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Ener Hexon® Smart261L Pro

Intelligent Liquid-cooled C&I ESS

User's Manual

ABOUT MANUAL

Applicable Product

This product user manual mainly introduces the transportation and storage, mechanical installation, electrical connection, power-on commissioning and power-off shutdown, fault handling and maintenance methods of battery ESS. This manual is only applicable to the intelligent industrial and commercial energy storage product developed by Shenzhen Yongtai Digital Energy Technology Co., Ltd., product name: Ener Hexon® Smart261L Pro intelligent liquid-cooled C&I ESS, model: YTDS5T261L-P125C/P125D.

Faces the reader

This manual is applicable to the personnel who install, operate and maintain this product.Readers should have a certain degree of electrical and related professional knowledge qualification.

All installation operations must be carried out and only by skilled personnel.Professional and technical personnel shall meet the following requirements:

After special training, and obtain the qualification

Read this manual completely and master the safety matters related to the operation

Familiar with local standards and safety codes for electrical systems

Symbols use

In order to ensure the personal and property safety of the user when using the product, and to use the product more efficiently and correctly, the manual provides relevant information, and the following symbols are used to highlight them.

The following list of symbols may be used in this manual, please read carefully to better use this manual.

The following symbols may appear in this text and have the following meanings:

Symbol	Symbol meaning
⚠ DANGER	This is used to warn of emergency hazardous situations.Failure to prevent such situations will lead to personnel fatalities or severe personal injury.
⚠ WARNING	This is used to warn of potential hazardous situations.Failure to prevent such situations could lead to personnel fatalities or severe personal injury.
⚠ CAUTION	This is used to warn of potential hazardous situations.Failure to prevent such situations could lead to moderate or minor bodily injury.
NOTICE	This is used to convey safety alert information for equipment and the surrounding environment.Failure to take preventive measures could result in equipment damage, data loss, reduced equipment performance or other unpredictable outcomes.
NOTE	This section is used to highlight important or critical information, recommended best practices and practical tips.It should be noted that this type of "instruction" is not a safety warning and is unrelated to risks of personal injury, equipment damage or environmental harm.

Use of symbols on the product

Please pay attention to the warning symbols on the product during installation, operation, maintenance and other operations, including but not limited to the following:

Symbol	Symbol Meaning
	High Voltage — Indicates that high voltage or live parts are present. Touching may result in electric shock.
	Caution — If not avoided, may cause minor or moderate personal injury.
	Protective Earth (PE) — This symbol indicates the protective grounding terminal. It must be firmly grounded to ensure operator safety.
	Functional Earth
	Trip Hazard
	Pacemaker Warning
	No Smoking
	No Open Flame
	Do Not Climb
	Do Not Touch
	Do Not Step
	No Entry
	Do Not Lean
	Read Instructions Before Use — Failure to comply may result in danger.
E-Stop	Emergency Stop

Acronym

The following abbreviations may appear in this document and have the following meanings unless otherwise specified:

Serial		Original
1	BMS	Battery Management System
2	BMU	Battery Management Unit
3	PCS	Power Conversion System
4	EMS	Energy Manage System
5	ESS	ESS
6	BESS	Battery ESS
7	PE	Protective conductor
8	SOC	State of Charge
9	SOH	State of Health

CONTENTS

1 SAFETY INSTRUCTIONS

1.1 General safety precautions

Before transporting, storing, installing, operating, using and maintaining the equipment, please read this manual first, operate in strict accordance with the contents of the manual, and follow all safety precautions on the equipment and in the manual.

The "Instructions,""Caution,""Caution,""Warning" and "Danger" in the manual do not represent all the safety precautions to be observed, but only serve as a supplement to all the safety precautions.You will also need to comply with relevant international, national or regional standards, as well as industry practices.The Company shall not be liable for any violation of the general safety operation requirements or the safety standards for the design, production and use of the equipment.

The equipment shall be used in an environment that meets the design specification requirements, otherwise it may cause equipment failure, and the equipment function abnormality or component damage caused thereby is not within the scope of equipment quality assurance; otherwise, the company shall not be liable for compensation for personal injury, property loss, etc. that may be caused.

Transport, storage, installation, operation, use and maintenance of the equipment shall be in accordance with local laws, regulations and codes.The safety precautions in this manual are only intended as a supplement to local laws, regulations and codes.

The Company shall not be liable for any of the following circumstances or the consequences thereof:

(1)Installation and use environment does not comply with the provisions of the relevant international, national and regional standards.

(2)Do not operate in the conditions of use described in this manual.

(3)Unauthorized disassembly, modification of the product or modification of the software code.

(4)Failure to follow the operating instructions and safety warnings in the product and documentation.

(5)Equipment damage caused by abnormal natural environment (earthquake, flood, volcanic eruption, debris flow, lightning, fire, war, armed conflict, typhoon, hurricane, tornado, extreme weather, force majeure).

(6)Shipping damage caused by you or a third party on your behalf.

(7)Damage caused by storage conditions not meeting product documentation requirements.

(8)Damage to the hardware or data of the equipment due to negligence, improper operation or intentional damage by you or a third party.

(9)Damage to the system caused by you or a third party, including removal and installation of the system that does not comply with the requirements of this manual, as well as adjustment, alteration, or removal of identification markings that do not comply with the requirements of this manual.

(10)Defects, failures or damages caused by acts, events, omissions or accidents beyond the reasonable control of Seller, including power outages or electrical failures, theft, war, riots, civil commotion, terrorism, intentional or malicious damage, etc.

NOTICE	It is strictly prohibited to engage in reverse engineering, decompilation, disassembly, dismantling, adaptation, implantation, or any other derivative operations on the device software. Under no circumstances shall the internal implementation of the device be studied, the device software source code obtained, intellectual property misappropriated, or the results of any performance testing of the device software disclosed.

1.2 Personal safety

⚠ DANGER	(1)Live electrical work during installation is strictly prohibited. Do not install or remove cables under power. When a cable core comes into contact with a conductor, it may generate arcs, sparks, or cause fire and explosion, leading to fire hazards or personal injury; (2)Improper or incorrect operation while the equipment is energized may result in fire, electric shock, or explosion, causing casualties or property damage; (3)During operation, it is strictly forbidden to wear conductive items such as watches, bracelets, bangles, rings, or necklaces, to avoid electric shock burns; (4)Specialized insulated tools must be used during operation to prevent electric shock injury or short-circuit faults. The insulation and voltage withstand rating must comply with applicable local laws, regulations, standards, and requirements.
⚠WARNING	During operation, specialized protective equipment must be used, such as wearing protective clothing, insulated shoes, safety goggles, safety helmets, and insulated gloves.

1.2.1 General Requirements

(1)Do not deactivate equipment protection and ignore warnings, cautions, and precautions in manuals and equipment.

(2)In the process of equipment operation, such as found that may lead to personal injury or equipment damage fault, should immediately terminate the operation, report to the head, and take effective protective measures.

(3)Do not power on the equipment until the installation is completed or confirmed by a professional.

(4)It is prohibited to contact the power supply equipment directly, with other conductors or indirectly through wet objects. Before contacting any conductor surface or terminal, measure the voltage at the contact point to confirm that there is no risk of electric shock.

(5)When the equipment is running, the housing temperature is high, there is a risk of burns, do not touch.

(6)It is strictly prohibited to fingers, parts, screws, tools, or veneer, such as contact with the running fan, so

as not to hurt hands or damage to the equipment.

(7)In the event of a fire, evacuate the building or equipment area and press the fire alarm bell, or call the fire alarm.Under no circumstances shall re-enter the burning building or equipment area.

1.2.2 Personnel Requirements

Lifting and transportation, installation and wiring, operation and maintenance of the equipment must be carried out by professional electrical technicians in accordance with local codes.Wear equipment that complies with local safety requirements when operating the equipment.

Figure 1-1 personnel dress code

The operator shall meet the following requirements:

(1)During installation, operation and maintenance, it is strictly prohibited to wear watches, bracelets, bracelets, rings, necklaces and other conductive objects, so as to avoid electric shock burns.

(2)In the transportation, transit, installation, wiring and maintenance operations, must comply with the laws and regulations of the country, region and relevant standards.

(3)Be familiar with the composition and working principle of the whole ESS, and operate according to the manual.

(4)Should have received professional training related to electrical equipment installation and commissioning, have certain electronic, electrical wiring and mechanical professional knowledge, familiar with electrical and mechanical schematic diagram.

(5)Should have in the process of installation or commissioning of the danger or emergency response ability.

