

Product Guide

C&I Energy Storage System
Model: CESS 261-125-01D

IEC



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PREFACE

Thank you for choosing the RCT C&I energy storage system

You have purchased an innovative, high-quality product with unique features and consistently high efficiency.

With this device, you will always achieve the highest possible yield from your energy system.

 WARNING	C&I energy storage system is an electrical device. During installation, wiring, grid connection, operation, maintenance and service they can cause various hazards. Please read the documents supplied with the product carefully and follow the instructions and device information to avoid material damage and personal injury.
	Keep this manual in a safe place for future reference.

1 About This Product Guide

1.1 Applicable Products

- This manual is applying to the C&I energy storage system (CESS 261 IEC product).
- The model of the C&I energy storage system is **CESS 261-125-01D**.

1.2 Validity, Purpose, Scope of this document and Legal Regulations

- This product manual provides general instructions for the C&I energy storage system.
- The content of this manual is regularly updated and revised as a part of the continuous product development.
- The current document version can be found at: www.rct-power.com.
- We explicitly reserve the right to make technical changes which improve the device or increase its safety standard. These changes do not require a separate notification. RCT Power is not liable for damages resulting from the use of this document.
- This manual does not supersede existing laws, regulations, rules, standards or conventions.
- The warranty conditions are enclosed with the device. No further warranty claims can be derived from this document.

1.3 Explanation of Symbols and References

It is important to follow the references in the manual during the installation, operation and maintenance of CESS 261 IEC product. The table below shows the warning signs and symbols used in the manual.

Symbols and References	Description
 DANGER	This symbol indicates a direct imminent danger. If the safety regulations are not observed, this may result in death, personal injury or serious damage to property.
 WARNING	This symbol indicates a direct imminent danger of medium risk. If the safety regulations are not observed, this may result in death, personal injury or serious damage to property.
 CAUTION	This symbol indicates a direct imminent danger of low risk. If the safety regulations are not observed, it might result in minor or moderate material damage.
 NOTICE	This symbol indicates a potentially hazardous situation which, if not avoided, could result in material damage to equipment or property.
	This symbol indicates important information and hints. They will help you to better understand the functionality of the device.
	This symbol indicates that the user manual must be read and understood before the device is put into operation.

Symbols and References	Description
	HIGH VOLTAGE WARNING! Indicates hazardous high voltages are present, which, if not avoided, will result in death or serious injury. Thus, only authorized and trained personnel should install and/or maintain this product.
	After disconnecting the electrical connections, wait a minimum of 10 minutes before opening the unit.
	Hot surface!
	Equipment grounding conductor (PE).
	This product must not be disposed of as normal household waste.
	CE mark CESS 261 IEC product complies with the requirements of the applicable CE guidelines.

1.4 Abbreviation

Unless otherwise specified, devices in this manual are referred to as the abbreviations below.

Complete designation	Description
Commercial and Industrial Energy Storage System	CESS
Power Conversion System	PCS
Battery Management System	BMS
Energy Management System	EMS
Depth Of Discharge	DOD
Power Factor	PF
Surge Protective Device	SPD

2 Revision Description

No.	Date	Version	Description
01	2025.12.05	1.0	Preliminary Version
02	2025.12.18	2.0	1. Add the 4G communication description; 2. Update the descriptions of parameters in datasheet.
03	2026.01.27	3.0	1. Update some pictures of CESS 261 IEC product. 2. Update the descriptions of parameters in this guide.
04	2026.04.23	4.0	Update the 6.2.3 section Parallel Space Requirements.
05	2026.07.15	5.0	Add the instructions for Discolored Shock Indicator Labels.
06			
07			

08			
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3 Safety Instruction

3.1 Personnel And Qualifications



The cabinet and the battery must only be installed, wired, connected, commissioned and serviced by qualified personnel to prevent material damage or personal injury.

The cabinet and the battery must only be installed, wired, connected, commissioned, and serviced by qualified personnel to prevent material damage or personal injury. Qualified personnel authorized to perform the tasks described in this manual must have the following skills and technical expertise:

- Should know electronic, electrical wiring and mechanical expertise, and be familiar with electrical and mechanical schematics.
- Should be familiar with the composition and working principles of the energy storage system and its front and rear-level equipment.
- Should have received professional training related to the installation and commissioning of electrical equipment.
- Be able to quickly respond to hazards and emergencies that occur during installation and commissioning.
- Be familiar with the relevant standards and specifications of the country/region where the project is located.

3.2 Electrical Safety

The CESS 261 IEC products were developed and tested in strict accordance with international safety regulations. All safety instructions relating to electrical and electronic equipment must be complied with during installation, operation and maintenance.

**DANGER****Danger to life or serious injury due to electric shock!**

- When the cabinet is connected to the power grid, the cables and components inside the cabinet generate high voltage.
- Before electrical connection, ensure that the device is not damaged; otherwise, electric shock or fire may occur.
- Qualified personnel must perform any work that involves wiring, connecting or opening the cabinet case.
- Important: Before performing any electrical work, it is necessary to ensure that the devices and systems in the energy storage integrated system are completely free of power.
- Touching the power grid or the contact points and terminals in the devices connected to the power grid may lead to electric shock.
- The battery side or the power grid side may generate voltage. Always use a multimeter to ensure that there is no voltage before touching.
- Lethal voltages are present inside the product!
 - Note and observe the warnings on the product.
 - Respect all safety precautions listed in these manual and other pertinent documents.
 - Respect the protection requirements and precautions of the lithium battery.
- When installing, maintaining, and repairing the device, ensure that:
 - To disconnect the battery voltage. To turn OFF the battery voltage, you must turn off the voltage source (DC / solar generator and AC / mains) and turn the isolation switch handles of the switch gears to “OFF” position to turn off the battery DC voltage.
 - Disconnect the MCCB to cut off the supply voltage (AC) and do not reconnect until the work is complete.
- Electricity may still exist in the battery when the power supply of the system is disconnected. Wait 10 minutes to ensure the equipment is completely voltage-free before any operation.
- Ensure that other persons stay away from cables and internal components.
- Do not open the door while the device is in operation.
- Do not open the rear guard plate of the electrical room while the device is under operation.

 WARNING	Risk of injury due to electric shock! ■ Installation, service and maintenance work must only be carried out by a qualified electrician. ■ Only power on again after all electrical work has been completed. ■ All hoisting, transportation, installation, wiring, operation, and maintenance must be carried out complying with the relevant codes and regulations of the country where the project is located. ■ Hazardous Voltage Circuits. ■ To Reduce the Risk of injury, read all instructions. ■ Risk of Electric Shock or Serious Injury. Care shall be taken when entering enclosure- Authorized personnel only.
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 CAUTION	Risk of burns on hot parts of the device. ■ During standard operation of the device, some parts of the device can become hot. ■ Use care when touching the housing while the device is operating.
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 NOTICE	■ All electrical installations must be carried out in accordance with local and national standards and guidelines. ■ Contact your local energy supplier or grid operator before connecting the energy storage system to the grid. ■ Ensure that electrically conductive surfaces of the entire energy storage system are grounded to prevent personal injury. ■ A malfunction can impair cabinet safety. Do not operate or start the energy system if it shows visible damage or if the displayed error message is unclear. ■ The cabinet does not contain any parts to be serviced by the owner. Please contact qualified personnel locally for servicing work on the energy storage system. ■ Only use devices and accessories approved by the manufacturer. Do not make any changes to the device. Do not remove the type plate. ■ Post prominent warning signs around the project location to prevent accidents caused by false switching. ■ Place necessary warning signs or barriers near the product.
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3.3 Battery Safety

For safe use of the product, the technician should carefully read and strictly observe the safety requirements. The company shall not be liable for product functional abnormality, component damage, personal safety accident, property loss, or other damage caused by the following reasons:

- The batteries are not charged as required, resulting in capacity loss or irreversible damage to the batteries.
- A battery is damaged, falls, or leaks due to improper operations or failure to operate the battery as required.
- The batteries are not powered on in time, which causes damage to the batteries due to over discharge.
- The damage is caused to batteries due to the use of improper equipment for charging and discharging.
- Batteries are frequently over discharged due to improper maintenance, capacity is incorrectly expanded, or the batteries have not been fully charged for a long time.
- Battery operation parameters are incorrectly set.
- Damage is caused to batteries because the battery operating environment does not meet the requirements.
- The customer uses the batteries beyond the scenarios specified in this manual, including but not limited to connect extra loads.
- Batteries are not maintained based on the system manual.
- The product is damaged due to the customer's continued use of batteries beyond the warranty period.
- The product is damaged due to the use of defective or deformed batteries.
- Use batteries provided by the company with other batteries, including but not limited to batteries of other brands or batteries of different rated capacities.
- Product damage or property loss are caused due to storing or installing batteries with flammable/explosive materials.
- Personal safety accidents and property loss are caused by battery-related operations performed by non-professional personnel, or by not wearing qualified protective equipment during operations.
- The battery is damaged due to eating, drinking, smoking and other behaviours near the battery.
- Batteries are stolen.

