen LCD

Programmable Working Mode

Seamlesson/Offrid Transferwithin10ms

Support Remote Control of DG

Quadruple Capacity by Paralleling 4 units

Technical Parameters	AMPS100
Input (PV)	
Maximum input power [kW]	100KW
Maximum input voltage [V]	900Vdc
Operating voltage range [V]	180~800Vdc
Rated input voltage [V]	500~800Vdc
Maximum input current per MPPT [A]	100A
Number of MPPT	2
Input (battery)	
Battery type	Lithium/lead-acid batteries
Maximum charging power [kW]	100KW
Operating voltage range [V]	250-800Vdc
Rated voltage range [V]	500-800Vdc
Maximum operating current [A]	200A

Technical Parameters	AMPS100
Output (On-grid)	
Grid connection	Three-phase four-wire/three-phase three-wire
Maximum apparent power output [kVA]	110KVA
Rated output power [kW]	100KW
Maximum apparent power output [kVA]	200KVA
Rated output voltage [V]	220/380Vac，230/400Vac，3W/N+PE
Rated grid frequency [Hz]	50Hz/60Hz
Rated output current [A]	144A
Adjustable power factor	-1~+1
THDi	≤3%
Isolation transformer	Standard
Output (Off-grid)	
Maximum apparent power [kVA]	110KVA
Rated output power [kVA]	100KVA
Rated output voltage [V]	200/380/,230/400Vac,3W./N+PE
Rated frequency [Hz]	50Hz/60Hz
Rated output current [A]	144A
Power factor range	-1~+1
THDu	< 2%
Overload capability	110% long term
Basic parameters	
Operating temperature range [℃]	-25℃~55℃ (derating starts at 45 ° C)
Operating humidity range [RH]	5~95%
Grid connection	Three-phase four-wire/three-phase three-wire
Maximum working altitude [m]	≤2000m，(Derated above 2000)
Cooling	Air cooling
Display	7 inch touch display
Communications	Ethernet /4G/RS485/CAN
Weight [kg]	910kg (* with transformer)
Dimensions W*D*H [mm]	1100mm*1000mm*1960mm
Level of protection	IP54
Meet the criteria	
Grid-connected standards	IEC62109/IEC61000/IEC62477/NRS-097\

UPS Backup Energy Battery Cabinet

SKYLINE SK576100 / SK481000

Original Technology

- Discharge Ratio up to ≥3C
- BMS Proactive Balancing Rate up to 2A
- Charging Current Limit ≤20A
- Single Cell Long-Term Float Charge Voltage ≥3.55V

High Security

- Real-time Monitor on Cell Temperature and Voltage
- Proactive BMS Management and Warning
- Preventing Short Circuit Breakers

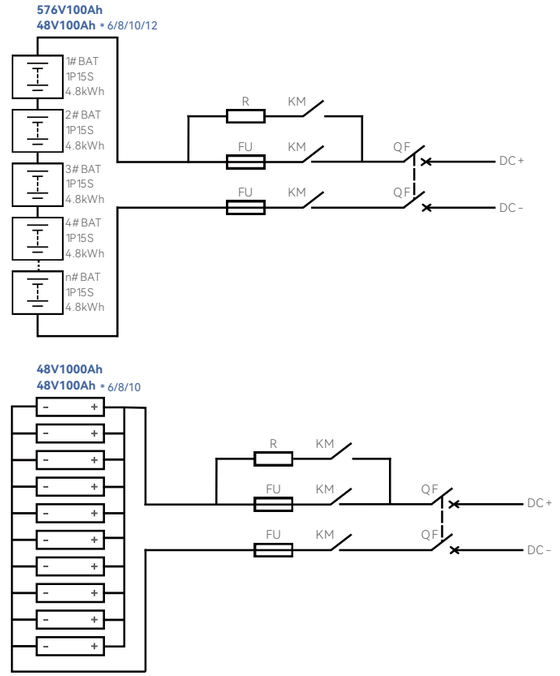
High Reliability

- Individual Rack Replaceable
- Minimized Discharging Temperature Rise of 20℃

Super Flexibility

- Compatible with Wide Voltage Range of 48V ~ 576V
- Flexible Configuration of 48kWh ~ 57.6kWh for Individual Rack
- Available for Bulk or Whole Rack Transportation