1.3 Electric safety

⚠ DANGER	(1)Before performing electrical connections, ensure that the equipment is undamaged; otherwise, electric shock or fire may occur. (2)Improper or incorrect operations may cause fire, electric shock, or other accidents. (3)During operation, prevent foreign objects from entering the equipment; otherwise, this may result in short circuits, equipment damage, reduced load power supply, power failure, or personal injury.
⚠WARNING	For equipment requiring grounding, the protective ground wire must be connected first during installation and disconnected last during removal.
NOTICE	No cables are allowed to pass through the air inlet and air outlet of the equipment.

1.3.1 General requirements

(1)Installation, operation and maintenance must be carried out in accordance with the sequence of steps in the manual. Do not modify, add or change without authorization

(2)Equipment, please do not do STH without authorization to change the installation sequence, etc.

(3)It is required to obtain the permission of the power department of the country or region where it is located before it can be connected to the grid.

(4)Comply with the safety regulations of the power station, such as the implementation of operation ticket, working ticket system.

(5)Install temporary fences or warning ropes in the operation area, and hang "No Entry" signboards. Non-working personnel are strictly prohibited from entering.

(6)Before installing and removing the power cable, the equipment itself and its front and rear switches must be disconnected.

(7)When liquid is found to enter the equipment, please immediately turn off the power supply, prohibit to continue to use.

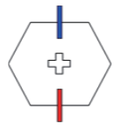
(8)Before operating the equipment, carefully check that the tools used conform to the requirements, and register them; after the operation, take them back according to the number to prevent them from being left inside the equipment.

(9)Before installing the power cable, you must first confirm the cable label identification is correct, the cable terminal insulation protection has been done.

(10)When installing the equipment, use a torque tool with the appropriate range to tighten the screws.When using a wrench to tighten, it is necessary to ensure that the wrench is not skewed, and the torque value error is not more than 10% of the specified.

(11) The screws shall be tightened with a torque tool and double checked with red and blue markings.After the installer confirms that the screw is tightened, the screw shall be painted with blue identification; after

the inspector confirms that the screw is tightened, the screw shall be painted with red identification (the line drawing identification shall cross the edge of the screw).



(12)After installation, ensure that all electrical component protective cases, insulating sleeves, etc. are in place to avoid the risk of electric shock.

(13)If the equipment has multiple inputs, disconnect all inputs and operate the equipment only after the equipment is completely powered down.

(14)When maintaining the power or power distribution equipment at the back of the power supply equipment, it is necessary to disconnect the output switch corresponding to the power supply equipment.

(15)During equipment maintenance, a "No Closing" sign shall be hung on the upstream and downstream switches or circuit breakers, and a warning sign shall be posted to prevent accidental connection.Fault must be processed, can be back on electricity.

(16)During fault diagnosis and troubleshooting, the following safety measures must be completed if power failure is required: power failure> electricity inspection> installation of grounding wire> hanging of signboard and installation of barrier.

(17)Please check the equipment connection terminal screw regularly, confirm tight, no loose.

(18)If the cable is damaged, it must be replaced by qualified personnel to avoid the risk.

(19)It is strictly prohibited to artificially alter, damage or block the identification and nameplate on the equipment, and timely replace the unclear identification due to long-term use.

(20)It is prohibited to clean the internal and external electrical parts of the equipment with solvents such as water, alcohol or oil.

1.3.2 Grounding requirements

(1)Equipment grounding impedance shall meet the requirements of local electrical standards.

(2)The equipment shall be permanently connected to the protective earth.Before operating the equipment, check the electrical connections of the equipment to ensure that the equipment is reliably grounded.

(3)Do not operate the equipment without an earth conductor installed.

(4)Do not damage the grounding conductor.

(5)For equipment using a three-pin socket-outlet, it must be ensured that the earth terminal in the three-pin socket-outlet is connected to the protective earth.

(6)If it is a large contact current equipment, before connecting the input power supply, the protective earth terminal of the equipment enclosure must be grounded to prevent the contact current of the equipment from causing electric shock to human body.

1.3.3 Wiring requirements

(1)Cable selection, erection and routing must comply with local laws, regulations and specifications.

(2)The power cord cloth in the process, it is forbidden to appear looping, twisting phenomenon.If discover the power cord length is not enough, must replace the power cord, it is forbidden to do joint or solder joints in the power cord.

(3)All cables must be securely connected, well insulated, and of the correct size.

(4)Cable trough, through the line hole should be no sharp edge, cable wear tube or through the line hole position must have protection, avoid the cable is damaged by sharp edges, burrs, etc.

(5)If the cable from the cabinet top access cabinet, need to enter the cabinet after ark outside u-shaped bending.

(6)Cables of the same type shall be bound together, with straight and tidy appearance and no skin damage; cables of different types shall be laid at least 30mm apart, and shall not be wound or laid in a crossed way.

(7)When leaving after wiring or during wiring, seal the cable opening with sealing mud immediately to avoid water vapor and small animals from entering.

(8)Buried cables shall be reliably fixed with cable bracket and cable clamp. Cables in the backfill soil area shall be tightly fitted with the ground to prevent deformation or damage caused by stress during backfill soil.

(9)When the external conditions (such as laying mode or ambient temperature) change, the cable type selection shall be verified with reference to IEC-60364-5-52 or local regulations and specifications, such as whether the ampacity meets the requirements.

(10)Cable used in high temperature environment may cause insulation aging, damage, cable and heat generating device or heat source area distance between the periphery of at least 30 mm.

11)When the temperature is too low, severe shock and vibration may cause brittle cracking of the plastic sheath of the cable.In order to ensure construction safety, should follow the following requirements:

All cables shall be laid and installed at a temperature above 0℃. Cables shall be handled with care, especially in low-temperature environment.

If the storage ambient temperature of the cable is below 0℃, the cable must be stored at room temperature for more than 24 hours before laying out the cable.

(12)It is prohibited to push the cable directly from the car and other non-standard operations, to avoid cable damage lead to the performance of the cable, the impact of current carrying and temperature rise, etc.

1.3.4 Anti-static Requirements

⚠ CAUTION	SStatic electricity generated by human body will damage electrostatic sensitive components on single board, such as BMU board. (1)Wear antistatic gloves before touching equipment and handling boards; (2)When holding the board, hold the edge of the board without components. It is forbidden to touch components with hands.

⚠ CAUTION	(3)The disassembled veneer shall be packed with antistatic packaging materials for storage or transportation.

1.4 Environmental Requirements

⚠ DANGER	(1)It is strictly prohibited to place the equipment in environments with flammable or explosive gases or smoke, and no operations should be performed in such environments. (2)It is strictly prohibited to store flammable or explosive materials in the equipment area. (3)Do not place the equipment near heat or fire sources, such as open flames, candles, heaters, or other heat-generating devices, as heat exposure may damage the equipment or cause a fire.
⚠WARNING	(1)The equipment should be installed in areas away from liquids. It is strictly prohibited to install it under water pipes, air outlets, or other locations prone to condensation. Do not install the equipment under air conditioning vents, ventilation openings, or cable outlets in the equipment room, to prevent liquid from entering the equipment and causing faults or short circuits. (2)During equipment operation, do not block ventilation openings or the cooling system, and do not cover the equipment with any objects, to prevent high temperatures from damaging the equipment or causing a fire.

(1)The equipment shall be stored in a clean, dry and well-ventilated area with appropriate temperature and humidity, and shall be protected from dust and condensation.

(2)It is strictly prohibited to install and operate the equipment beyond the scope specified in the technical indicators, otherwise it will affect the equipment performance and safety.

(3)It is strictly prohibited to install, use and operate outdoor equipment and cables (including but not limited to handling equipment, operating equipment and cables, plugging and connecting to outdoor signal interface, aerial work, outdoor installation, opening door, etc.) in severe weather such as thunder, rain, snow, strong wind above Grade VI.

(4)It is strictly prohibited to install the equipment in an environment with dust, smoke, volatile gas, corrosive gas, infrared radiation, organic solvent or excessive salinity.

(5)It is strictly prohibited to install the equipment in the environment with metal conductive dust and magnetic dust.

(6)It is strictly prohibited to install the equipment in the area where fungi, mold and other microorganisms are likely to grow.

(7)It is strictly prohibited to install the equipment in the strong vibration, strong noise source and strong

electromagnetic field interference area.

(8)Site selection shall comply with local laws and regulations and relevant standards.

(9)Installation environment solid ground, no rubber soil, soft soil or easy to sink, such as bad geology, it is forbidden to choose low-lying areas or easy water area, the site level should be higher than the highest water level in the region.

