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C&I BESS Solution

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Product Introduction and Features

Commercial and industrial energy storage is a typical application of the distributed energy storage system on the user side, and features close distance from the distributed pv power terminal and the load center, which can not only effectively improve the consumption rate of clean energy, but also effectively reduce the loss of power transmission, and help the realization of the carbon peaking and carbon neutrality goals. The purpose of industrial and commercial energy storage is to meet the electricity demand of industrial and commercial loads, and to realize the return on investment by making use of the difference between peak and valley electricity tariffs.

C&I energy storage can cooperate with pv power generation to increase the ratio of "self-consumption priority", or it can take part in a microgrid system consisting of solar, wind, diesel generator, and other energy sources.

Flexible Configuration

Covering a wide power range of 50kW~MW

Multiple configuration options for 2-4 hours backup power.

Convenient Installation

Integrated structure design with high protection grade meeting a variety of application environments

Being Economical and Reliable

High charging and discharging efficiency

Design of an intelligent temperature control system

Providing a safer operating environment

- Modular Power Conversion System Design
- Combined Battery System Design, Supporting Power Expansion
- Supporting Redundant Expansion for Multiple Functions
- Standard System Design with Multiple Parallel Operation

630kW BESS PCS

Polar

C&I PV + BESS

Vega

MW-level liquid-cooled commercial and industrial energy storage system

TRACK 2.0

Outdoor liquid-cooled battery energy storage cabinet

Alcor

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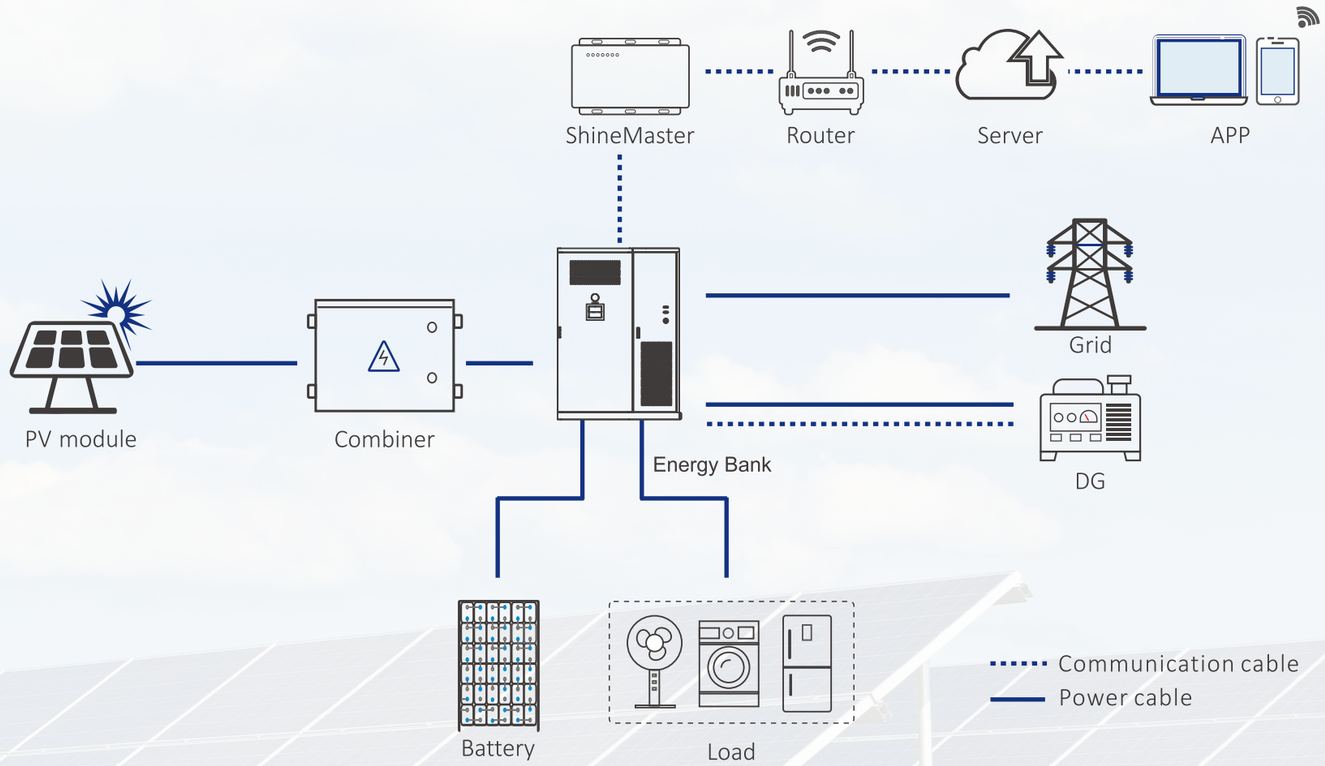
PV Access

This commercial and industrial energy storage product operates under AC 400V on-grid condition, and can realize local manual adjustment, automatic peak shaving, dynamic expansion and other operating modes through local EMS or remote EMS control strategies.

The system can also be optionally equipped with a PV access function to form a PV-storage system.