3.4 Electric Arc Protection

 WARNING	To avoid unnecessary injury and device damage, strictly follow the instructions in this manual. If not properly operated, it may cause arc hazards, and may even cause fire, explosion and other risks. RCT is not responsible for arcing, fire, explosion and other accidents caused by failure to operate according to the machine identification or product manual.
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The following improper operation may cause arcing, fire, explosion and other hazards inside the device. And always remember that in the event of an accident, it must be handled by qualified professionals. Improper operations for existing accidents may cause a wider range of failures or accidents.

- Plug and unplug DC high-voltage fuses of each device on power.
- Touch the uninsulated end of a potentially live cable.
- Touch wiring bars, terminals, or other parts inside the device that may be live.
- The power cable is improperly connected.
- Parts such as screws fall into the power module.
- Incorrect operation by unqualified operators without training.

Before operating the equipment, assess whether there is an arc risk in the operating area. If there is a risk of arcing, you need to:

- Operators must receive safety training in advance.
- Try to assess the area where the shock is likely to occur.
- Before operating in a possible electric shock area, you must wear the required protective clothing.

3.5 Protective Tools

Special protective equipment must be used during operation, such as wearing protective clothing, insulating shoes, goggles, and insulating gloves.

Item	Name And Graphics			
Protective tools	 Insulating gloves	 Protective clothing	 Goggles	 Insulating shoes

3.6 Instructions for Discolored Shock Indicator Labels

To ensure product safety during transportation, shock indicator labels are affixed to the outer packaging of this product. If you find the label has turned **red** upon receipt of goods, please do not panic. A red label only indicates the equipment has been subjected to a certain level of vibration, which does not mean the device is damaged or inoperable. To safeguard your rights and interests, please follow the steps below:

1. Preserve on-site evidence: Immediately take photos or videos of the discolored shock indicator label, outer packaging and the overall condition of the product to retain objective proof.
2. Inspect product appearance: Carefully check the product casing, ports and key components for obvious dents, deformation or damage.
3. Contact after-sales service: Regardless of whether any abnormalities are found in the appearance inspection, please reach out to our after-sales team right after discovering the issue and provide the relevant photos and videos. We will conduct a professional assessment and resolve the matter promptly based on your feedback.



Fig. 3-1 The Label Has Turned Red

4 Product Presentation

4.1 Product Introduction

CESS 261 IEC Industrial and Commercial Energy Storage System integrates a battery system, liquid cooling unit, fire alarm system, dehumidification module, bi-directional inverter, and equipment-level Energy Management System (EMS). It adopts an integrated AC/DC design and modular structure, supporting rapid deployment and multi-cabinet expansion.

The system is compatible with hoisting or forklift transportation for deployment, and is equipped with a liquid cooling temperature control system, aerosol fire suppression, and early thermal runaway detection functions. With an IP54 protection rating, it can adapt to extreme environments and support grid connection, making it suitable for scenarios such as industrial parks, charging stations, and data centers.

It achieves reduced electricity cost per kWh and long-term economic benefit optimization through functions including **self-consumption**, **T.O.U**, **peak shaving**, and **third-party power dispatching**. Meanwhile, it supports intelligent monitoring and remote operation and maintenance, featuring a long cycle life and high safety performance..



Fig. 4-1 Product 3D Picture

4.2 Product Type Introduction

CESS 261-125-01 D
 └───┬───┬───┬───┬───
 1 2 3 4 5

No.	Meaning	Description
1	Product Name	CESS-Commercial And Industrial Energy Storage System
2	Nominal Energy	261kWh
3	Nominal AC Output Power	125kW
4	Standard Type	01-IEC Standard
5	Product Configuration	D-This product consists of PCS and battery system

4.3 System Solution

■ With PV (AC Coupling)

The energy received from the power grid and PV (**AC-coupling**) is stored in the battery and is then converted into grid-compliant AC current to feed into the facility or back to the grid, dependent upon the interconnect agreement.

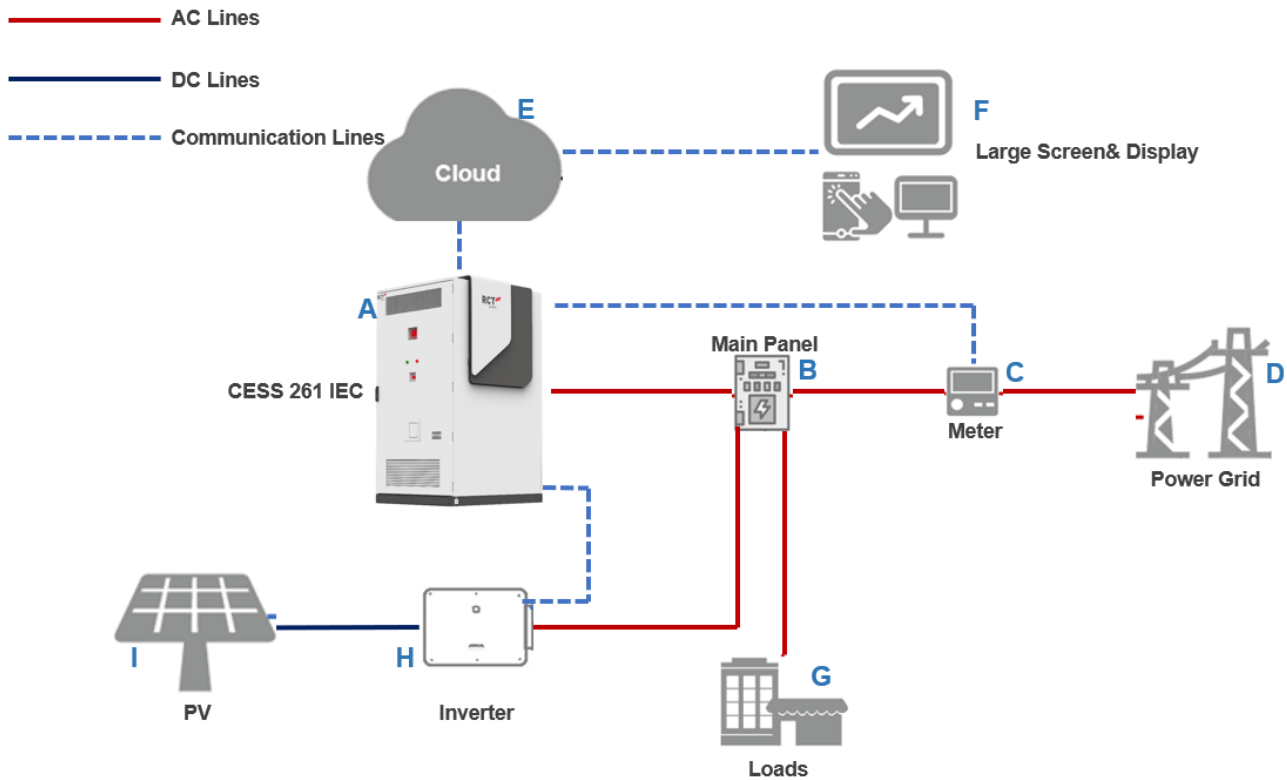


Fig. 4-2 Scheme Topology Diagram (With PV)

■ Without PV

The energy received from the power grid is stored in the battery and is then converted into grid-compliant AC current to feed into the facility or back to the grid, dependent upon the interconnect agreement.