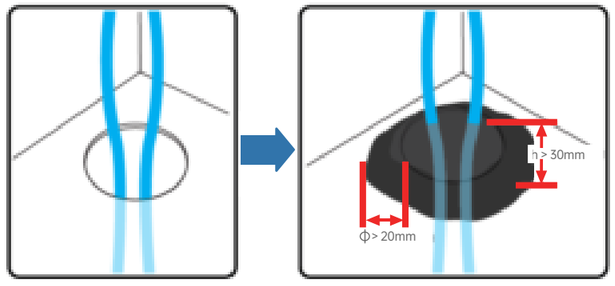
(10)It is strictly prohibited to install the equipment in the location of the water flooded.

(11)If the equipment is installed in a place with lush vegetation, in addition to routine weeding, it is necessary to harden the ground below the equipment, such as laying cement, stones, etc.

(12)During installation, operation and maintenance, it is necessary to clean the accumulated water, ice and snow or other sundries on the top first, and then open the door to prevent sundries from falling into the equipment.

(13)When installing the equipment, please ensure that the installation surface is firm and meets the equipment load requirements.

(14)The routing holes shall be sealed. The routed routing holes shall be sealed with sealing mud, and the unrouted routing holes shall be sealed with the cover provided with the equipment. The correct sealing mud sealing construction standard is shown in the figure below.



1.5 Mechanical Safety

⚠ DANGER	When working at heights, always wear a safety helmet and a safety harness or lanyard. Secure the harness or lanyard to a strong and stable structural component. Do not attach it to movable or unstable objects, or to sharp-edged metal surfaces, to prevent the hook from slipping and causing a fall.
⚠WARNING	(1)Tools must be complete and inspected by a professional organization. Do not use tools that are damaged, fail inspection, or have exceeded their inspection validity period. Ensure tools are secure and not overloaded. (2)Before installing equipment into a container, make sure the container is properly secured. This prevents tilting or collapsing due to an unstable center of gravity, which could cause injury to installers or damage to the equipment.

⚠WARNING	(3)When removing equipment from a container, handle carefully any equipment inside that may be unstable or heavy to avoid being crushed or injured. (4)Drilling into the equipment is strictly prohibited. Drilling can compromise the equipment's sealing, electromagnetic shielding, internal components, and wiring. Metal shavings from drilling may enter the equipment and cause circuit board short circuits.

1.5.1 General Requirements

(1)Paint scratches during transportation and installation of equipment must be repaired in time, and long-term exposure of scratched parts is strictly prohibited.

(2)Arc welding, cutting, etc. are prohibited without evaluation by the company.

(3)It is forbidden to install other equipment on top of the equipment without evaluation by the company.

(4)When working in the space above the top of the equipment, protection should be added to the top of the equipment to avoid damage to the equipment.

(5)Please use the right tools and master the correct way to use them.

1.5.2 Safe handling of heavy loads

(1)When carrying heavy goods, according to the different weight of the goods, choose the right carrying tools and the right number of people to cooperate, and package the safety of the goods.

Figure 1-4. Coordination of work while lifting heavy loads

W<18kg　18kg⩽W<32kg　32kg⩽W<55kg　W⩾55kg

(2)When handling equipment by hand, protective gloves, anti-smashing shoes and other safety protective equipment shall be worn.

(3)Avoid scratching equipment surfaces, damaging parts or cables during equipment handling.

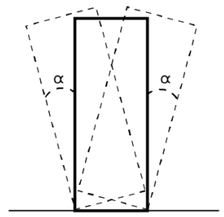
(4)When using fork lift truck, fork lift truck must be in the middle position to prevent tipping.

Before moving, please fasten the equipment to the forklift with ropes; when moving, special personnel shall be responsible for it.

(5)The equipment must be moved carefully to avoid impact or falling.

(6)Transportation should choose sea transport or road conditions better, do not support rail and air transport.Minimize bumps and inclines during transportation.

(7)The inclination angle of cabinet shall comply with the requirements shown in the figure. The inclination angle α with package shall be ⩽15°, and the inclination angle α after package removal shall be ⩽10°.



1.5.3 High altitude safety

(1)The operation above 2 meters from the ground belongs to aerial operation, and the supervisor shall be set up for aerial operation.

(2)Must go through relevant training, obtain relevant qualification certificate before work, aerial work.

(3)Work at height should be stopped before the rain water on the steel pipe is dry or other dangerous situations may occur.After the above situation, all kinds of operation equipment must be checked by the safety director and relevant technicians to confirm safety before operation.

(4)The site of aerial work shall be marked out as a dangerous restricted area, and obvious signs shall be set up to prohibit irrelevant personnel from entering.

(5)Guardrails and signs shall be set up at the edge and hole of aerial operation to prevent missing feet.

(6)Scaffolding, springboard or other sundries are strictly prohibited on the ground below the aerial work area.Ground personnel are strictly prohibited to stay or pass directly below the aerial work area.

(7)Carry operating instruments and tools to prevent equipment damage or personal injury caused by falling tools.

(8)It is strictly prohibited for overhead workers to throw objects from high altitude to the ground, and it is strictly prohibited to throw objects from ground to high altitude. Slings, hanging baskets, overhead vehicles or cranes shall be used to convey objects.

(9)The upper and lower layers should be avoided as much as possible.If it cannot be avoided, special protective shed must be set up between the upper and lower layers or other protective measures must be taken, and it is forbidden to stack tools and materials on the upper layer.

(10)Scaffolds shall be dismantled layer by layer from top to bottom after completion of work. It is strictly prohibited to dismantle upper and lower layers at the same time. When dismantling a certain part, other parts shall be prevented from collapsing.

(11)The personnel working at height shall operate in strict accordance with the safety regulations at height, and the Company shall not be responsible for accidents caused by violation of safety regulations at height.

(12)It is strictly prohibited to laugh and play when working at height, and it is strictly prohibited to rest in the working area at height.

1.5.4 Safe use of ladders

(1)Wooden ladders or insulated ladders should be used when electrical climbing operations are possible.

(2)The platform ladder with protective fence shall be used first for ascending operation, and the one-word ladder shall not be used.

(3)Before using the ladder, please make sure that the ladder is intact, the weight of the ladder meets the requirements, and it is strictly prohibited to use it overweight.

(4)The ladder must be placed in a secure position and someone must hold it while working.

(5)When climbing stairs, keep your body steady and ensure that your center of gravity does not deviate from the edge of the ladder to reduce danger and ensure safety.

(6)The pull rope must be firm when using the miter ladder.

1.5.5 Lifting safety

(1)The personnel for lifting operation shall receive relevant training and be qualified before taking up their posts.

(2)Temporary warning signs or fences shall be erected in the hoisting area for isolation.

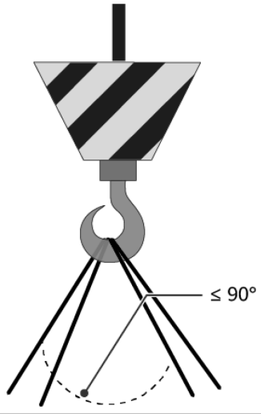
(3)The foundation for lifting operations must meet the load-bearing requirements of crane work.

(4)Before lifting, ensure that lifting tools are firmly fixed to fixtures or walls that meet load bearing standards.

(5)During hoisting, it is forbidden to walk under the boom and hoisting objects.

(6)During hoisting, it is forbidden to drag wire ropes and lifting tools, and it is forbidden to use hard objects to impact.

(7)During hoisting, ensure that the angle between two cables is not greater than 90°, as shown in the figure below.



1.5.6 Drilling safety

(1)Client and Contractor consent shall be obtained prior to drilling.

(2)Wear safety equipment such as goggles and protective gloves when drilling.

(3)When drilling, avoid embedded pipes or lines to avoid short circuits or other hazards.

(4)The equipment shall be shielded during drilling to prevent debris from falling into the equipment, and the debris shall be cleaned up in time after drilling.

1.6 Device safety

1.6.1 ESS safety

⚠ DANGER	(1)Do not open the container doors while the system is in operation. (2)In case of a fault in the ESS, avoid standing near the container doors, including the area within the door's opening range.
NOTICE	The ESS must be enclosed with fences, walls, or other protective measures, and clearly marked with safety warning signs to prevent unauthorized personnel from entering during operation, which could result in personal injury or property damage.

(1)The ESS installation layout must meet the fire protection distance or firewall requirements specified in local standards, including but not limited to GB 51048-2014 Code for Design of Electrochemical Energy Storage Plants and NFPA 855 Standard for the Installation of Stationary ESSs.