The System Connection Scheme is as Shown Below:



Flat and Valley Price Periods

In case of sufficient PV power generation, PVs first charge batteries and then supply the remaining power to loads; In case of insufficient PV power generation, PVs first charge batteries, and the grid supplies all the power to loads. However, the grid can charge batteries as well;

If batteries are not discharged within a week after the on-grid connection of the system, the batteries will be discharged a week following the charging to maintain the electrochemical activity, and the power is determined according to the battery calculation.

Peak Price Periods

In case of sufficient PV power generation, PVs first supply power to loads and then charge batteries with the remaining power;

In case of insufficient PV power generation, batteries discharge to supply power to loads. If batteries get completely discharged, the grid supplies power to loads while charging batteries;

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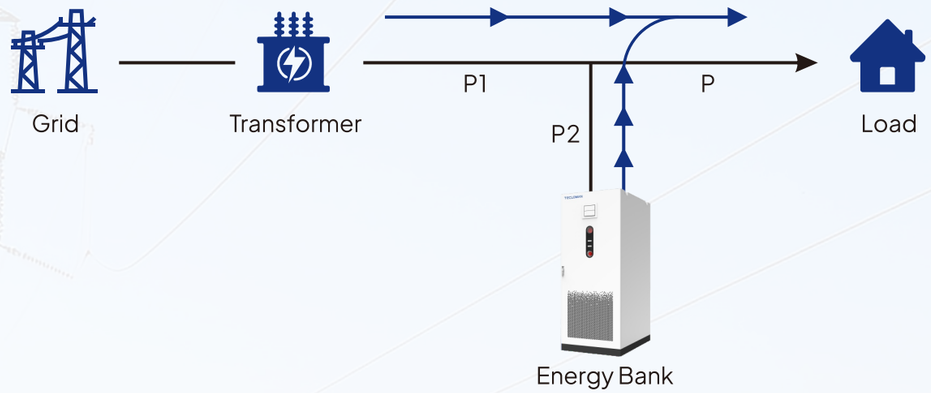
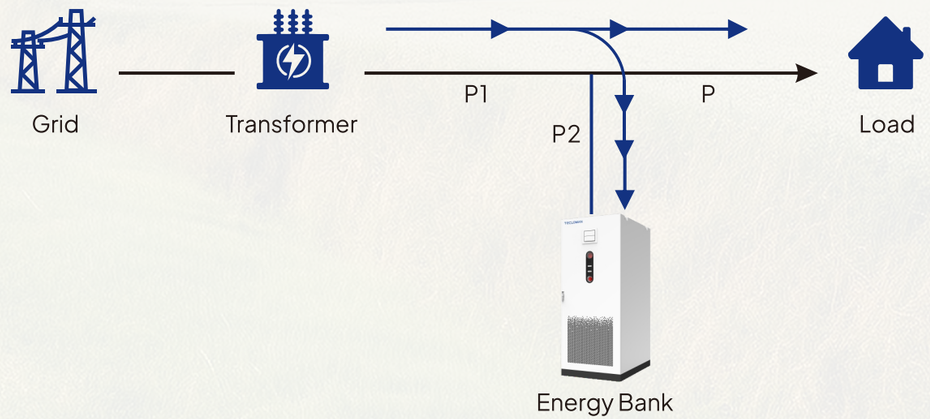
Dynamic Extension

Dynamic extension of the grid or transformer by devices When electrical loads increase, the energy storage system can be used to effectively extend the capacity of the grid and reduce the short-time overload of transformers or circuits caused by the change of loads.

When the power P of the load side is equal to or greater than that of the grid side, the energy storage system is in the discharging and extension mode (P=P1+P2) to reduce the load of transformers and effectively prevent the occurrence of the peak power.



When the power P of the load side is equal to or smaller than that of the grid side, the energy storage system is in the charging mode (P1=P+P2) to store the electric energy of the grid in batteries.