Electrical Topology Diagram



Technical Parameters	ANPLSK576100	ANPLSK481000
Item	Parameter	Parameter
Model Specification	576V100Ah	48V1000Ah
Battery Type	100Ah LiFePO4Cell	100Ah LiFePO4Cell
Configuration	180S1P	10*15S1P
Rated Voltage [V]	576	48
Voltage Range [V]	504-648	42-54
Rated Energy [kWh]	57.6	48
Standard Charging Current [A]	20	200
Max Charge Current [A]	20	200
Standard Discharge [A]	100	1000
Max Discharge Current [A]	300	3000
Life Cycle	≥2000，SOH≥80% @RT 20~30°	≥2000，SOH≥80% @RT 20~30°
Shipping Capacity	30%~50%	30%~50%
Operating Temperature [℃]	Charge 0~45℃	Charge 0~45℃
	Discharge -20~55℃	Discharge -20~55℃
Storage Temperature [℃]	-10~40，30%~50%SOC	-10~40，30%~50%SOC
Store Relative Humidity [℃]	≤60%	≤60%
Float Charging Voltage [V]	53.5	53.5

5G Base Station Battery Pack
48V10Ah/13Ah/15Ah/20Ah

Long Live Cycle

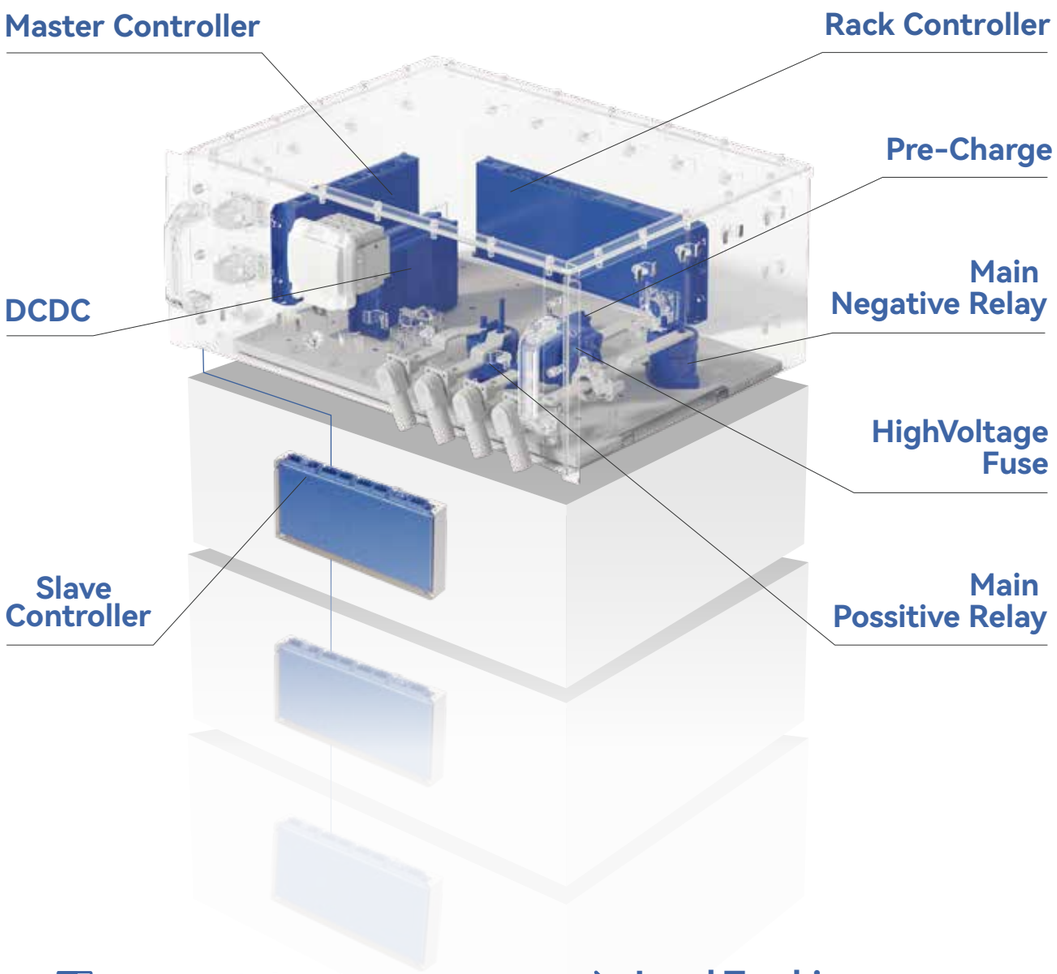
High Security

High Ratio of Discharge

Technical Parameters	ANPLSK4810	ANPLSK4813
Item	Parameter	Parameter
Model Specification	48V10Ah	48V13Ah
Battery Type	10Ah LiFePO4Cell	13Ah LiFePO4Cell
Battery Rated Voltage [V]	3.2	3.2
Configuration	15S1P	15S1P
Rated Voltage [V]	48	48
Voltage Range [V]	30-54.75	30-54.75
Rated Energy [kWh]	0.48	0.62
Rated Charging Current [A]	5A CC Charge until 54.75V,0.5A CV cut-off	6.5A CC Charge until 54.75V,0.65A CV cut-off