(2)The ESS should be regularly inspected for fire protection, not less than once a month.

(3)When the system is energized, pay attention to the danger warning signs on the equipment and avoid standing at the cabinet door.

(4)After the power components of the ESS are replaced or the wiring is changed, it is necessary to manually start the wiring detection and topology identification to avoid abnormal operation of the system.

(5)It is recommended that users bring their own camera devices to record the detailed process of installation, operation and maintenance of equipment.

1.6.2 Battery Safety

⚠ DANGER	(1)Do not short-circuit the positive and negative terminals of the battery, as this can cause a battery short circuit. A short circuit generates a large current instantly and releases significant energy, which may lead to electrolyte leakage, smoke, flammable gas release, thermal runaway, fire, or explosion. To avoid short circuits, batteries must not be serviced while energized. (2)Do not expose batteries to high temperatures or near heat sources, such as direct sunlight, open flames, transformers, or heaters. Overheating may cause

⚠ DANGER	electrolyte leakage, smoke, flammable gas release, thermal runaway, fire, or explosion. (3)Do not subject batteries to mechanical shocks, drops, collisions, punctures, or pressure impacts, as these may damage the battery or cause fire. (4)Do not disassemble, modify, or damage batteries (e.g., inserting foreign objects, applying external pressure, immersing in water or other liquids), as this may cause electrolyte leakage, smoke, flammable gas release, thermal runaway, fire, or explosion. (5)Ensure battery terminals do not come into contact with other metal objects, as this may cause heating or electrolyte leakage. (6)Using or replacing batteries with incorrect models can create fire or explosion hazards. Always use the battery models specified by the manufacturer. (7)Battery electrolyte is toxic and volatile. In the event of a leak or abnormal odor, avoid contact with the liquid or gas. Non-professional personnel should stay away and immediately contact qualified personnel. Professionals must wear safety goggles, rubber gloves, a respirator, protective clothing, disconnect the equipment from power, remove the leaking battery, and consult a technical engineer. (8)The battery is a sealed system and does not release gases under normal operation. Under extreme misuse, such as fire, puncture, crushing, lightning strike, overcharging, or other conditions leading to thermal runaway, battery damage or abnormal chemical reactions may occur, releasing electrolyte or gases such as CO and H_2. Ensure proper measures for venting flammable gases to prevent fire or equipment corrosion. (9)Gases generated by battery combustion can irritate eyes, skin, and throat. Take appropriate protective measures.
⚠WARNING	(1)Batteries should be installed in areas away from liquids. Do not install them under air conditioner outlets, ventilation openings, server room cable windows, water pipes, or other locations prone to leaks, to prevent liquids from entering the equipment and causing malfunction or short circuits. (2)During battery installation and commissioning, provide fire safety equipment according to construction standards, such as fire sand or CO_2 fire extinguishers. Before putting the system into operation, ensure all fire safety equipment meets local laws, regulations, and standards. (3)Before removing the packaging, ensure that battery storage and transport maintain the integrity of the outer packaging. Place batteries according to packaging labels, and do not place them upside down, on their side, upright, or at an

⚠WARNING	angle. When stacking, follow the stacking instructions on the packaging to prevent impact or drops that could damage the battery. (4)After removing the packaging, place the battery in the correct orientation as required. Do not place it upside down, on its side, upright, at an angle, or stacked, to avoid damage from impacts or drops. (5)Tighten the copper bars or cable fastening screws according to the specified torque. Regularly inspect for tightness, rust, corrosion, or foreign objects, and clean as necessary. Loose screws can cause excessive connection voltage drop and, under high current, may generate excessive heat that can destroy the battery. (6)After battery discharge, recharge the battery promptly to prevent damage from over-discharge.

Disclaimer: The Company shall not be liable for damage to batteries supplied by the Company caused by:
(1)Battery damage caused by earthquake, flood, volcanic eruption, debris flow, lightning strike, fire, war, armed conflict, typhoon, hurricane, tornado, extreme weather, force majeure;
(2)Direct damage to battery caused by field equipment operating environment or external power parameters failing to meet environmental requirements for normal operation, including but not limited to high or low actual operating temperature of battery, unstable power grid and frequent power failure, etc.;
(3)Battery damage, drop, leakage, rupture, etc. due to improper operation or failure to connect batteries as required;
(4)The battery is installed on site and connected to the system, and the battery is damaged due to overdischarge caused by failure to power on in time due to your fault;
(5)Battery damage due to failure to timely acceptance due to your reasons;
(6)You did not set battery operation management parameters correctly;
(7)You mix the batteries provided by our company with other batteries, causing accelerated capacity decay, including but not limited to: mixing with other brands of batteries, mixing with batteries with different rated capacities, etc.;
(8)Your improper maintenance causes frequent over-discharge of batteries, your on-site expansion or long-term failure to fully charge, etc.;
(9)You fail to properly maintain the battery according to the operating manual of the supporting equipment, including but not limited to: failing to regularly check whether the battery terminal screws are tightened;
(10)Battery damage caused by your failure to store according to storage requirements (such as storage in humid, rain-prone environments);
(11)Due to your reasons, the battery is not charged in time, resulting in overdue storage, capacity loss or irreversible damage to the battery, etc.;
(12)Battery damage caused by you or a third party, including but not limited to: failure to relocate and install batteries without authorization according to the requirements of the company;

(13)You change battery usage scenarios without informing us;
(14)You connect extra loads to the battery yourself;
(15)The battery has exceeded its maximum shelf life;
(16)The battery is out of warranty.

1.6.2.1 General Requirements

⚠ DANGER	(1)Do not expose the battery to high-temperature environments or place it near heat-generating equipment such as direct sunlight, fire sources, transformers, heaters, etc. Overheating of the battery may cause fire or explosion. (2)Do not disassemble, modify or damage the battery (e.g., inserting foreign objects, immersing in water or other liquids, etc.), otherwise it may cause battery leakage, overheating, fire or explosion. (3)Lithium-ion/sodium-ion battery ESSs have a high fire risk. The following safety risks shall be fully considered before conducting battery-related operations: (4)The battery electrolyte is flammable, toxic and volatile. (5)Battery thermal runaway will generate flammable gases as well as gases such as CO and H_2. (6)The accumulation of flammable gases generated after battery thermal runaway presents a risk of flash fire and explosion. The ESS shall be loaded and unloaded in accordance with the laws, regulations and industry standards of the region where it is located. Rough loading and unloading may cause short circuit or damage to the batteries inside the cabinet, which could lead to battery leakage, rupture, explosion or fire.

(1)Batteries must be stored in a separate warehouse, and stored in the outer package, avoid mixing with other materials, avoid open storage, avoid battery stacking too high.The site must be equipped with fire fighting facilities that meet the requirements, such as fire fighting sand, fire extinguishers, etc.
(2)Do not disassemble the battery outer package under normal circumstances.If the battery needs to be recharged, it should be recharged by professionals as required.After recharging, the battery must still be put back into the package.
(3)After unpacking the battery in outdoor scenes, it is recommended to power on within 24 hours. If it cannot be powered on in time, it is necessary to place the battery indoors in a dry and corrosive gas-free environment.
(4)The battery should be placed correctly according to the anti-inversion mark or label on the packaging box to avoid cell leakage due to inversion during long-term storage.
(5)Batteries should avoid impact.
(6)When handling the battery, it should be handled in the direction required by the battery, and it is forbidden to invert or tilt.
(7)Use the battery within the temperature range specified in this manual.When the ambient temperature

of the battery is lower than the lower limit of the operating temperature, charging is prohibited to avoid internal short circuit caused by crystallization due to low temperature charging.
(8)Please dispose of waste batteries according to local laws and regulations. Do not dispose of batteries as domestic waste.Improper disposal of batteries may result in environmental contamination.
(9)Do not use damaged batteries (dented battery case or other damage), damaged batteries may lead to the release of flammable gases, do not store damaged batteries near undamaged products.
(10)Damaged batteries should be stored in a location that does not contain flammable materials, and non-professionals should not approach.
(11)Damaged batteries should be monitored during storage for signs of smoke, flame, electrolyte leakage or heat generation.
(12)If the battery pack is accidentally drenched with water, it is prohibited to continue installation. It is transported to a safe isolation point and timely apply for replacement of spare parts.
(13)No direct sunlight or rain, dry and well ventilated, clean environment around, no large amount of infrared radiation, organic solvents and corrosive gases.