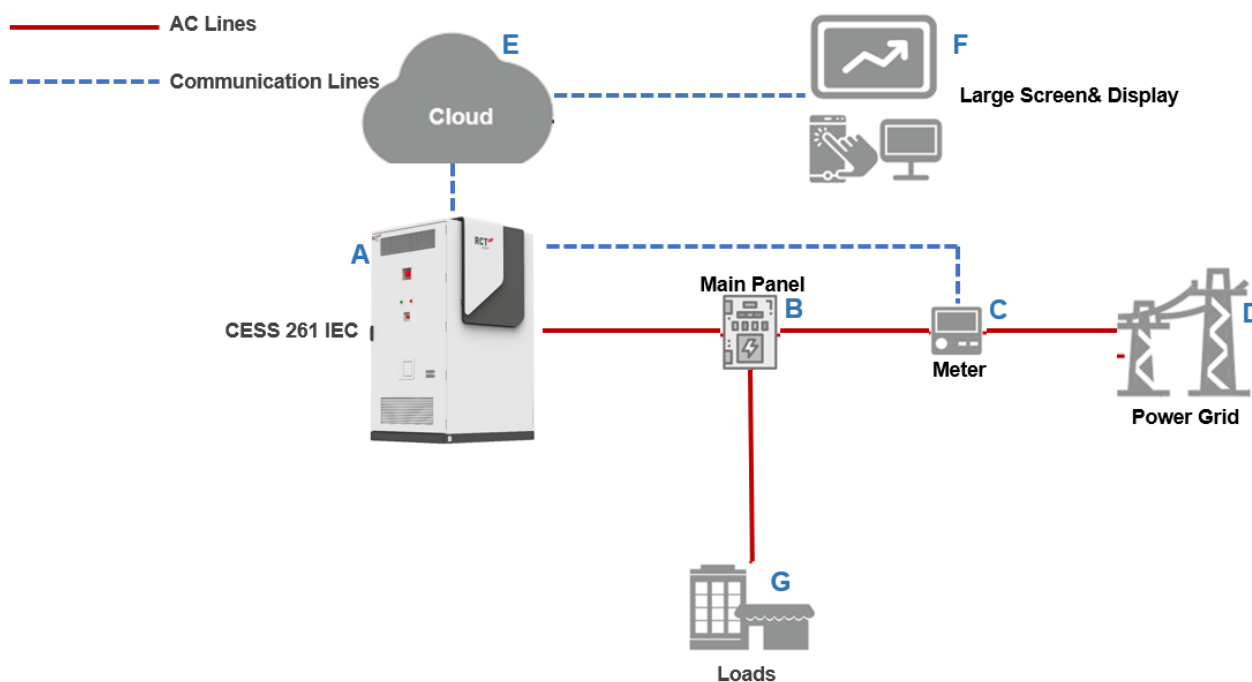


Fig. 4-3 Scheme Topology Diagram (Without PV)

Item	Description	Comments
A	Commercial And Industrial Energy Storage System	CESS 261-125-01D
B	Main Pannel	Power Distribution
C	Meter	Collect AC power measurements
D	Power Grid	400Vac, 3P4W, 50Hz or 60Hz
E	Cloud	Energy cloud data storage platform
F	Large Screen And Display	Energy data display and function control
G	Loads	Ordinary electrical loads
H	Inverter	PV inverter, DC-AC
I	PV	

■ Maximum number of parallel machines

Maximum number of parallel machines for on-grid operation: 20, 4 master units (with EMS industrial PC) matched with 16 slave units (without EMS industrial PC)

Maximum number of parallel machines for off-grid operation: 5, 1 master units (with EMS industrial PC) matched with 4 slave units (without EMS industrial PC)

4.4 Application Scenarios

Product Type	Application Scenarios
CESS 261-125-01D	Self-consumption Time Of Use (T.O.U) Peak Shaving Third-Party Power Dispatching

4.4.1 Self-consumption

Self-consumption is a typical operating mode of this product. Its core is that the electricity stored in energy storage equipment is prioritized for local loads, minimizing reliance on the external power grid. In this mode, the system usually charges using electricity from local power generation devices (such as distributed photovoltaics, small wind power, etc.) or from the grid during off-peak periods. Subsequently, during local peak electricity consumption periods, the stored electricity is discharged to directly meet the user's own power needs, rather than being prioritized for feedback to the grid. This mode has the following advantages:

- Reducing the amount of electricity purchased from the external grid, especially during periods of high electricity prices, which can lower electricity costs.
- Improving the self-consumption rate of local energy sources (such as photovoltaics and wind power), reducing curtailment, and enhancing energy utilization efficiency.
- In the event of grid fluctuations or short-term power outages, with appropriate design, it can also serve as an emergency power source to ensure the continuous power supply for critical loads.

4.4.2 Time Of Use (T.O.U)

Power grid typically divides a day into time periods such as peak, flat, and off-peak (for example, electricity prices are high during the daytime peak hours of power consumption and low during the nighttime off-peak hours). In the T.O.U mode, the energy storage system absorbs and stores electricity from the power grid during off-peak periods when electricity prices are low and releases the stored electricity during peak periods when prices are high to supply loads or sell back to the grid. Through the arbitrage of "buying low and selling high", it reduces electricity costs or increases revenue.

4.4.3 Peak Shaving

In this mode, during peak electricity consumption periods (such as daytime industrial production and evening periods when residential electricity use is concentrated), the energy storage system discharges the stored electricity to share the power supply pressure of the power grid or transformers, thereby avoiding issues such as power rationing and equipment overload caused by excessive load. During off-peak electricity consumption periods (such as late at night), the energy storage system absorbs surplus electricity from the power grid (at this time, the grid load is low and power generation efficiency may be low) and stores the electricity to prevent energy waste.

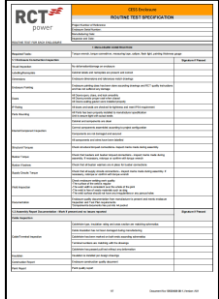
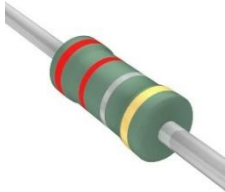
4.4.4 Third-Party Power Dispatching

This mode enables EMS to accept third-party dispatching, including active power regulation and reactive power regulation.

4.5 Product Specifications

4.5.1 Scope of Supply

- Our products are inspected for proper condition before shipment.
- Despite careful packaging, transport damage can occur. The transport company usually has to take responsibility for this damage.
- Please inform the transport company immediately if you notice any damage to the packaging or the cabinet. Your specialist dealer will be happy to assist you if necessary.
- Do not install, wire or operate the cabinet if any damage has been detected.
- Check the contents of the shipment for completeness in accordance with below:

		
1 x CESS 261 IEC Product	5 x MSD	1 x Test Report
		
1 x Door Key	2 x Fuse 10A	2 x EOL Resistance
		
1 x Certificate Of Conformity		

***Note:** In order to protect the safety of technicians who repair CESS 261 IEC product in high voltage environments or respond to some sudden events, the connection of the battery DC high voltage circuit can be quickly separated via the MSD device, so that the maintenance and other work is in a relatively safe state.

4.5.2 External Design

Cabinet Appearance

The appearance of the cabinet is shown as below:

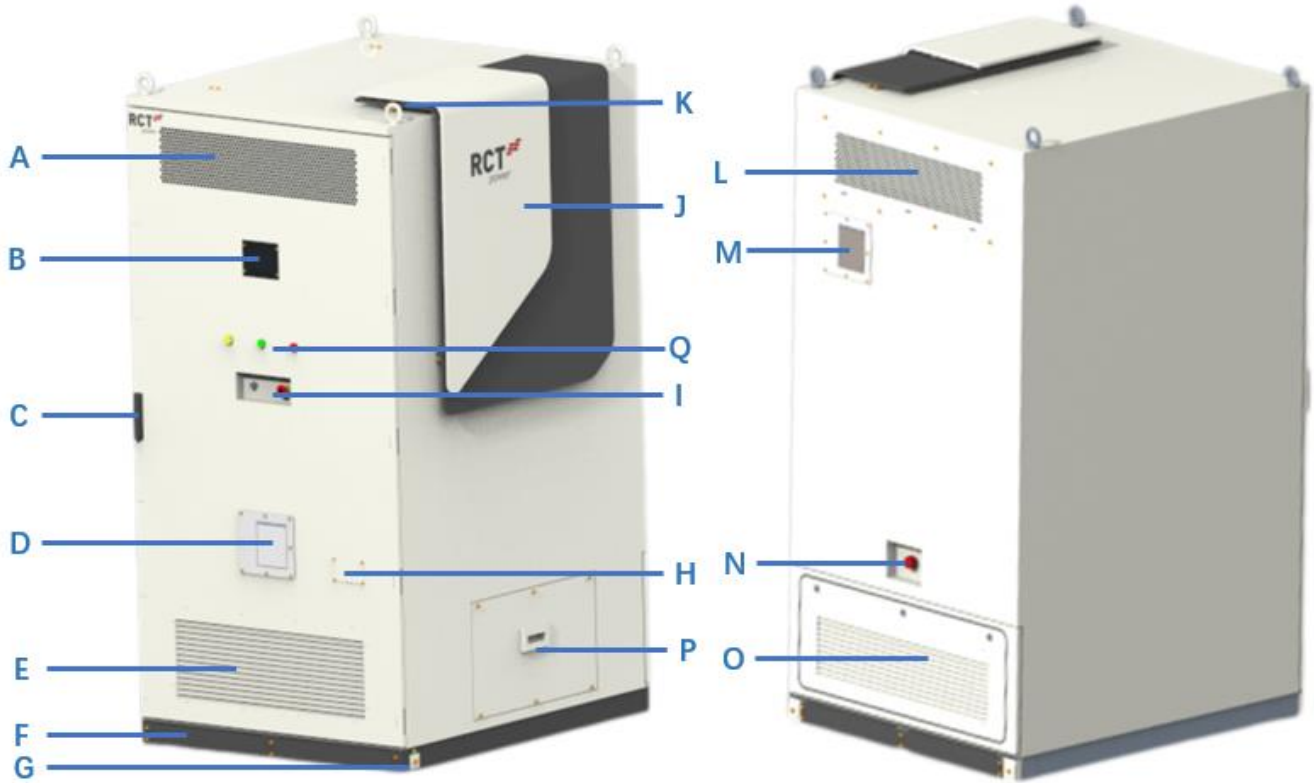


Fig. 4-4 External Design

Items	Description
A	Chiller air intake grill
B	Strobe and siren
C	Door lock
D	Exhaust intake (Without fan)
E	PCS Air intake grill
F	Forklift hole
G	Grounding point
H	Nameplate
I	Emergency stop button

J	Label (an optional configuration, not a standard configuration)
K	Rings
L	Chiller air outlet grill
M	Exhaust outlet (With fan)
N	Water inlet
O	PCS Air outlet grill
P	Service Door
Q	Indicator Lights (Yellow, Green, Red)

4.5.3 Ventilation Design

- The chiller intakes air from the front side and expels it from the back side.
- The PCS also intakes air from the front side and expels it from the back side.



Fig. 4-5 Ventilation Design

4.5.4 Internal Design

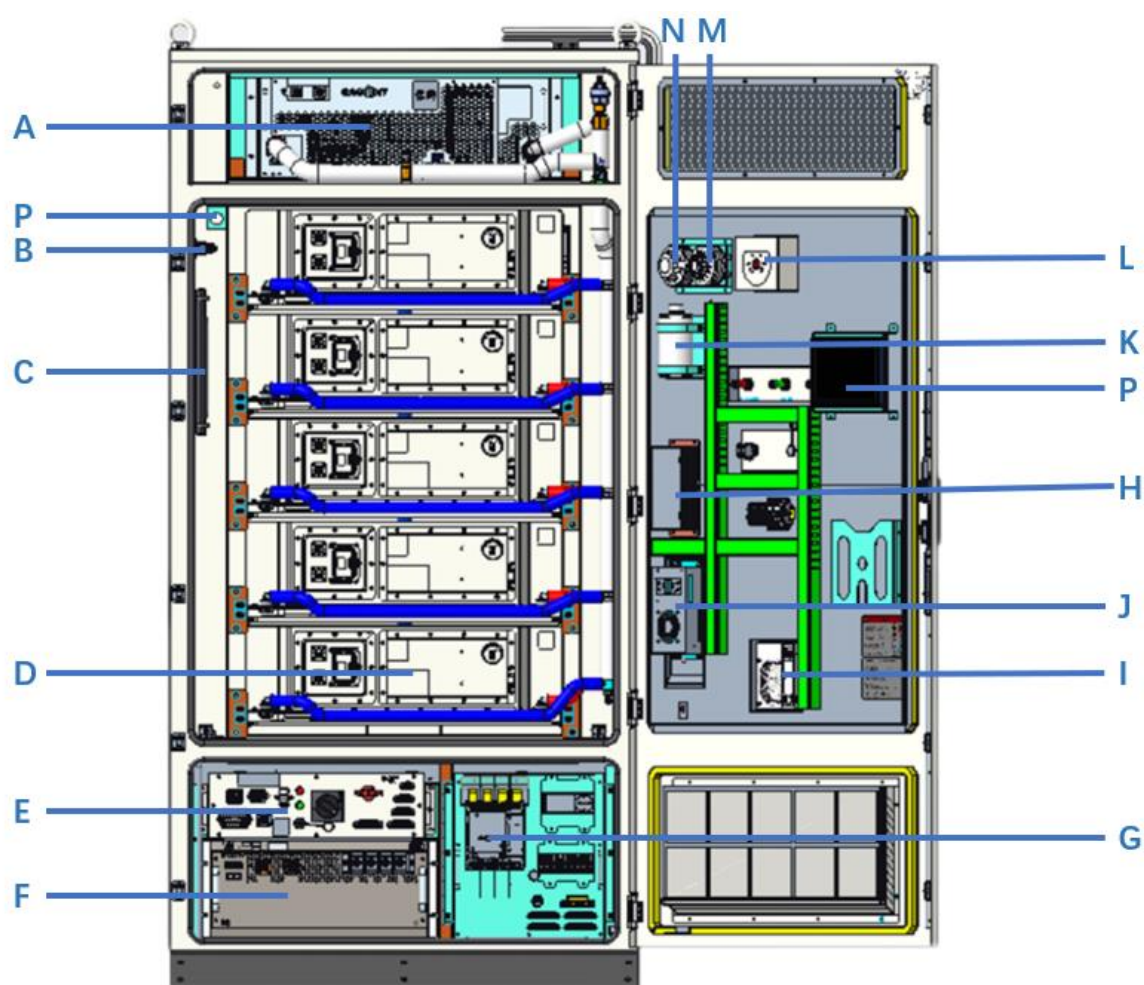


Fig. 4-6 Internal Design

Items	Description
A	Chiller (Adjust the temperature of battery pack)
B	Door switch
C	Illumination
D	Battery pack (×5)
E	PDU (With BCU)
F	Power Conversion System (125kW,3P+N+PE,400Vac)
G	Grid connection MCCB
H	Industrial PC (EMS Platform for master machine)

I	Exhaust intake (Without fan)
J	Dehumidifier
K	Aerosol fire suppression
L	Strobe and siren
M	Temperature detector
N	Smoke detector
O	Combustible gas detector
P	EMS Screen (an optional configuration, not a standard configuration)

4.5.5 314Ah Battery Cell



Fig. 4-7 Appearance Of Battery Cell

Parameter	Value
Material System	Lithium Iron Phosphate
Shell Material	Aluminum
Nominal Charging/Discharging Capacity	314Ah
Weight	5.670kg±0.20kg
Nominal Voltage	3.2Vdc
Nominal Charging/Discharging Energy	1004.8Wh

4.5.6 Battery Pack



Fig. 4-8 External Design Of Battery Pack

Module Name		POWER CESS PACK 52L2D	
Module Type		LFP Battery Pack	
No.	Items	Value	Note
1	Structure	1P52S	\
2	Nominal Energy	52.25kWh	\
3	Nominal Voltage	166.4V	\
4	Range Of Operating Voltage	137.8~186.16V	Battery Cell (2.65V~3.58V)
5	Nominal Current	157A	\
6	Cooling Method	Liquid-cooling	\
7	Communication Method	Daisy Chain	\
8	Connection Method	Quick Connector	\
9	Dimension	W810*L1158*H240mm	\
10	Weight	Approximately 350kg	\
11	IP Rating	IP67	\

4.5.7 Battery Rack

Module Name		RACK-261L2D-IEC-11	
Module Type		LFP Battery Pack×5, Liquid-cooling Machine×1, PDU×1	
No.	Items	Value	Note
1	Structure	5×1P52S	5 Battery Packs Connected In Series
2	Nominal Energy	261.2kWh	5×52.25kWh
3	Nominal Voltage	832V	5×166.4V
4	Range Of Operating Voltage	689~930.8V	Battery Cell (2.65V~3.58V)
5	Nominal Current	157A	\
6	Cooling Method	Liquid-cooling	\
7	Communication Method	RS485, CAN, TCP, Daisy Chain	\
8	Connection Method	Quick Connector	\
9	Dimension	W930*D1202*H2502.2mm (Approximately)	\
10	Weight	Approximately 2030kg	\
11	IP Rating	IP67 (Battery Pack)	\
12	Does the PDU include the DCAC/DC module? (Yes/No)	Yes	\

4.5.8 Power Conversion System (PCS)



Fig. 4-9 Appearance Of PCS

Parameter	Value
DC Side	
Operating Voltage Range	650~950Vdc
Max. DC Current	203A
AC Side	
Rated AC Power	125kW
Rated AC Current	180A
AC Rated Voltage	400Vac (3P+N+PE)
AC Line Frequency	50 / 60 Hz
Power Factor Adjustable Range	-1~+1
Peak Efficiency	>98.5%
Long-term Overload Capacity	110%

Cooling Method	Air-cooling
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4.5.9 PDU (With BCU)

The PDU (or High-voltage Box) which is in **RACK-261L2D-IEC-11** or **CESS 261 IEC product** has a DCAC/DC module in it.