Max charge Current [A]	10	13
Standard Discharge [A]	0.5C CC Discharge until 30V cut-off	0.5C CC Discharge until 30V cut-off
Max Discharge Current [A]	20	26
Life Cycle	≥2000，DOD90%，SOH≥80% @RT 20~30°	≥2000，DOD90%，SOH≥80% @RT 20~30°
Shipping Capacity	30%~50%	30%~50%
Operating Temperature [℃]	Charge 0~45	Charge 0~45
	Discharge -20~55	Discharge -20~55
Storage Temperature [℃]	-10~40，30%~50%SOC	-10~40，30%~50%SOC
Store Relative Humidity [℃]	≤60%	≤60%

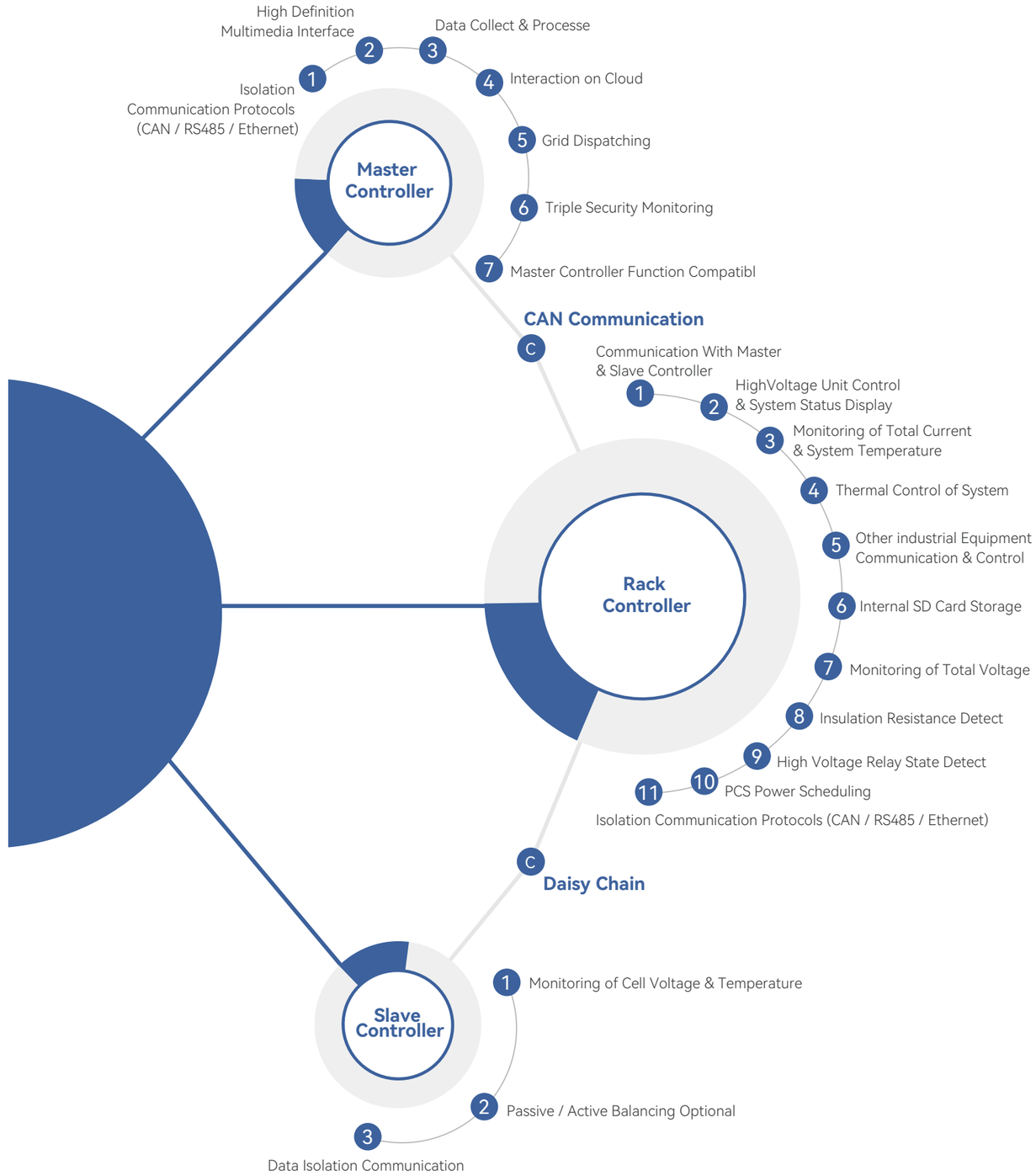
Technical Parameters	ANPLSK4815	ANPLSK4820
Item	Parameter	Parameter
Model Specification	48V15Ah	48V20Ah
Battery Type	15Ah LiFePO4Cell	20Ah LiFePO4Cell
Battery Rated Voltage [V]	3.2	3.2
Configuration	15S1P	15S1P
Rated Voltage [V]	48	48
Voltage Range [V]	30-54.75	30-54.75
Rated Energy [kWh]	0.72	0.96
Rated Charging Current [A]	7.5A CC Charge until 54.75V,0.75A CV cut-off	10A CC Charge until 54.75V,1A CV cut-off
Max charge Current [A]	15	20
Standard Discharge [A]	0.5C CC Discharge until 30V cut-off	0.5C CC Discharge until 30V cut-off
Max Discharge Current [A]	30	40
Life Cycle	≥2000，DOD90%，SOH≥80% @RT 20~30°	≥2000，DOD90%，SOH≥80% @RT 20~30°
Shipping Capacity	30%~50%	30%~50%
Operating Temperature [℃]	Charge 0~45	Charge 0~45
	Discharge -20~55	Discharge -20~55
Storage Temperature [℃]	-10~40，30%~50%SOC	-10~40，30%~50%SOC
Store Relative Humidity [℃]	≤60%	≤60%