1.6.2.2 Power Supplement Requirements

(1)If the battery has been charged for more than 8 months since the last time, it is necessary to supplement the battery.If the battery is not replenished as required, it may affect the performance and service life of the battery.
(2)Battery production completion time can consult our service engineer.

🕮 NOTE	Before installing the battery pack, check whether the battery pack is abnormal. Battery pack abnormality refers to any of the following phenomena: (1)The battery pack shell is obviously deformed or damaged; (2)Whether the total positive to total negative voltage of the battery pack is about 0V; (3)The impedance of the positive or negative ear of the battery pack to the ground is <50kΩ.

1.6.2.3 Battery installation requirements

(1)Please use the specified type of battery, random use of non-specified type of battery may lead to battery damage.
(2)Before installing batteries, check whether the packaging is intact. Batteries with damaged packaging cannot be used.
(3)Batteries should be placed horizontally and fixed.
(4)During battery installation, it is forbidden to place installation tools and sundries on the battery.
(5)During battery installation, pay attention to the positive and negative poles. It is forbidden to short-circuit the positive and negative poles of the battery.
(6)During installation, use a torque wrench to ensure that the connection terminals are tightened and check regularly to ensure that the connection terminals are not loose.

1.6.2.4 Battery short circuit protection

⚠ DANGER	Short-circuiting of batteries will generate instantaneous high current and release a large amount of energy, which may cause personal injury and property damage.

(1)When installing and maintaining the battery, it is necessary to wrap the exposed cable terminals on the battery with insulating tape.

(2)Avoid foreign matters (such as conductive objects, screws, liquids, etc.) entering the battery and causing short circuits.

1.6.2.5 Hazard and Toxicity Statement

⚠ DANGER	(1)Hazard: Battery terminals come into contact with other metals, which may cause heating or electrolyte leakage.Electrolyte is flammable, if electrolyte leaks, remove the battery from the fire immediately. (2)Toxicity: Vapors produced by battery combustion may irritate eyes, skin and throat.

1.6.2.6 Battery abnormality handling measures

⚠ DANGER	(1)When electrolyte leakage or abnormal odor occurs, avoid contact with leaked liquid or gas.Non-professionals do not approach, please contact professionals immediately.Professionals should wear goggles, rubber gloves, gas masks, protective clothing, etc. to prevent hazards caused by electrolyte overflow. (2)Electrolytes are corrosive and contact may cause skin irritation and chemical burns.In case of contact with battery electrolyte, the following measures need to be taken. (3)Inhalation: Evacuate contaminated areas, inhale fresh air immediately, and seek immediate medical help. (4)Eye contact: Rinse eyes immediately with plenty of water for at least 15 minutes, do not rub, and seek immediate medical help. (5)Skin Contact: Wash contact areas immediately with plenty of water and soap and seek immediate medical help. (6)Ingestion: Seek immediate medical help.

1.6.2.7 When battery drops occur

(1)After the battery is dropped (whether with packaging material or not), but the appearance is not obviously deformed or damaged, and there is no obvious odor, smoke or fire, operate under the premise of ensuring safety.

(2)Warehouse: evacuate personnel, transfer batteries to an open and safe place by professional personnel using mechanical tools, contact the service engineer of the company, and allow to stand for 1h and monitor

the battery temperature within the range of room temperature ±10℃ for treatment.

(3)ESS site: evacuate personnel, close the door of ESS, transfer the battery to an empty and safe place by professional personnel with mechanical tools, and contact the service engineer of the company for treatment after standing for 1 h.

(4)When obvious peculiar smell, damage, smoke or fire occurs after the battery falls, evacuate personnel immediately, contact professional personnel, give an alarm in time, and use fire fighting facilities by professional personnel under the condition of ensuring safety.

(5)It is forbidden to continue using the battery after falling. Contact our service engineer for evaluation.

1.7 Maintenance and replacement

NOTICE	Before removing the parts from the cabinet, please confirm that other parts on the cabinet are not loose or have potential hazards.

(1)Two or more people must be present when performing maintenance on the ESS.

(2)During equipment maintenance, nearby live parts shall be covered with insulating material.

(3)It is forbidden to open the cabinet door in rain, snow, thunder, dust, fog and other weather.

(4)Do not allow fingers, parts, screws, tools, or boards to touch the running fan until the fan is powered off and stops rotating.

(5)Do not power on the device until troubleshooting.

(6)When the system is energized, pay attention to the danger warning signs on the equipment and avoid standing at the energy storage cabinet door.

(7)Except for battery pack, wait for 15min after power-off to ensure that the equipment has no power before operating the equipment.

(8)For switches that need to be disconnected for maintenance, a clear label should be affixed to the switch.

(9)After the power components of the ESS are replaced or the wiring is changed, it is necessary to manually start the wiring detection and topology identification to avoid abnormal operation of the system.

(10)After completing the maintenance and replacement operations, lock the battery cabinet door in time and keep the key properly.

2 PRODUCT INTRODUCTION

2.1 ESS components

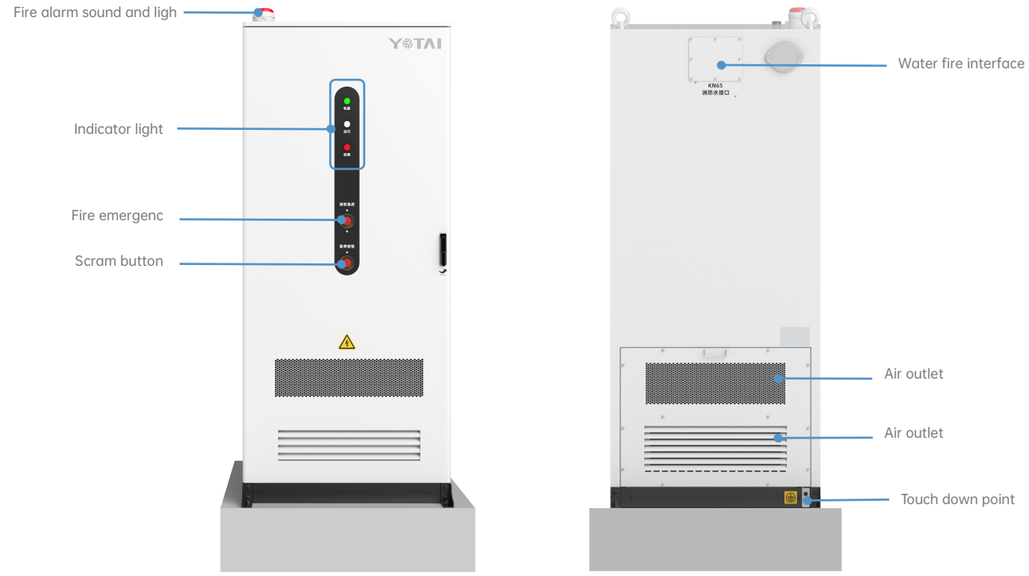
This product is a cabinet-type industrial and commercial energy storage battery system, with a battery cabinet as the carrier. The product consists of lithium ion battery module, energy storage converter, liquid cooling unit, fire protection system, energy management system, auxiliary distribution system, etc., which can realize energy storage and release. The size is W950 *D1300* H2200mm, and the weight is about 2.5T. The product is mainly used for peak clipping and valley filling, optical storage and charging station, demand management, power quality improvement, dynamic expansion, etc.The product appearance effect diagram is shown in the following figure:

Figure 2-1 Schematic diagram of battery cabinet

Figure 2-2 Schematic diagram of internal layout of battery cabinet

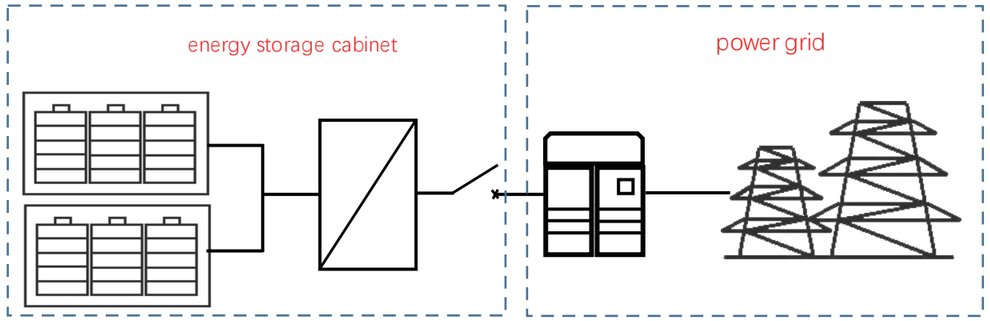
NOTICE	Emergency stop switch is installed on the front cabinet door of battery cabinet. It is used for manual operation and pressing in case of emergency to control the emergency stop of battery system. When emergency needs manual pressing of emergency stop button, emergency stop button can be pressed.