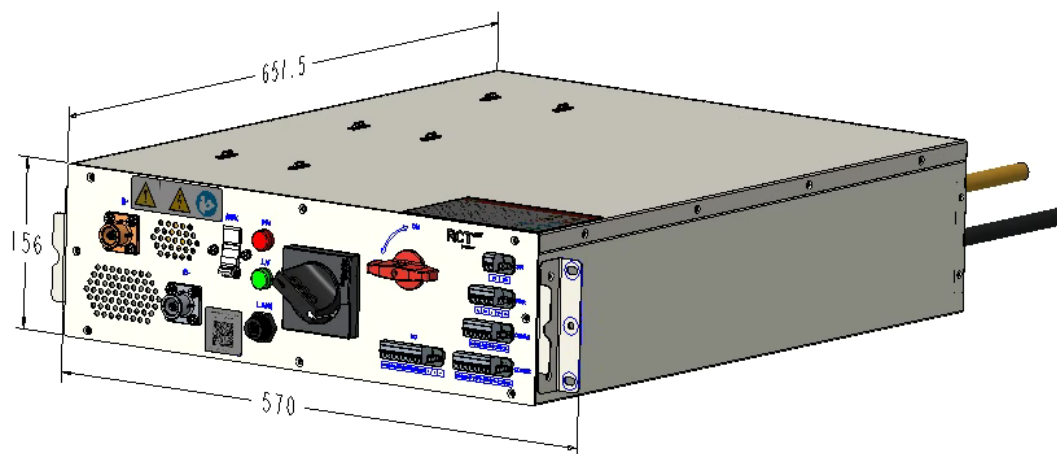


Fig. 4-10 External Design Of PDU

Definition Of External Ports

Port Name	No.	Definition	Function/Note
High-voltage Connections	B+	BAT+	PACK—DC Ports Connected With Switch Gear
	B-	BAT-	
	DC+	PCS+	PACK—DC Ports Connected With PCS
	DC-	PCS-	
Auxiliary Power Supply	1	L	AC 220V Input, Only RACK-261L2D-IEC-11 module has these ports
	2	N	
	4	V+	RACK-261L2D-IEC-11: DC24V Output
	5	V-	
COMM1	1	1A	RS485
	2	1B	
	3	2A	RS485

	4	2B	
	5	C1H	CAN
	6	C1L	
COMM2	1	DO+	Fault Tripping
	2	DO-	
	3	FT+	Fault Dry Contact Points
	4	FT-	
	5	FR+	Reserved
	6	FR-	
	7	C2H	DBC
	8	C2L	
SPI	1	IP1	Daisy Chain Communicated With Battery Pack
	2	IM1	
I/O	1	SPD	Input: Status Of SPD
	2	DS	Input: Status Of Door (Opening or Closing)
	3	STD	Input: Status Of H2/Smoke/Temperature Detectors
	4	EGF	Input: Status Of Exhaust Fan Operation
	5	H2S	Input: Fault Status Of H2 Detector
	6	GND	

5 Transportation And Storage

5.1 Precautions

 NOTICE	Failure to transport and store the product in accordance with the requirements in this manual may invalidate the warranty.
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5.2 Transport Methods

CESS 261 IEC cabinet can be transported by sea or road, but does not support railway or air transportation.

CESS 261 IEC cabinet is highly integrated and easy to hoist, which facilitates its transport.

CESS 261 IEC cabinet can be transported by truck in the country.

5.3 Requirements for Transportation

All devices in CESS 261 IEC cabinet have been installed and fixed before leaving the factory, and they can be hoisted and transported as a whole during transportation.

 NOTICE	In the whole process of loading, unloading, and transportation, the safe operation regulations of CESS 261 IEC cabinet in the country/region where the project is located must be observed! ■ All tools used for CESS 261 cabinet and during operation shall be properly maintained. ■ All personnel engaged in loading, unloading and anchoring should have received relative training, especially in safety.
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- Maritime transportation complies with the transportation requirements of the IMDGCODE and the International Maritime Dangerous Goods Rules.
- Land transport shall comply with the ADR or JTT617 transport requirements.
- To meet the regulatory requirements of the transport regulatory authorities in the transport starting country, route country and destination country.
- Compliance with the international transport of dangerous goods rules and the regulatory requirements of the transport regulatory authorities of the corresponding countries.
- Stacking is prohibited when transportation at ports and on board ships.

5.4 Storage Requirements

- To prevent possible condensation or its bottom from being soaked by rain water in the rainy season. CESS 261 IEC cabinet should be stored on higher ground.
- Raise the container base due to site conditions. The specific height should be reasonably determined based on site geological and meteorological conditions.
- Store the CESS 261 IEC cabinet on a dry, flat, and stable ground with sufficient carrying capacity and without any vegetation covers. The ground must be flat and dry.
- Before storage, ensure that the doors of the container and all internal equipment are locked.
- Storage environment temperature: $-35^{\circ}\text{C} \sim 55^{\circ}\text{C}$, recommended storage temperature: $0^{\circ}\text{C} \sim 30^{\circ}\text{C}$.
- Long-term storage of batteries is not recommended because it may cause the decrease in battery capacity. Even if the battery is stored at the recommended storage temperature, irreversible capacity fade will still occur during periods of rest. The longer it has been stored, the greater the capacity fade. Please refer to the technical protocol for specific rate of capacity fade.
- The relative humidity should be between $0 \sim 95\%$ without condensation.
- The air inlet and outlet of CESS 261 IEC cabinet should be effectively protected to prevent rain water, sand and dust from penetrating into the container.
- Carry out periodic inspections. Check the cabinet and the inner equipment for damage at least every half a month.
- Before installing a cabinet that has been stored for more than six months, open the door to visually check and ensure that there is no condensation. Check the cabinet and the inner equipment for damage. Check the product after it is powered on and starts. If necessary, request professionals for testing before installation.
- Starting from the date of delivery of RCT Power, CESS 261 IEC cabinet with a storage period of more than 3 months under the above conditions are to be charged and discharged once to bring the system SOC to $20\% \sim 50\%$.

6 Mechanical Installation

6.1 Inspection Before Installation

6.1.1 Deliverables Inspection

Check whether deliverables are complete against the attached packing list.

6.1.2 Product Inspection

- Check whether the container received is the ordered one.
- Check CESS 261 IEC and the internal equipment for any damage.

If any problems are found or there is any question, please contact the forwarding company or RCT Power.



NOTICE

Only install CESS 261 IEC when it is complete and intact. Before installation, ensure that:

- CESS 261 IEC is in good condition without any damage.
- All internal equipment is in good condition without any damage.

6.2 Installation Environment Requirements

6.2.1 Installation Site Requirement

- The climate environment and geological conditions, such as stress wave emission and underground water level, should be fully considered when selecting the installation site.
- The environment around the installation site should be dry and well ventilated.
- There should be no trees around the installation site to prevent branches or leaves blown off by heavy winds from blocking the door or air inlet of the energy storage system.
- The installation site should be away from areas where toxic and harmful gases are concentrated, and free from inflammable, explosive and corrosive materials.
- Our CESS 261 IEC cabinet noise level is $\leq 70\text{dB @1m}$. Please consider the appropriate place to install it.
- This product is recommended for outdoor installation.

6.2.2 Foundation Requirements

 NOTICE	CESS 261 IEC cabinet is heavy as a whole. Before constructing the foundation, it is necessary to inspect the installation site in detail (mainly referring to the geological conditions and environmental climatic conditions, etc.). Commence the design and construction of the foundation only after confirming that all requirements are met.
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Unreasonably constructed foundation will bring some great troubles to the installation of the CESS 261 IEC cabinet, affecting the normal opening and closing of the doors and the normal operation. Therefore, the foundation of the CESS 261 IEC cabinet must be designed and constructed according to certain standards to meet the requirements of mechanical support, cable routing and later maintenance and overhaul.