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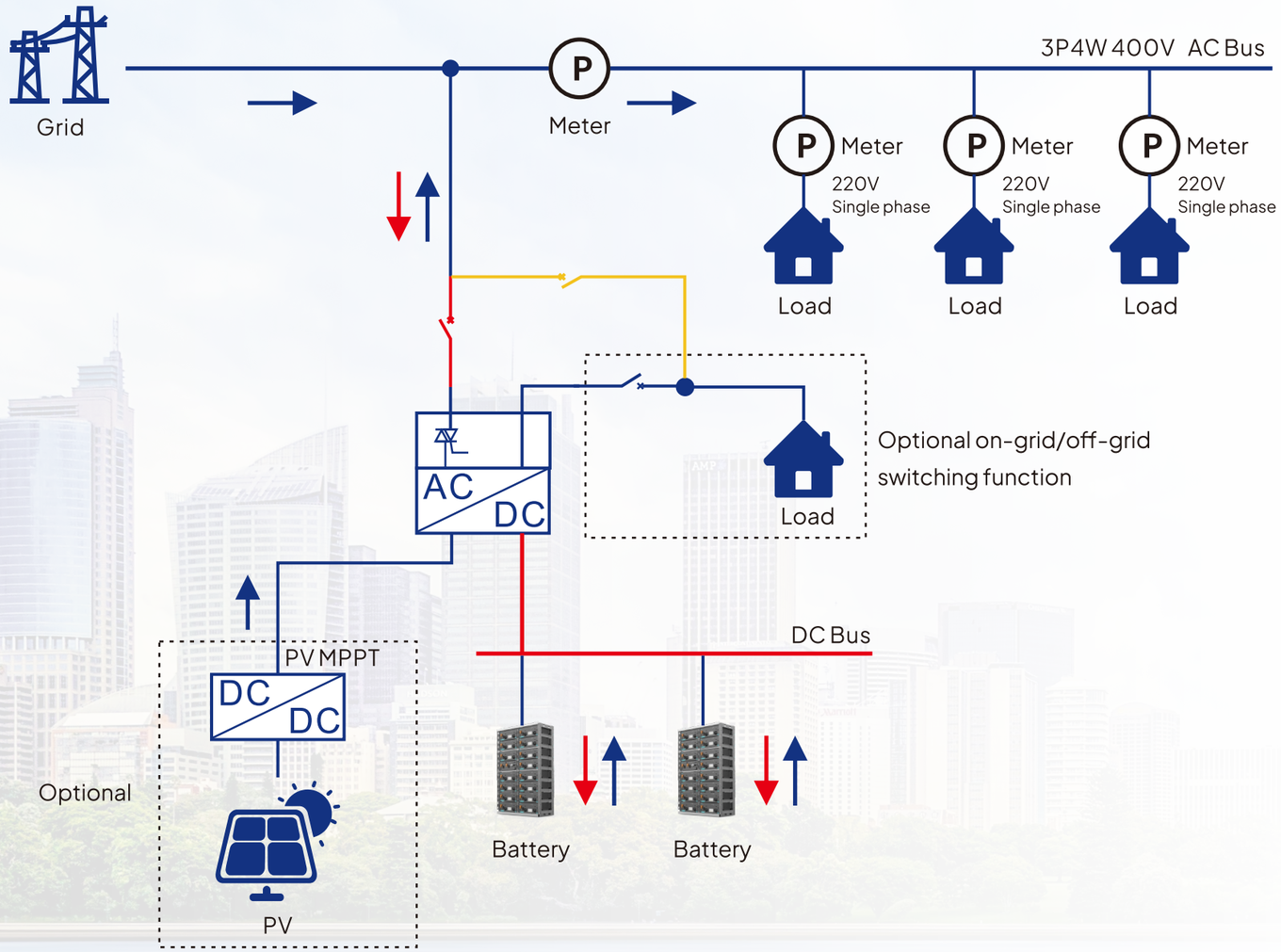
On-grid/Off-grid Switching Function

In power backup, power preservation, and other application scenarios, it is necessary to ensure the power supply for important loads. The EMS system controls the charging and discharging functions of batteries based on whether the grid is powered on or off, ensuring that its loads and power consumption terminal are not affected by grid outage. The switching time shall be less than or equal to 10ms.

① When the grid is powered on, the energy storage system works in on-grid mode and charges batteries under specific settings.

② When the grid is suddenly powered off, the distributed energy storage all-in-one machine inverts the battery energy storage into AC power supply for the loads, with a switching time less than 10ms, to ensure that the loads are not subject to intermittent power supply interruptions.

③ When the grid is powered on again, after the system detects the grid power-on, it automatically switches to the on-grid mode, and recharges the batteries according to the policy requirements to ensure the power supply for the next power outage.



- Matching Standard Modular PV-storage System
- Standard Single-gun and Dual-gun EV Charger Access
- PV, Storage and Charging Control Strategy and Energy Scheduling
- Standard EV Charger System, Matching Combination Mode
- Prefabricated PV-storage-charging Integrated System

DC Power Supply of EV Charger

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Alcor

TESS-125-262-LTE

Product Overview

The Alcor Commercial & Industrial Liquid-Cooled Energy Storage Cabinet is a standardized outdoor enclosure that integrates long-life battery cells, innovative battery management system (BMS) control strategies, high-performance power conversion systems (PCS), intelligent temperature control systems, and active fire protection control systems. Designed with completely separate compartments for electrical components and battery modules, it significantly enhances thermal management reliability and fire safety. Suitable for a wide range of applications including peak shaving, renewable energy integration, dynamic capacity expansion, and low-voltage grid regulation.

- High-efficiency liquid cooling technology, battery temperature difference <5°C.
- Integrated design, pre-assembled for transportation, ready for immediate connection and use.
- Intelligent monitoring system with unified BMS and EMS control for enhanced safety and smart operation.
- Built-in independent fire protection system.