Figure 2-3 Schematic Diagram of External Structure of Battery Cabinet



2.2 Electrical schematic

Figure 2-4 System electrical schematic diagram



3 FIXING AND INSTALLATION

ESS mounting and installation reference attachment: Energy Hexon® Smart261L Pro Industrial ESS Installation Manual.

NOTICE	The site selection shall comply with GB51048 Code for Design of Electrochemical Energy Storage Power Station or local regulations.

The ESS is only suitable for outdoor scenes and requires outdoor layout. It does not support indoor layout.The general requirements for site selection are as follows:

(1)The installation location should not be in low-lying areas, and the installation level should be higher than the highest water level in the history of the area.

(2)Distance from airport, landfill, river bank or dam shall be ⩾2000m.

(3)Choose an open location and ensure that there are no obstacles within 10 meters of the site.

(4)Keep at least 50m away from residential areas to avoid noise pollution.

(5)It has convenient transportation conditions and reliable fire suppression system equipment.

(6)Meet the site area necessary in the near future, and according to the needs of the whole life cycle, there should be room for expansion.

(7)Choose a well-ventilated area.

(8)ESS installed in salt areas will be corroded, may cause fire, do not install ESS outdoors in salt areas.Salt-damaged areas refer to areas within 2000m from the coast or affected by sea breeze.The area affected by sea breeze varies according to meteorological conditions (e.g. typhoon, seasonal wind) or topographic conditions (with dykes, hills).

NOTE	(1)When the safe spacing of the site cannot meet the requirements of relevant national standards, it is recommended to relocate the site. (2)If there is no more suitable site selection, it is recommended to refer to DBJT15-81-2022 Technical Code for Fire Resistance Design of Building Concrete Structures and install firewall with fire resistance of no less than 3h for safety protection. The thickness of firewall shall be ⩾ 200mm, and the space requirements for equipment transportation, installation and maintenance shall be considered. (3)It is recommended to refer to T/CEC 373-2020: The length and height of the firewall shall exceed the external contour of the prefabricated cabin by 1m respectively; and refer to NFPA 855-2020 "Standard for Installation of Fixed ESSs": When there is an independent firewall with 1 h fire resistance, the spacing is allowed to be reduced to 914 mm.

Site selection shall avoid scenarios not recommended by industry standards and regulations, including but not limited to the following sections, regions and locations:

(1)Strong vibration, strong noise source and strong electromagnetic field interference area.

(2)Places where dust, oil smoke, harmful gases, corrosive gases, etc. are produced or have been produced.

(3)Places where corrosive, inflammable and explosive articles are produced or stored.

(4)Places with existing underground facilities.

(5)There are rubber soil, soft soil and other adverse geological conditions, easy to accumulate water and easy to sink the ground.

(6)Seismic faults and seismic zones with fortification intensity higher than 9 degrees.

(7)There are debris flows, landslides, quicksand, karst caves and other areas of direct harm.

(8)Within the limits of the mining subsidence (dislocation) zone.

(9)within the explosion hazard range.

(10)An area likely to be inundated if a dam or levee breaks.

(11)Important water supply sanitation protection area.

(12)Historic preservation areas.

(13)densely populated places, high-rise buildings, underground buildings.

NOTICE	Marking the safety area: circle the safety area with red construction marking tape, remove the obstacles in the safety area, and hang the construction signboard and safety warning board at the eye-catching place.

4 ELECTRICAL WIRING

4.1 Prerequisite

⚠WARNING	It is strictly prohibited to install fuse, switches and other devices on the protective earth(PE) conductor.
NOTICE	The grounding complies with the local electrical safety regulations.

(1)It has been confirmed that the ESS is complete.

(2)It has been confirmed that the ESS has been installed in accordance with the installation manual and that safety inspections have been completed.

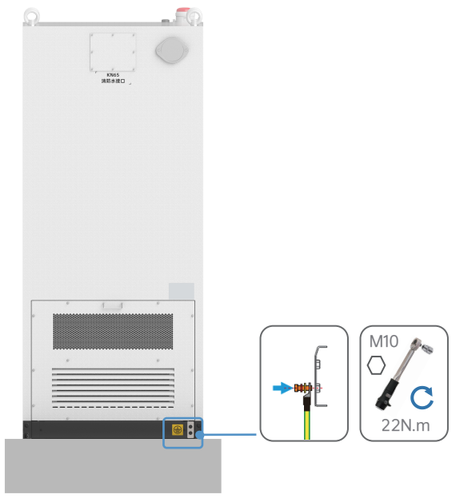
(3)The wiring requirements have been clearly identified and confirmed.

4.2 Connect the protective earth conductor

The materials required for protective earthing are as follows:

Grounding Method	Recommended Specification	Terminal Requirements	Source
Grounding conductor	ZR-YJVR-0.6/1kV-1*35	OT/DT terminal,M10 bolt	Provided by user
Grounding bar	4*40mm (Minimum hot-dip galvanized coating thickness ⩾70μm)	M10*30 screw	Provided by user
Note: Either the grounding conductor or the grounding bar may be selected;only one method is required.			

Figure 4-1 Connection of the Grounding Conductor/Grounding Bar



NOTICE	(1)Connect the grounding conductor from the outside of the battery cabinet to the grounding bar. (2)The grounding screw shall be tightened to the specified torque. Refer to Appendix 1 for the torque specification table.

4.3 AC grid connection wiring

The materials required for AC grid connection are as follows:

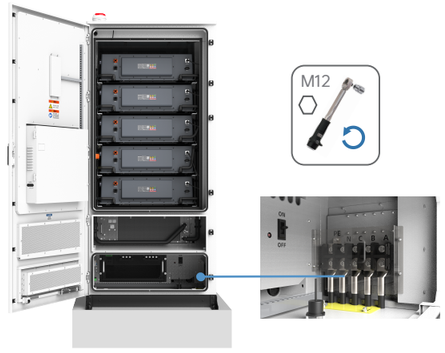
Recommended Cables	Recommended Specification	Recommended Terminal Model	Source
AC cable	ZR-YJVR-0.6/1kV-3*70+2*35	OT/DT terminal, M12 bolt	Provided by user
Firestop sealant	3kg	/	Supplied at random

The AC grid cable wiring procedure is as follows:

Figure 4.2 AC Cable Wiring Procedure

Step 1: Ensure that the cabinet has been securely

Step 2: Open the cabinet door and remove the transparent PC protective cover at the lower right



Step 3: Complete the wiring in accordance

Step 4: Seal the cable entry using firestop sealant, and close the cabinet door securely.

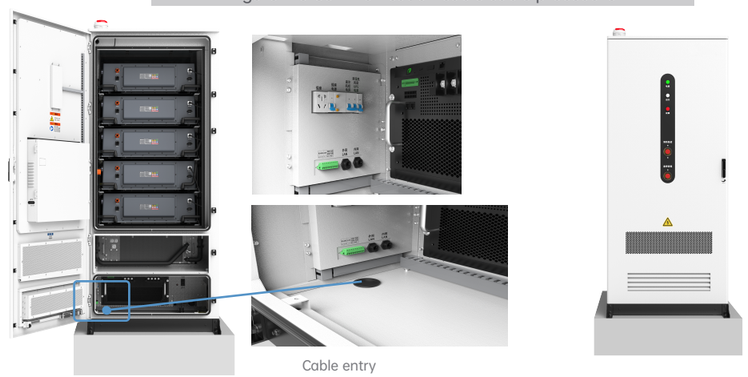
NOTICE	(1)When connecting the AC cables, ensure that all cables are free from damage or breakage. In particular, ensure that the neutral (N) conductor is securely. connected; otherwise, damage to the AC equipment within the system may occur. (2)After completing the AC cable connection, ensure that the terminals are fully seated against the copper busbar with good electrical contact, and that the AC inpuTighten the fixing bolts to the specified torque. Refer to Appendix 1 for the torque specification table. (3)After the torque value has been verified, mark the nut with a paint marker.