Intellectual Management System



- Active Balancing
- Load Tracking
- Flexible Configuration
- Intelligent Anti-backflow
- Demand Control
- Edge Computing

System Configuration



03.
FIELDS OF APPLICATION

Application scenarios

Businesses severely affected by power outages

High-energy-consuming enterprises

Synergistic use of PV, storage and charging infrastracture

Scenarios with unstable transformer loads

Typical ESS DC Coupling Application

Problem

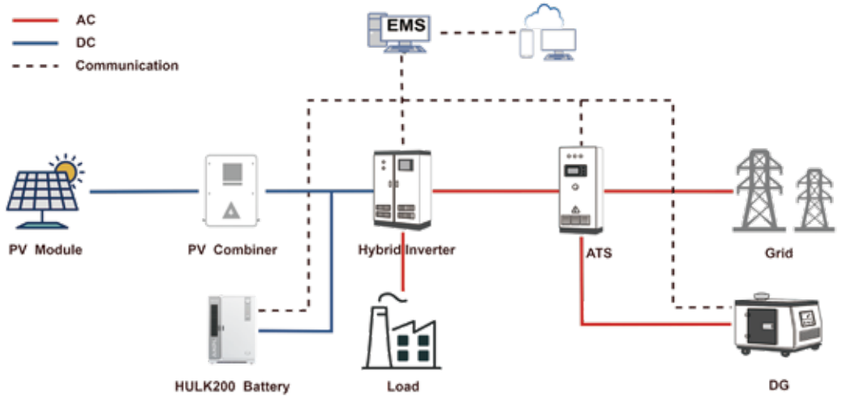
Photovoltaic system owners often face challenges when it comes to utilizing the generated solar energy efficiently. Excess energy during certain periods goes unused, leading to missed savings and potential wastage.

Solution

ANPL energy storage systems enable PV system owners to store surplus energy generated by their solar panels for later use. This stored energy can be consumed during non-sunny periods or high energy demand, maximizing self-consumption and reducing reliance on the grid.