Model	TESS-125-262-LTE
AC (On-Grid)	
Rated Power*	125kW
Rated Voltage	400V
Rated Current	180A
AC System Wiring Type	3L/N/PE
Voltage Range	400Vac(-15% ~ +10%)
Rated Frequency	50Hz/60Hz
THDI	<3% (Rated power)
Power Factor	>0.99
Power Factor Range	±1
Overload Capability	110% overload (10 min), 120% overload (1 min)
AC (Off-grid)	
Rated Power	125kW
Rated Voltage	400V
Rated Current	180A
Rated Frequency	50/60Hz
THDU	<3% (Linear load)
DC (Battery)	
Cell Type	LFP 3.2V/315Ah
Configuration	260S1P
Charge/Discharge Rate	≤0. 5
Rated Battery Voltage	832V
Battery Voltage Range	702V ~ 936V DC
Basic Parameters	
Noise	<75dB
Protection Rating	IP54
Corrosion Protection	C3
Operating Temperature	-20 ~ 55°C
Firefighting Agent	Aerosol

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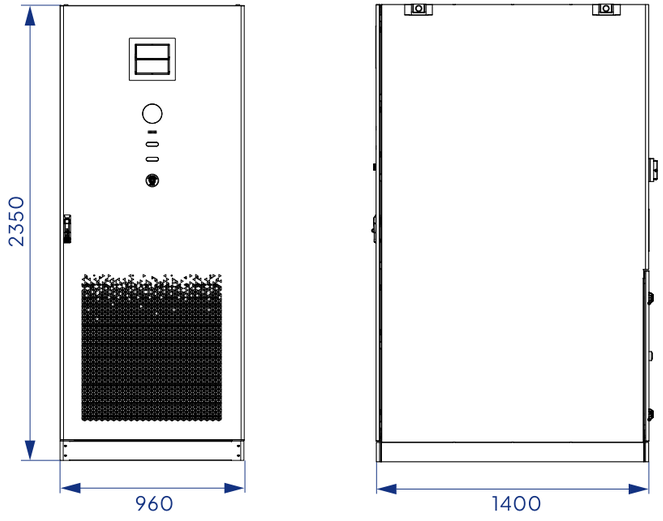
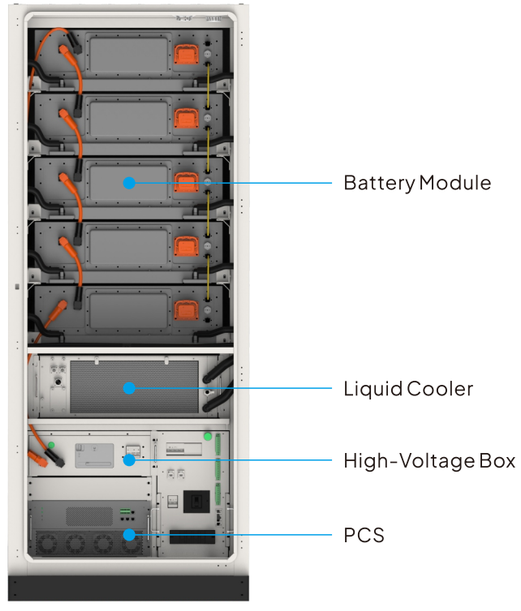
Model	TESS-125-262-LTE
Cooling Method	Module liquid cooling + PCS air cooling
Relative Humidity	0 ~ 95%，without condensation
Max. Altitude	⩽4000m (Derated above 2000m)
Dimensions (W×D×H)	960×1400×2350 mm
Weight	2500kg
Certifications	Battery:IEC61000-6-2/4, IEC62477-1, IEC62619, UI1973, UL9540A, UN38.3 PCS:IEC62477-1, EN61000-6-2/4, EN50549-1/10
Communication	
Display	Touch Screen
Communication Interface	1RS485+1WAN+1LAN
Communication Protocol	Modbus TCP/RTU

*Note: PCS power options include 100kW, 110kW, and 125kW.
Maximum battery power shall not exceed 0.5P.

Product Dimensions



Internal Structure



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Polar

C&I PV+BESS

THESS-125-242

THESS-125-262

THESS-250-484

THESS-250-524

Product Overview

The modular C&I energy storage system is designed using a modular and combined approach. The independent design of battery cabinets and power supply cabinets enhances the system's safety and reliability. The equipment can be integrated with photovoltaic (PV) systems to form a solar + storage solution, improving the self-consumption rate of solar power and reducing electricity costs. The system is widely used in various scenarios such as peak shaving and valley filling for C&I applications, emergency backup power, smart microgrids, and renewable energy integration in distribution networks.

- Modular design, flexible configuration.
- Safe and Reliable: Independent battery cabinet and power supply cabinet design, ensure system safety.
- Standardized expansion, flexible configuration, multiple application scenarios.
- Intelligent O&M: full life cycle monitoring & management controlled by cloud platform.
- Photovoltaic access to improve energy efficiency and reduce electricity costs.
- On and Off grid seamless switching: guaranteeing stable operation of the critical loads.

Model	THESS-125-242	THESS-125-262	THESS-250-484	THESS-250-524
AC (Grid tied)				
Rated Power *	125kW	125kW	250kW	250kW
Rated Voltage	400V			
Rated Current	180A	180A	360A	360A
AC System Wiring Type	3L/N/PE			
Voltage Range	400Vac (-15%~+10%)			
Frequency	50Hz/60Hz			
THDI	<3% (Rated power)			
Power Factor	>0.99			
Power Factor Range	±1			
Overload Capability	110% overload (10 min), 120% overload (1 min)			
AC (Off-grid)				
Rated Power	125kW	125kW	250kW	250kW
Rated Voltage	400V			
Rated Current	180A	180A	360A	360A
Frequency	50Hz/60Hz			
THDU	<3% (Linear load)			
DC (Battery and PV)				
Max. PV Open-circuit Voltage	1000V			
Rated PV Power	120kWp	120kWp	240kWp	240kWp
PV Voltage Range	400~650VDC	400~700VDC	400~650VDC	400~700VDC
PV MPPT NO.	60kW*2	60kW*2	60kW*4	60kW*4
Cell Type	LFP 3.2V/315Ah			
Grouping Method	240S1P	260S1P	240S2P	260S2P
Charge/Discharge Ratio	⩽0.5P			
Battery Rated Voltage	768V	832V	768V	832V
Battery Voltage Range	672~864VDC	728~936VDC	672~864VDC	728~936VDC
Basic Parameters				
On/off Grid Switch Function	Optional			