- The soil at the installation site should be compact.
- Compact and fill the foundation pit to provide sufficient and effective support for the container.
- Raise the foundation to prevent the container base and the interior from rain erosion.
- The cross-sectional area and height of the foundation should meet the requirements.
- Construct corresponding drainage in conjunction with local geological conditions.
- Built a cement foundation with sufficient cross-sectional area and height. The foundation height is determined by the construction party according to the site geology.
- Consider cable routing when building the foundation.

- The installation carrier should be firm and reliable. The bearing capacity of the foundation should exceed **3 tons**.
(Estimated weight of the assembly is **2.7 tons**.)
- The bottom of the foundation pits must be strengthened and filled. The surface of the foundation shall be solid, flat and level (**horizontal error $\leq 4\text{mm}$**). Sunken or filled foundation is not acceptable.
- Built a maintenance platform around the foundation to facilitate later maintenance.
- During the foundation construction, reserve enough space for the AC and DC side cable trench according to the position and size of the cable inlet and outlet holes and pre-embed the cable conduit.
- A drainage system is necessary to prevent the bottom or internal equipment of the cabinet from being soaked in water during the rainy season or during heavy rainfall.
- Both ends of all embedded pipes should be temporarily sealed to prevent impurities from entering and causing troubles to later wiring.
- After all cables are connected, cable inlet, outlet and connector should be sealed with fireproof mud or other suitable materials to prevent rodent access.

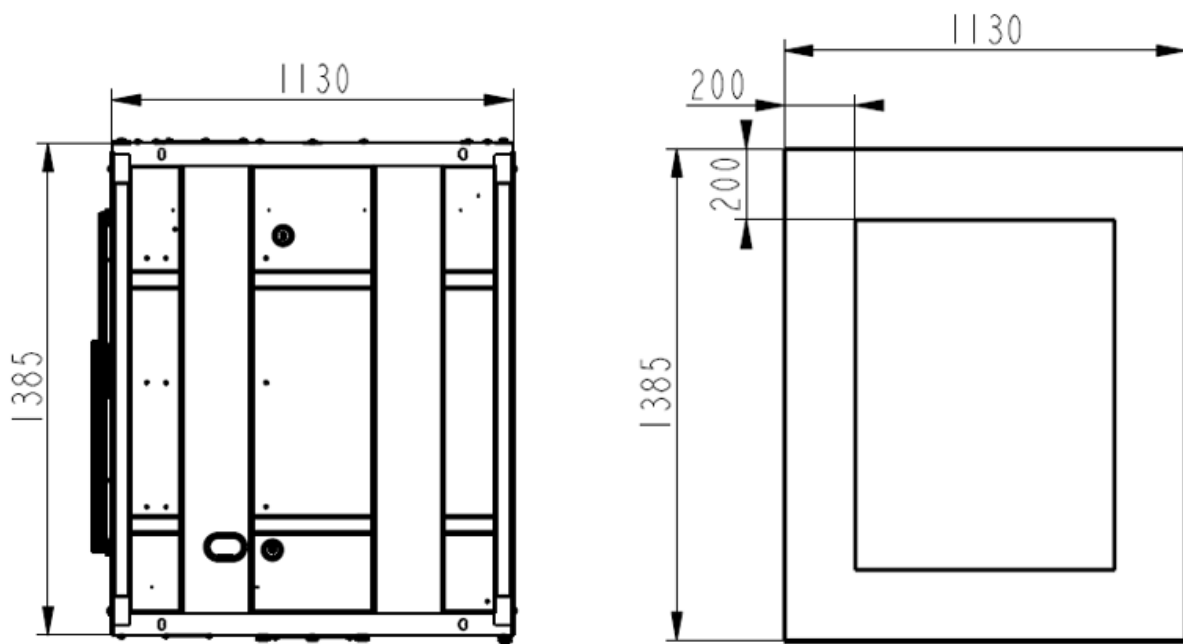


Fig. 6-1 Foundation Dimensions Of The Cabinet (Bottom View)

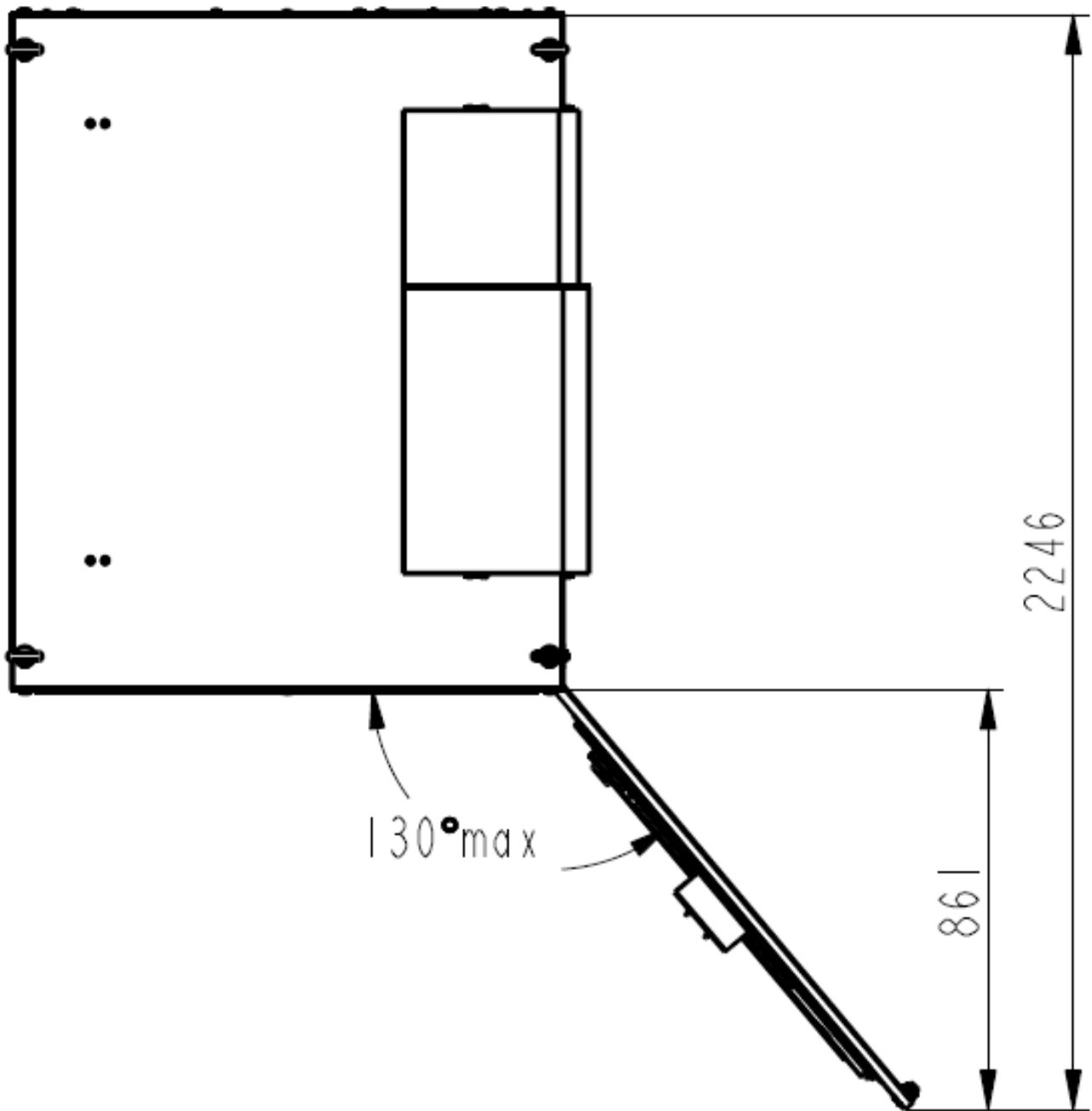


Fig. 6-2 Opening Angle And Distance Of The Cabinet Door (Top View)

6.2.3 Parallel Space Requirements

Impacted Factors Of Parallel Installation:

- **Fire Safety:**

Preventing Thermal Runaway Propagation: Sufficient spacing acts as a physical fire barrier, preventing heat and flames from spreading too quickly to adjacent cabinets if a thermal runaway event occurs in one unit.

Providing Firefighting Operation Space: It offers essential working space for fire rescue efforts and equipment deployment (e.g., fire extinguishers, hydrants).

- **Heat Dissipation And Thermal Management:**

Energy storage cabinets typically use a forced-air cooling mode, such as "front intake, rear exhaust". If the spacing is too small, hot exhaust air can be recirculated into the intake of adjacent cabinets. This leads to elevated intake air temperatures, creating a heat cycle that significantly reduces cooling efficiency. This can cause the system to report high-temperature faults and may even trigger safety risks.