4.4 Communication cable connection

The materials required for communication wiring are as follows:

Recommended Cables	Recommended cable model	Terminal model	Source
RS485 communication cable	ZC-RVVPS22-300/300V-4×1.5	Insulated pin terminal E1508	Provided by user
Network cable	FS-SFTP CAT 5E HSYVP-5E 4×2×0.51mm²(Shielded Category 5e Ethernet cable)	RJ45	Provided by user
Dry contact signal cable	ZC-RVVPS22-300/300V-2×1.5	pre-insulated pin terminal E1508	Provided by user
Optical fiber	Armored optic fiber cable G.652，2-core,-Transmission Distance:0-20km，Wavelength:Default1310nm	SC connector/ Single-mode dual-fiber connection	Provided by user
Note：If the Ethernet cable length exceeds 100 m, optical fiber shall be used. The customer shall separately provide a switch equipped with optical ports.			

Figure 4-3 Communication cable cable procedure



Step 1: Route the cables through the cable entry and complete the wiring according to the interface definition.

Step 2: Confirm that all connections are secure and close the cabinet door properly.

NOTICE	During off-grid parallel operation, in addition to the communication cables mentioned above, a dedicated off-grid parallel connection cable shall also be connected.

Figure 4-4 external interface definition

The definitions and functions of the communication terminal block are as follows:

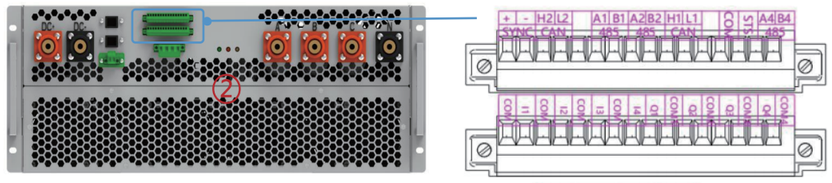
External communication interface：XM24 Terminal block					External Connection Instructions	
No.	Terminal model	External Terminal No.	Definition	Function Description	Terminal block	Recommended cables
1	LC6M-5.08-9P	XM24:1	RS485-A	Electric energy meter 485 Communication A	Tubular type	AWG20
2		XM24:2	RS485-B	Electric energy meter 485 Communication B	Tubular type	
3		XM24:3	RS485-G	Electric energy meter 485 Communication C	Tubular type	
4		XM24:4	24V+	24V power supply+	Tubular type	AWG20
5		XM24:5	24V-	24V power supply+	Tubular type	AWG20
6		XM24:6	NO	Fire High Alarm Normally Open Dry Contact	Tubular type	AWG20
7		XM24:7	C	Fire High Alarm Normally Open Dry Contact	Tubular type	AWG20
8		XM24:8	NO	Fire High Alarm Normally Open Dry Contact	Tubular type	AWG20
9		XM24:9	C	Fire High Alarm Normally Open Dry Contact	Tubular type	AWG20

The definitions and functions of the external communication Ethernet port are as follows:

External communication ethernet port					
No.	External Terminal No.	Definition	Function Description	Terminal block	Recommended cables
1	LAN1	WAN	Connects to the upper-level system or external network	RJ45	CAT5E-SFTP-1/0.5*4P (Shielded Category 5e Ethernet cable)
2	LAN2	LAN/COM	Connects the internal network for communication among internal devices.	RJ45	CAT5E-SFTP-1/0.5*4P (Shielded Category 5e Ethernet cable)

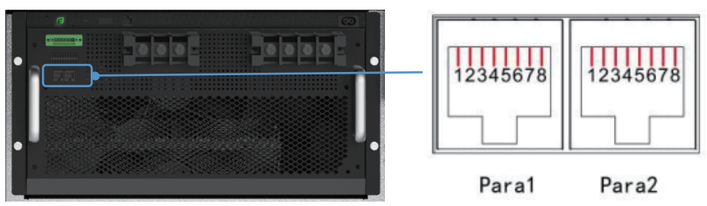
Figure 4-5 External Interface Definition for PCS Off-Grid Parallel Operation

(1)YTDS5T261L Pro-P125C Model



No.	Pin Name	Function Description	Recommended cables
1	SNYC+	Off-grid synchronization	ZC-RVVPS22-300/300V-2×1.5
2	SNYC-		
3	CANH	PCS Parallel Communication	ZC-RVVPS22-300/300V-2×1.5
4	CANL		

(2)YTDS5T261L Pro-P125D Model



Pin	Pin Name	Function Description	Recommended cables
1	CAN1_L	CAN Parallel operation signal	FS-SFTP CAT 5E HSYVP-5E 4×2×0.51mm²(Shielded Category 5e Ethernet cable)
2	CAN1_H		
3	INV_SYNC	Internal power-frequency synchronization signal	
4	GND	common signal terminal	
5	CARRIER_SYNC	Internal carrier synchronization signal	
6	GND	common signal terminal	
7	Not yet enabled	Not yet enabled	
8	Not yet enabled		

5 SYSTEM POWER ON AND POWER OFF

5.1 System power on

⚠WARNING	(1)The ESS may be put into operation only after confirmation by qualified professionals. (2)For ESSs that have been shut down for an extended period, a comprehensive and thorough inspection shall be performed before power-on. The system may be energized only after all parameters have been confirmed to meet the specified requirements.

5.1.1 Pre-Power-On Inspection

Before power-on, carefully verify the following items to ensure that there are no errors:

(1)Check whether the wiring is correct.

(2)Ensure that all internal protective covers are securely installed.

(3)Ensure that the emergency stop button is in the released position.

(4)Check to ensure that there are no grounding faults.

(5)Use a multimeter to measure the AC and DC side voltages to verify that they meet the start-up requirements and that there is no overvoltage hazard.

(6)Check to ensure that no tools or parts have been left inside the equipment.

(7)Check that the fire protection pressure gauge is operating normally.

5.1.2 Power-on procedure

⚠WARNING	If any circuit breaker trips during the power-on process, suspend closing other circuit breakers and immediately inspect the downstream load of the tripped circuit breaker for short circuits or other abnormalities.

NO.	Device Code	Device name
①	QF1	AC incoming circuit switch
②	QF2	Socket power switch
③	QF3	Liquid cooling unit power switch
④	QF4	Dehumidifier / fan / UPS power switch
⑤	UPS	UPS button

Power on the ESS:

Step 1 Power on the auxiliary power supply of the battery cabinet:

(1)Operate the AC incoming circuit switch QF1 by turning it to the ON position to close the AC circuit breaker.

(2)Close the five-pin socket switch QF2 by turning it to the ON position (factory default: ON).

(3)Close the liquid cooling unit power supply switch QF3 by turning it to the ON position to energize and start the liquid cooling unit.

(4)Close the UPS power supply switch QF4 by turning it to the ON position, then press the UPS power button to start the UPS.

(5)Complete auxiliary power power-on.。

Step 2 Start the system via the EMS web interface. Wait approximately 30 seconds and observe that the PCS indicator lights turn on, indicating that the operation was successful.

Step 3 The system power-on is complete. The system can now be controlled for manual power dispatch commands (positive values indicate discharging, and negative values indicate charging), or operated in automatic peak shaving and valley filling mode.

Note:For detailed cloud platform web operations, refer to《Yotai Industrial and Commercial Energy Storage Management Cloud Platform User Manual V3.3》.

5.2 Normal power-down

Power down the ESS:

Step 1 Use the EMS web interface to reduce the PCS power to 0.

Step 2 Use the EMS web interface to shut down the system. Wait approximately 30 seconds and verify that the PCS indicator lights turn off.

Step 3 Power down the auxiliary power supply of the battery cabinet:

(1) Turn off the liquid cooling unit power supply switch QF3. The liquid cooling unit will be de-energized and shut down.

(2) Turn the five-pin socket switch QF2 to the OFF position.

(3) Turn the AC incoming circuit breaker QF1 to the OFF position to open the circuit breaker.

(4) Turn the UPS power supply switch QF4 to the OFF position.

(5) Press the UPS power button to shut down the UPS.

(6) The auxiliary power supply power-down is complete.

The system power-down is complete.

Note: For detailed cloud platform web operations, refer to《Yotai Industrial and Commercial Energy Storage Management Cloud Platform User Manual V3.3》.

5.3 Abnormal system power-down

5.3.1 Fire incident power-down

Promptly contact local fire protection professionals.

5.3.2 Fault-induced emergency power-down

Promptly contact Yotai Digital Energy Technology after-sales service at +86-755-26998085.

6 ROUTINE MAINTENANCE

For operation and maintenance of the ESS, refer to the appendix: 《Ener Hexon® Smart261L Pro Intelligent Liquid-Cooled C&I ESS Operation and Maintenance Manual.》.