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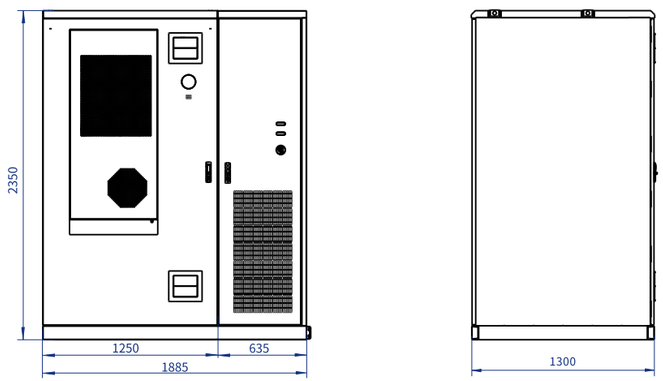
Modle	THESS-125-242	THESS-125-262	THESS-250-484	THESS-250-524
On/off Grid Switch Time		<20ms		
Noise Level		<75dB		
IP protection Level		IP54		
Anti-corrosion Protection		C3		
Operating Temperature		-20℃~55℃		
Fire Protection		Aerosols		
Cooling	Forced air + Smart AC	Liquid cooling	Forced air + Smart AC	Liquid cooling
Relative Humidity		0 ~ 95%, without condensation		
Max. Altitude		⩽4000m (Derated above 2000m)		
Dimensions (W×D×H)	1885×1300×2350mm	1585×1300×2350mm	3764×1300×2350mm	3164×1300×2350mm
Weight	3010kg	2900kg	5420kg	5200kg
Certificates	Battery: IEC61000-6-2/4,IEC62477-1,1EC62619,UL973,UL9540A,UN38.3 PCS: IEC62477-1,EN61000-6-2/4,EN50549-1/10			
Communication				
Display	Touch Screen			
Communication	RS485 / LAN			
Communication Protocal	Modbus			

* Note: If you need to increase the system power and battery power, please consult the manufacturer,
Max. battery power not to exceed 0.5P,
PCS power can be selected from 100kW, 110kW, 125kW.