- **Operations, Maintenance And Safety:**

Working Space: Technicians require adequate space to open cabinet doors (the doors themselves have thickness and require swing clearance), perform wiring, and conduct inspections and maintenance tasks.

Emergency Evacuation: In the event of an incident, personnel must be able to evacuate quickly.

Recommended Distance:

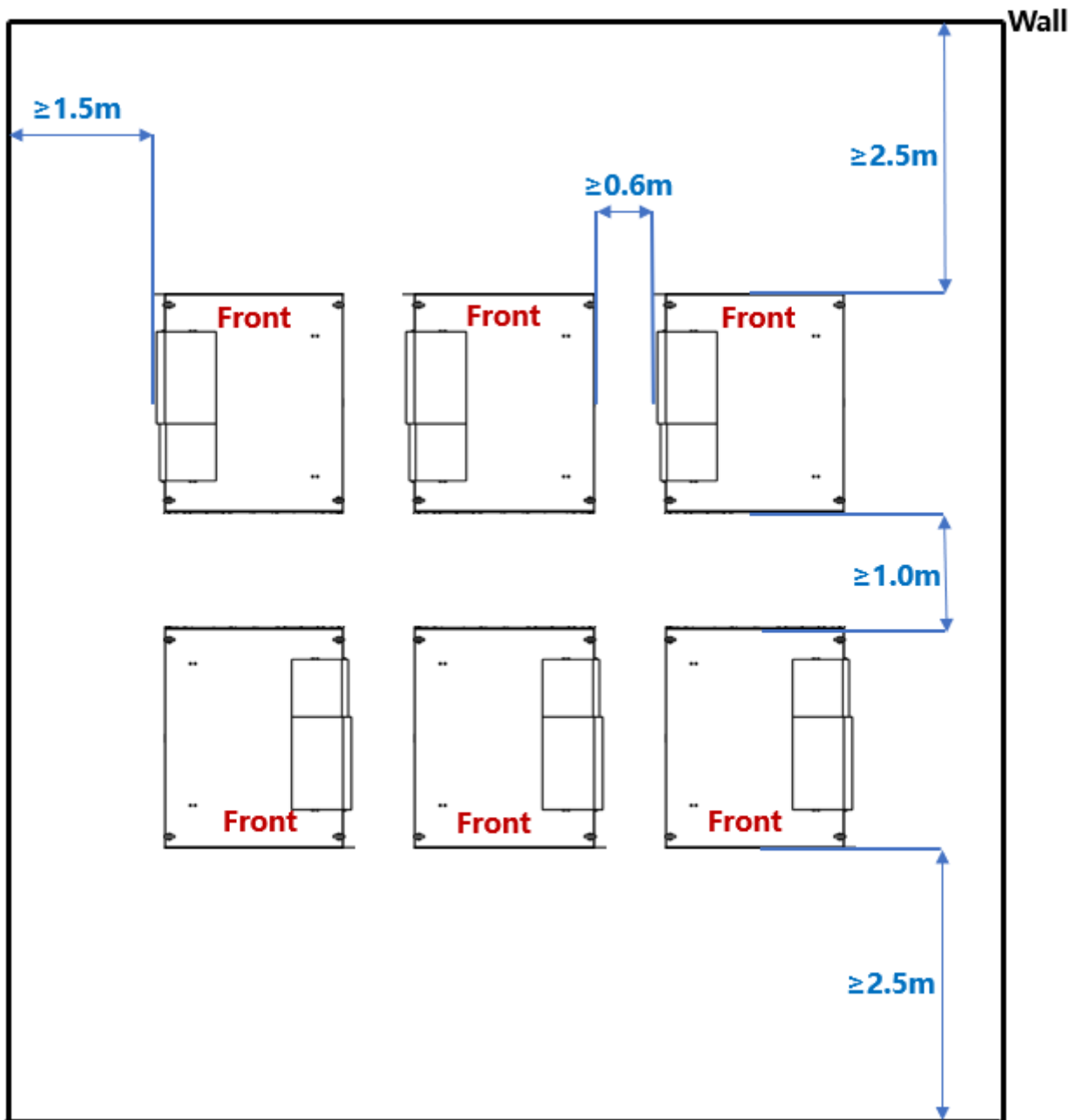


Fig. 6-3 Recommended Parallel Space (Top view)

Minimum Installation Distance:

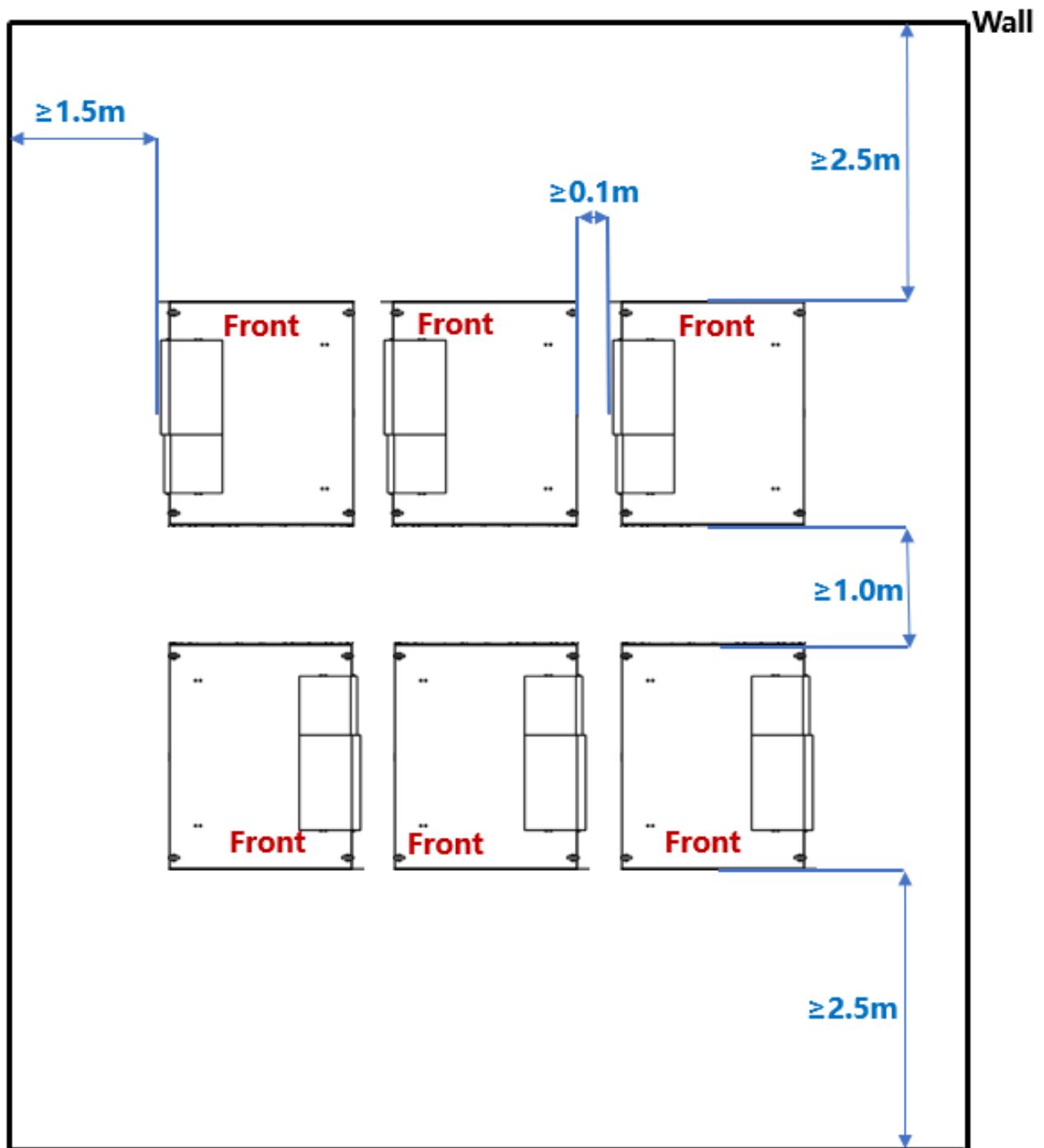


Fig. 6-4 Minimum Installation Distance (Top view)

6.3 Forklifting Transport

If the installation site is flat, you can use a forklift to move the CESS 261 IEC cabinet. The bottom of the cabinet is equipped with fork holes specially used for forklift transportation. Move the cabinet through the side fork holes. If a forklift is used, the following requirements should be met:

- The forklift should be equipped with sufficient load capacity.
- The length of the forklift feet should meet the requirements of the device.
- The length of fork needs to be longer than 1500mm.