Business Areas

- Factories
- Commercial complex
- Hotel and tourism industry
- Mining



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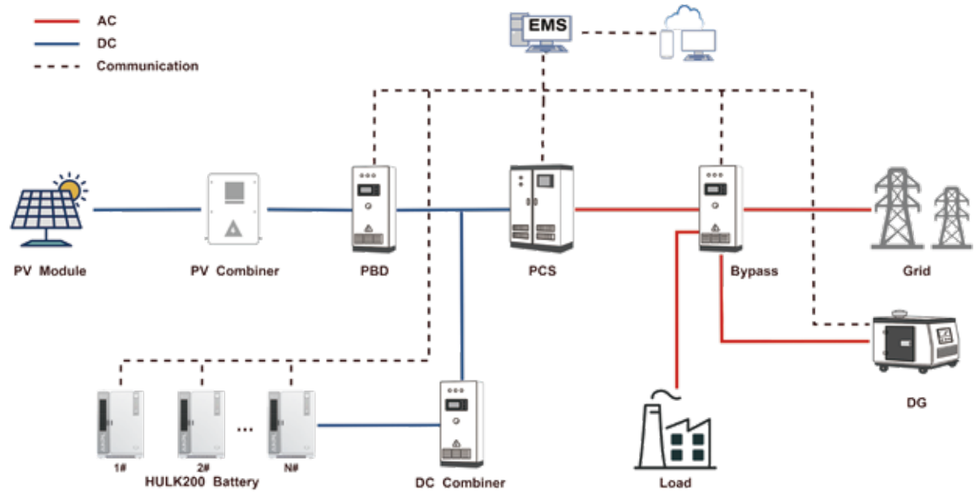


Typical ESS For On-Grid Application

Problem

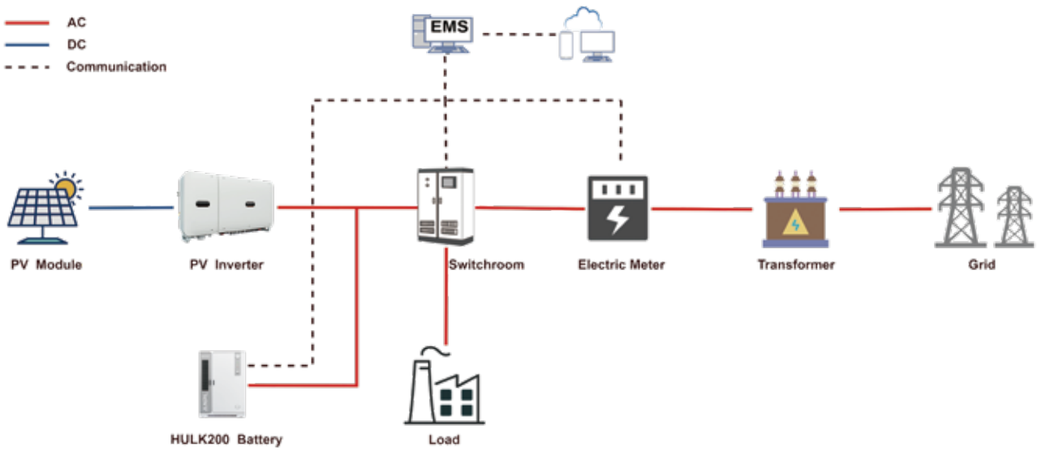
Electricity costs can significantly increase during peak demand periods. Businesses often struggle to manage these costs, resulting in higher expenses and reduced profitability.

Solution

ANPL energy storage systems offer an effective solution by allowing users to store excess electricity during off-peak periods and discharge it during peak demand times. This helps businesses take advantage of the price difference between peak and off-peak electricity rates, optimizing their electricity costs.

Business Areas

- Textile Manufacturing
- Plastic industry
- Wood Processing
- Electronic Equipment Manufacturing



BATTERY ENERGY STORAGE
SYSTEM SOLUTION EXPERT

POWERING THE GREEN FUTURE.

04. PROJECT APPLICATION

Commercial & Industrial ESS Projects (Selected)


600kW/1398kWh


1200kW/2796kWh


800kW/1864kWh


700kW/1631kWh


700kW/1631kWh


400kW/932kWh


900kW/2097kWh


800kW/1864kWh


800kW/1864kWh


400kW/932kWh


700kW/1631kWh


1200kW/2796kWh


900kW/2097kWh


400kW/932kWh


1200kW/2796kWh


700kW/1631kWh


700kW/1631kWh

800kW/1864kWh