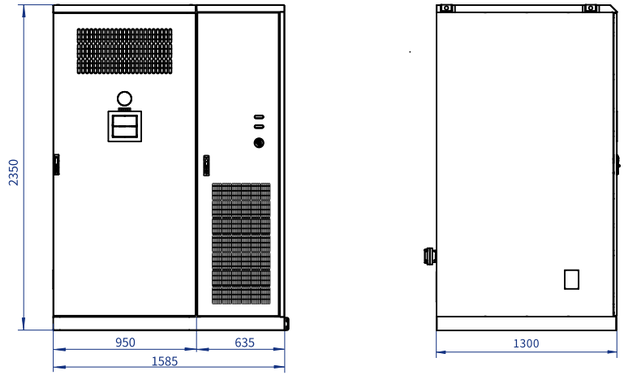
Product Dimensions

THESS-125-242 Dimensions: 1885mm×1300mm×2350mm Weight: 3010kg

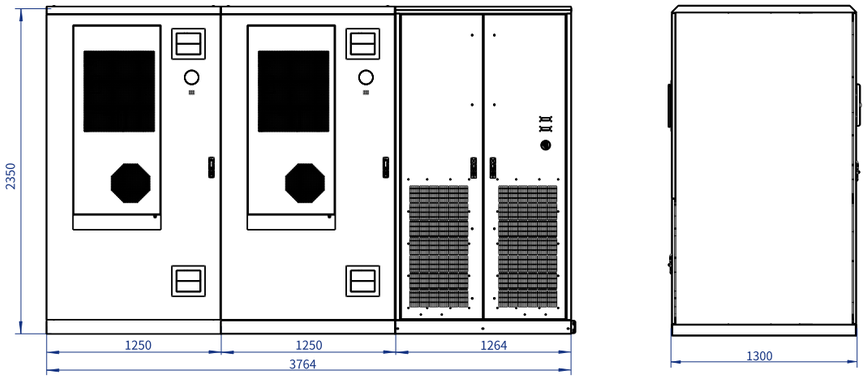


Product Dimensions

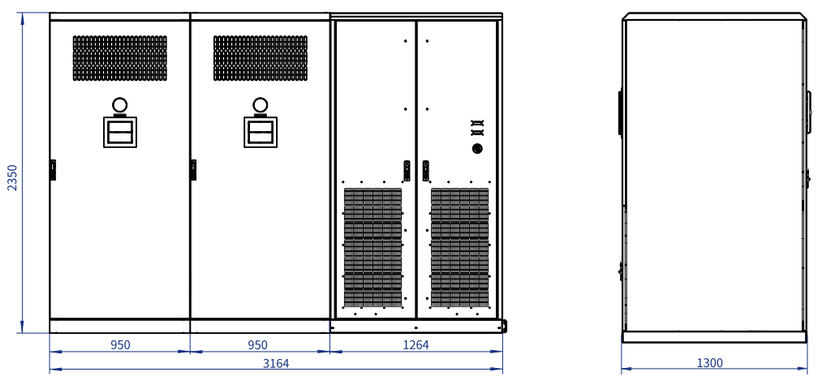
THESS-125-262 Dimensions: 1585mm×1300mm×2350mm Weight: 2900kg



THESS-250-484 Dimensions: 3764mm×1300mm×2350mm Weight: 5420kg



THESS-250-524 Dimensions: 3164mm×1300mm×2350mm Weight: 5200kg



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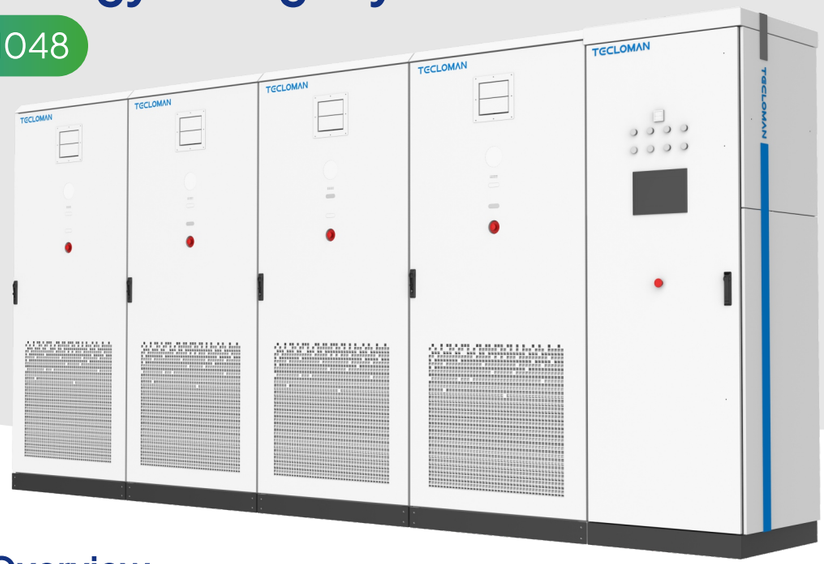
Vega

MW-level liquid-cooled commercial and industrial energy storage system

TESS-500-1048



Product Overview

The MW-level liquid-cooled industrial and commercial energy storage system (315Ah) is mainly targeted at industrial and commercial energy storage application scenarios both at home and abroad. Supports AC400V grid connection, reserves charging pile interfaces, and can be assembled in modular cabinets. The power and battery capacity can be adjusted at any time according to customer needs. It is equipped with a high safety protection level fire protection and intelligent temperature control system. It is applicable to various application scenarios such as photovoltaic storage and charging, expansion on the transformer area side, and local microgrids.

- Integrated design, high protection rating, and convenient installation and transportation
- The reliable integration of intelligent temperature control and fire management enhances the fire safety protection of the system
- Supports expansion by connecting multiple units in parallel
- Supports AC 400V grid connection
- The independent battery and electrical compartment design enhances safety protection levels
- Suitable for multiple application scenarios, including renewable energy integration, microgrids, and peak load management
- All components within the system are CE certified, ensuring the system is suitable for transportation as a whole
- The design includes provisions for electric vehicle charging station interfaces.

Model	TESS-500-1048
AC (On-grid)	
Maximum power	550kW
Rated power	500kW
Rated voltage	400V
Rated current	721A
Voltage range	400Vac（-15%~+10%）
Rated frequency	50Hz/60Hz
THDI	＜3%（Rated power）
Power factor	＞0.99
AC System Wiring Type	3/N/PE
AC (Off-grid)	
Maximum power	550kW
Rated power	500kW
Rated voltage	400V
Rated current	721A
THDU	＜3%（Resistive load）
Rated frequency	50Hz/60Hz
Overload capacity	110% overload (10 min), 120% overload (1 min)
Direct current	
Rated battery voltage	832V
Battery voltage range	728~949VDC
Battery capacity	1048kWh
Maximum charging power	550kW
Maximum discharging power	550kW
Maximum charging current	793A
Maximum discharging current	793A
Basic parameters	
Noise	<75dB（A）@1m
Protection level	IP54
Corrosion protection rating	C3
Operating temperature	-25℃~+55℃
Protection function	Over/undervoltage, overcurrent, over/under temperature, excessively high/low SOC (State of Charge), low insulation resistance, short-circuit protection, etc.
Fire protection	aerosol

Model	TESS-500-1048
Cooling Method	Liquid-cooled air conditioning + forced air cooling
Relative Humidity	0 ~ 95%, without condensation
Altitude	⩽4000m (Derated above 2000m)
Dimensions (W×D×H)	4750×1300×2350mm
Weight	≈10.5T
Communication	
Display	Touchscreen
Communication Interface	RS485/CAN/LAN

Product Certification

PCS Certification:

CE EN 61000-6-4:2019 EN 61000-6-2:2019 EN 62477-1:2012+A1:2017 EN62109-1:2010 EN 50549-1: 2019 C10/11.