6.1 Pre-Maintenance Notes

⚠WARNING	(1)Do not open the battery cabinet for maintenance during rainy, humid, or high-wind conditions. If such maintenance cannot be avoided, Yotai Digital Energy Technology shall not be liable for any resulting losses. (2)Avoid opening the cabinet door during rainy, snowy, or foggy conditions with high humidity. After closing the cabinet door, ensure that the sealing gaskets around the door are properly seated and not curled. (3)To reduce the risk of electric shock, do not perform any maintenance or servicing beyond the procedures described in this manual. If necessary, contact Yotai Digital Energy Technology customer service personnel for maintenance or servicing.

6.2 Cabinet Maintenance Items and Schedule

The maintenance interval may vary depending on factors such as the plant scale, installation location, and site environment. It is recommended to perform maintenance every three months. If the operating environment is subject to heavy dust or sand, the maintenance interval should be shortened and the maintenance frequency increased.

NOTICE	During maintenance or shutdown, if any of the following conditions persist for more than 120 consecutive hours, any resulting capacity loss is not covered under the warranty: (1)The battery discharge voltage is lower than the minimum battery voltage of 2.5 V. (2)The battery cluster SOC is 0%.

7 ALARM / FAULT HANDLING

7.1 EMS Alarms / Faults

Please refer to《Yogtai Industrial and Commercial Energy Storage Management Cloud Platform User Manual V3.3.》.

7.2 PCS Alarm Handling

YTDS5T261L-P125C Please refer to《125 kW Four-Leg Energy Storage Converter User Manual V01.01.10》.
YTDS5T261L-P125D Please refer to《EPCS Series Energy Storage Converter User Manual V2.6》.

7.3 Liquid Cooling Unit Alarm Handling

Please refer to《3&5kW Drawer-Type Air-Cooled Chiller Electronic Manual (Chinese–English Edition)–2025-01-17》.

APPENDIX
A CRIMPED OT/DT TERMINALS

A.1 OT/DT Terminal Requirements

(1)When copper-core cables are used, copper terminals shall be used.

(2)When copper-clad aluminum cables are used, copper terminals shall be used.

(3)When aluminum alloy cables are used, copper–aluminum transition terminals shall be used, or aluminum terminals shall be used in combination with copper–aluminum transition washers.

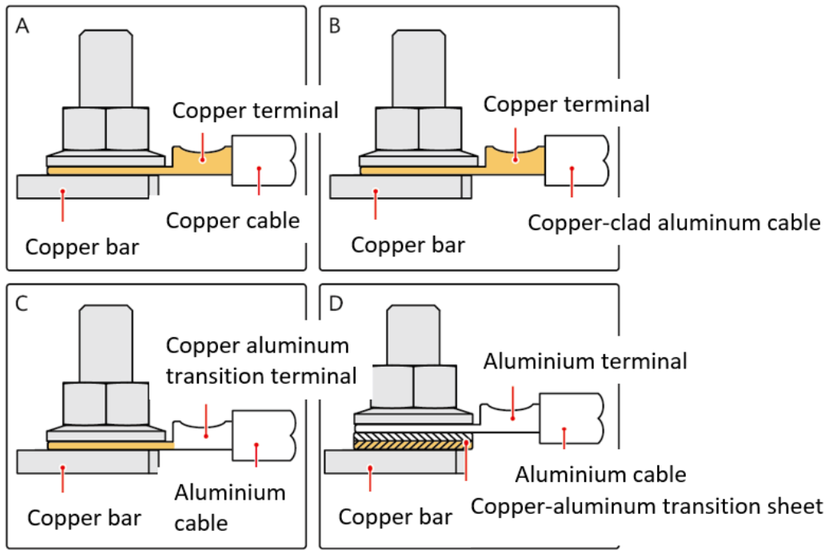
NOTICE

(1)It is strictly prohibited to directly connect aluminum terminals to the terminal block, as this may cause electrochemical corrosion and compromise the reliability of the cable connection.

(2)When copper–aluminum transition terminals are used, or when aluminum terminals are used in combination with copper–aluminum transition washers, the requirements of IEC 61238-1 shall be met.

(3)When using copper–aluminum transition washers, ensure that the aluminum side of the washer is in contact with the aluminum terminal, and the copper side is in contact with the terminal block. Pay attention to the correct orientation.

Appendix Figure 1 OT/DT terminal requirements



A.2 OT/DT Terminal Crimping

NOTICE

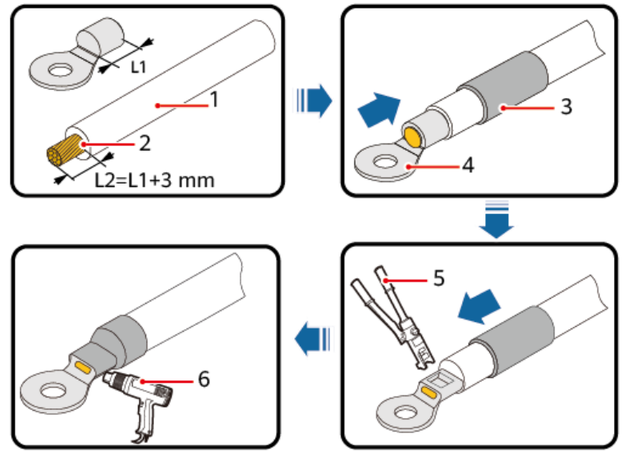
(1)When stripping the insulation, do not damage the conductor.

(2)After crimping, the cavity formed by the conductor crimp barrel of the OT/DT terminal shall fully enclose the conductor, and the conductor shall be firmly bonded to the OT/DT terminal with no looseness.。

(3)Heat-shrink tubing or insulating tape may be used to cover the crimped area. The following description takes heat-shrink tubing as an example.

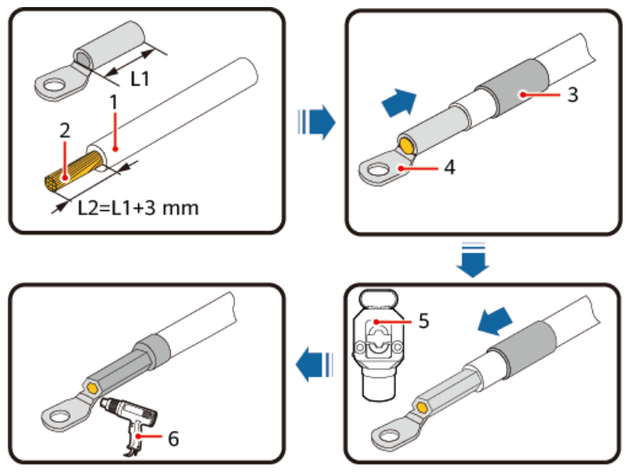
(4)During the use of the heat gun, please ensure proper protection to prevent damage to the equipment.

Appendix Figure 2 Crimp the OT terminal



(1) →Cable
(2) →Conductor
(3) →Heat-shrink tubing
(4) →OT Terminal
(5) →Hydraulic crimping tool
(6) →Heat gun

Figure 3 Crimp the DT terminal



(1) →Cable
(2) →Conductor
(3) →Heat-shrink tubing
(4) →DT Terminal
(5) →Hydraulic crimping tool
(6) →Heat gun

B STANDARD TORQUE TABLE FOR SCREWS

Appendix Table1 General threaded connection torque / Unit: N·m (torque tolerance ±10%)

Bolt specification	Operating Environment and Examples			
	General screws (unless otherwise specified)	Threads, internal threads, and fasteners made of materials such as copper, aluminum, or plastic; including die-cast and plastic components.	When using high-strength threaded joints made of special steel, especially when additional dynamic loads are applied to the bolts.	When using high-strength threaded joints made of special steel, especially when only static loads (frictional joint) are applied to the bolts.
	General steel connections	When screws are in contact with brittle materials such as PCB boards or PC boards, or when used with copper studs or tapped copper plates.	Bolt connections of rotating parts such as the gun mount, gun mount opening, and door lock.	Bolt connections for lifting and wall-mounted installations
	Property class 4.8		Property class 8.8	Property class 10.9
M2	0.176	0.088	0.315	0.42
M2.5	0.36	0.18	0.65	0.86
M3	0.63	0.315	1.14	1.5
M3.5	1	0.5	1.8	2.4
M4	1.5	0.76	2.7	3.6
M5	3	1.5	5.4	7.2
M6	5.2	2.6	9.2	12.2
M8	12.5	6.2	22	29.5
M10	24.5	12.5	44	59
M12	42	21	76	100
M14	68	35	122	166
M16	106	53	190	255

Note::

(1)The torque values for property class 8.8 and 10.9 bolts must be specified in the process documentation before use.

(2)For threaded copper and aluminum busbars, use the torque values from the second column for installation.