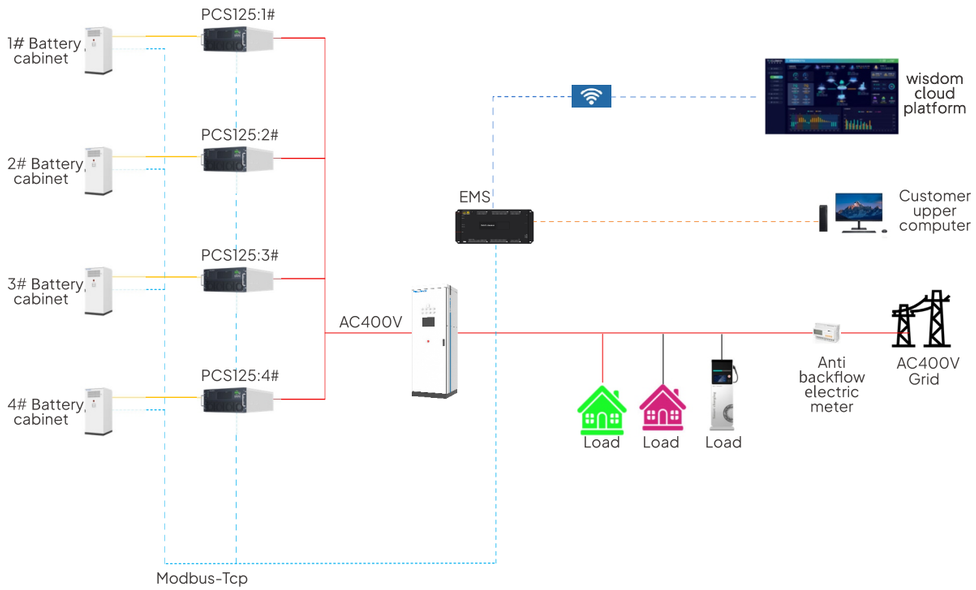
Module Certification:

GB/T36276-2018 IEC61629 UN38.3 EMC.

Battery Certification:

UI1973 UL9540A IEC61629 UN38.3 GB/T36276-2018 ROHS MSDS.

Product Principle



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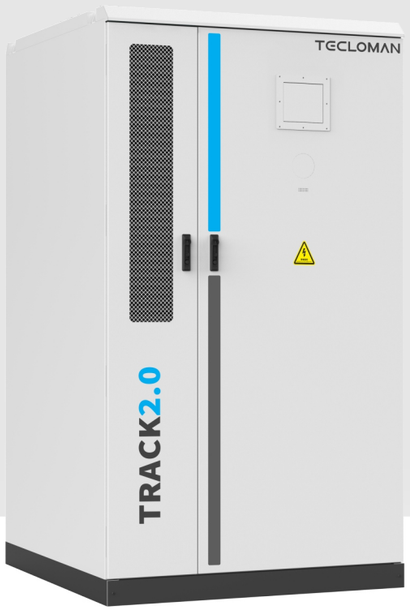
TRACK 2.0

Outdoor liquid-cooled battery energy storage cabinet

Track-499-630-Y

Track-665-630-Y



Product Overview

The outdoor liquid-cooled battery cabinet, based on an "All-in-One" modular integrated architecture, integrates battery clusters (1 to 8 PACKs), BMS, liquid cooling air conditioner, fire protection, and thermal management systems into a single standardized cabinet. It can be connected individually or used in parallel with PCS, featuring a small footprint, high reliability, easy installation, flexible scalability, convenient maintenance, and high system efficiency. It is suitable for various application scenarios such as microgrids, emergency backup power, peak shaving and valley filling, and distributed renewable energy integration.

- Out-door cabinet design enables direct outdoor installation.
- High overall performance with a built-in NFPA 69-compliant independent fire suppression system.
- Compatible with 1000V/1500V systems.
- Intelligent BMS system with real-time monitoring for enhanced system safety.
- High-efficiency liquid cooling technology with a temperature difference ≤4°C.
- Advanced thermal insulation and fire-resistant materials with a fire resistance rating of 2 hours.
- IP54.
- High energy density.
- Active equalization: Effectively control the battery pressure difference, and increase the energy usage rate by more than 20% in the whole life cycle of the system.

Model	Track-499-630-Y	Track-665-630-Y
Cell type	LFP 3.2V/315Ah	
Configuration	2P156S	2P208S
Nominal capacity	630Ah	630Ah
Nominal power	314kWh	419kWh
Nominal voltage	499.2VDC	665.6VDC
Operating Voltage Range	436.8~561.6 VDC	582.4~748.8VDC
Nominal charge/discharge current	315A	
Max. charge/discharge current	400A	
Low voltage power supply mode	220V~50/60HZ 20A Non-UPS power supply	
Charge/discharge efficiency	≥95% without auxiliary consumption	
Cycle life	≥6000 Cycles	
Operating Temperature	Charging temperature: 0~55°C, Discharging temperature: -20~55°C	
Recommended operating temperature	15°C~ 40°C	
Storage temperature	Within one month: -30°C~+55°C, 90%RH Max Within three months: -10°C~+45°C, 90%RH Max Recommended storage temperature:-10°C ~+25°C ,85%RH Max)	
Altitude	⩽4000m (Derated above 2000m)	
Thermal management mode	Liquid-cooled	
Equalisation	Active / Passive	
Relative humidity	5~90%RH	
IP grade	IP54	
Dimension W×D×H	1300×1300×2320mm (±5mm)	
Weight	≈3098kg	≈3814 kg
Communication mode	Modbus / CAN2.0 / RS485	
Certificates	IEC62477-1, IEC61000-6-2/4, IEC62619,UL1973, UI9540A, UN38.3 , under certification	

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630kW BESS PCS

TPCS-630

Product Overview

The 630kW PCS is a powerful AC/DC bidirectional conversion device designed for BESS.

- Built-in isolation transformer, directly with three-phase 100% unbalanced load
- Supporting multiple machine parallel connection, meeting the requirements of different power levels
- -25°C to 55°C
- harsh conditions such as high humidity and salt spray
- Frequency support; Voltage support Inertia support
- Flexible configuration with different capacity requirements
- Multiple control modes, free choice
- Integrated EMS, intelligent management

Model	TPCS 630
DC parameters	
Maximum operating Voltage	1000V
Minimum operating Voltage	570V
Full-load voltage range	600~850V
Maximum input current	1155A
Grid-connected AC parameter	
Rated output power	630kW
Maximum output power	693kW
AC rated voltage	400V
AC rated frequency	50Hz/60Hz
Rated output current	909A
Maximum output current	1000A
Maximum overload capacity	110% overload (10 min), 120% overload (1 min)
AC voltage range	85%Un-110%Un
AC frequency range	45-55Hz/55-65Hz (settable)
THDi	<5%(Rated power)
DC component of current	<0.5% of rated output current
Power factor	-0.99 (advance)~ 0.99 (lag)
Reactive power controllable range	-100%-100%(transformer required)
Isolation method	none
AC System Wiring Type	3W+N+PE
Off-grid AC parameter	
AC rated voltage	400V
AC rated frequency	50Hz/60Hz
THDu	<3% (Linear load)
DC component of voltage	0.5%Un (linear balanced load)
Load capacity of unbalance load	100%
Voltage variation range	<3%Un
Gird-connection and off switch mode	
Gird-connection and off switch capacity	Planned off-grid
Passive off-grid switching mode and switching time	<10 ms with switching cabinet
Efficiency	
Maximum efficiency	99.0%
Basic parameters	
Dimensions (W × H × D)	1216mm × 850mm ×2054mm
Weight	1200kg
Permissible operating temperature range	-25°C~55°C (over 45 °C, it will operate in derating)
Cooling method	Forced air cooling
Protection Grade	IP20
Relative humidity	≤95%RH, non-condensing
Highest Altitude	⩽4000m (Derated above 2000m)
Self power consumption in shutdown	<50W
HMI	Touch Screen
Communication Interface	RS485, Ethernet, CAN
Support protocols	Modbus TCP, Modbus RTU

Centralized EMS controller is a cost-effective and multi-functional energy management controller tailored for the energy storage industry. By collecting important data between devices, processing and analyzing the data, and implementing internal control strategies within the controller, various application scenarios can be achieved, such as peak shaving and frequency regulation, peak-valley arbitrage, and reducing maximum demand. At the same time, the EMS controller can manage 7 energy storage devices simultaneously, supervise the operation of each device in real time, and allocate the operating power among the devices reasonably.

Parallel Operation Management

Can manage the operation of 7 devices simultaneously, and allocate the operating power of each device reasonably.

Energy Management

Configure energy storage strategies, including manual mode, local automatic, remote EMS and dynamic extension, etc., to adapt to various scenario requirements.

System Protection

Integrated structure design with high protection grade meeting a variety of application environments.

Device Monitoring

View the operation status of various devices in the energy storage system and support device regulation.

Fault Alarm

Collect fault alarms among devices, including time, level, status, etc.

Centralized/Remote EMS Control

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Tecloman Smart O&M Cloud System

Tecloman Smart O&M Cloud System is a professional remote operation and maintenance monitoring platform independently developed for energy storage products, which adopts self-developed edge computing terminals for bi-directional data communication, and encrypts and decrypts the transmitted data through encryption algorithms to ensure the security of communication.

Users can view the equipment operation status, alarm records, historical data and other information at any time through browser, applet or APP, and can also perform remote parameter setting, control, timing, firmware upgrading and other operations on the equipment, realizing the monitoring and operation and maintenance of the whole life cycle of the equipment.

- Full-time data monitoring + beidou positioning, Remote visualization of equipment status and location
- Intelligent operation strategy, can be customized Strategy, to achieve automatic control of equipment
- Intelligent O&M, intelligent equipment health status Assessment based on historical data
- Fault alarm information active push, support public, Sms,email multiple message reminder function