The forklift feet should be inserted into the fork pockets at the bottom of the workstation (for the location of the fork pockets, see the figure below). The depth of the forklift feet inserted into the pockets should be the depth of the pockets.

- Remove the front cover plate before move the cabinet.
- The weight of CESS 261 IEC cabinet is about 2.8 tons, please select appropriate equipment
- The transportation, moving and putting down of the cabinet should be slow and stable. It is recommended to try transportation.
- Only place the cabinet in a stable place. The place should be well drained without any obstruction or bulging. The cabinet should be fixed by four bottom mounting screws into the foundation.

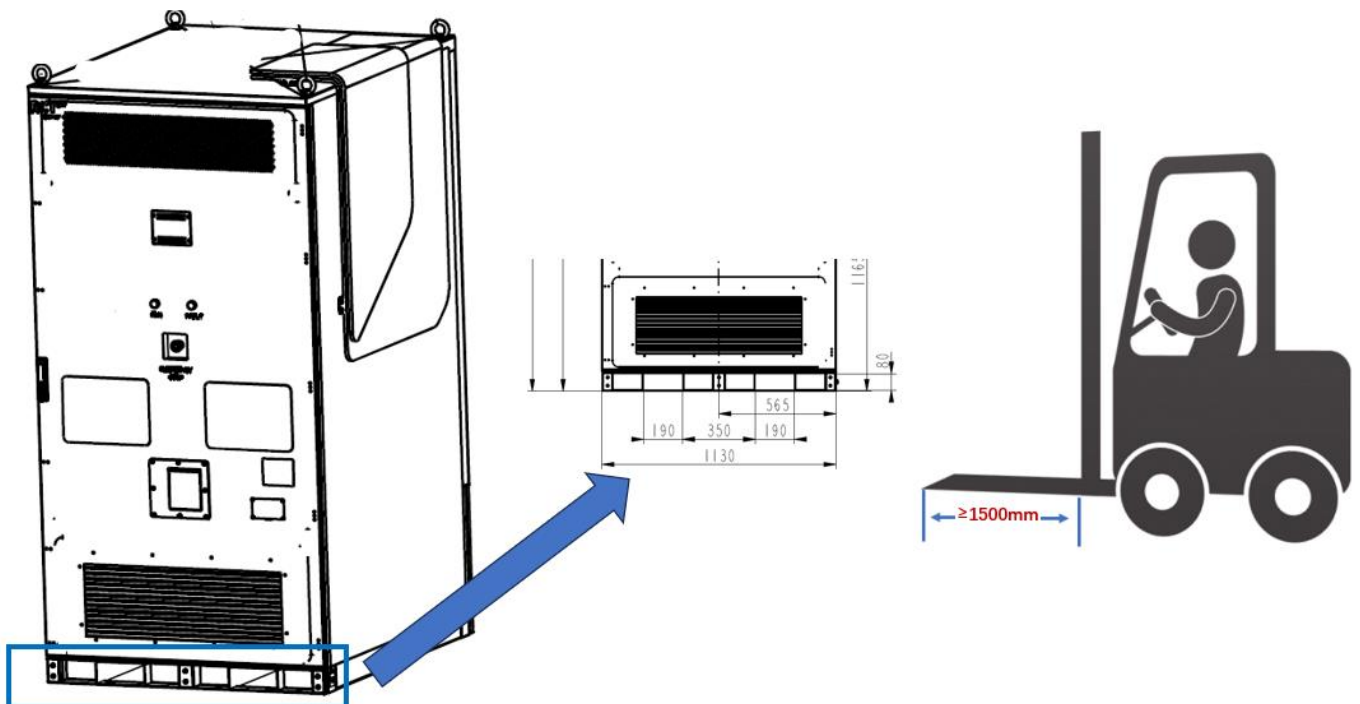


Fig. 6-5 Forklifting

6.4 Hoisting and Transport

6.4.1 Safety Precautions

When lifting the device, at least the following requirements must be met:

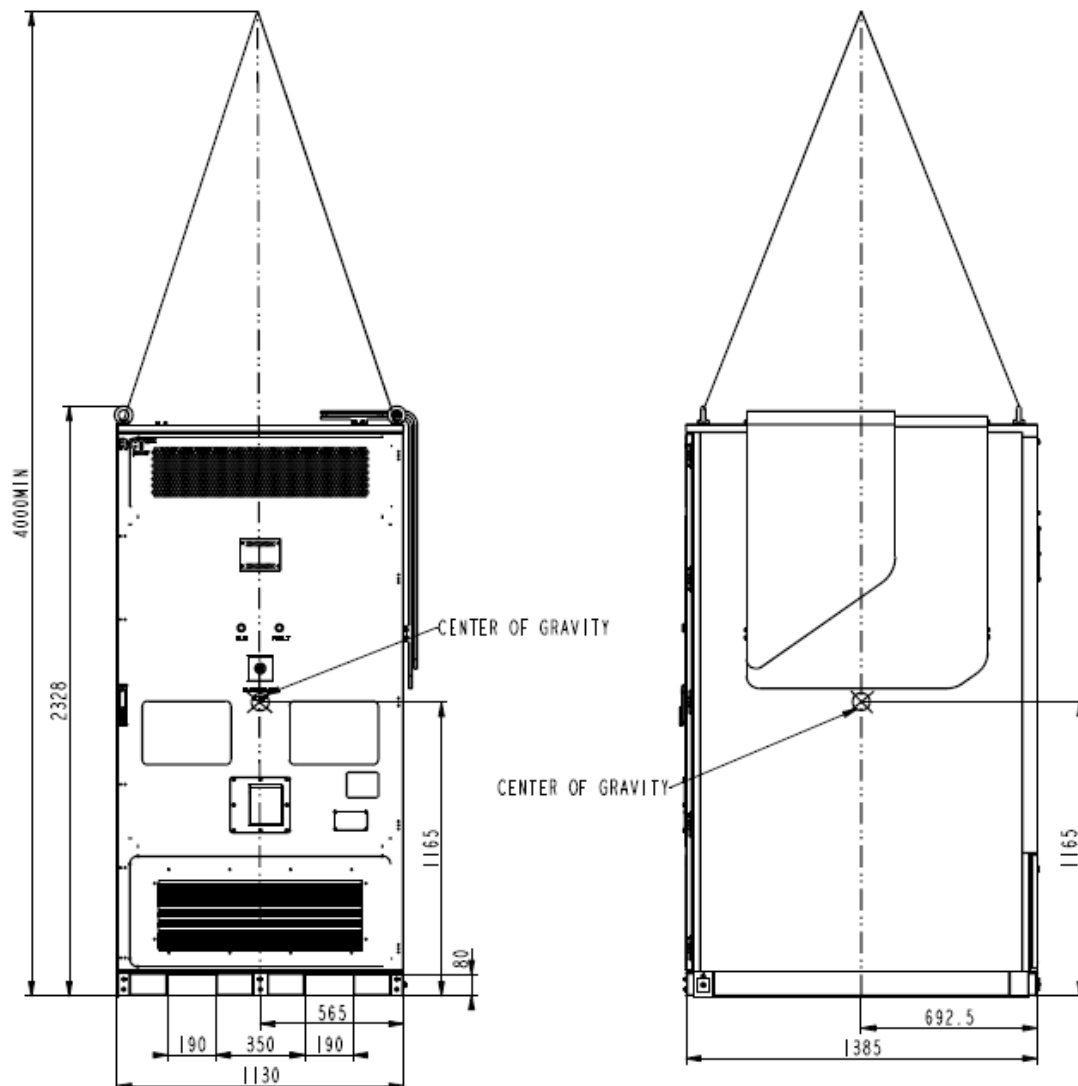
- All safety requirements must be met.
- A professional instructor is needed in the whole hoisting process.
- The strength of the sling used should be able to withstand the weight of the devices.
- Ensure that all sling connections are safe and reliable, and that the lengths of the slings connected to the corner fittings are equal.
- The length of the sling can be adjusted appropriately according to the actual requirements of the site.
- During the lifting process, the devices must be stable and not skewed.
- Please lift the devices from the top.
- Take all necessary auxiliary measures to ensure the safe and smooth lifting of the devices.

 WARNING	■ Observe the safety operating rules of the crane at all times. ■ Standing within 5 to 10 meters of the hoisting areas is strictly forbidden! Anybody standing under the boom or station is strictly forbidden in the whole hoisting process. ■ The hoisting work must be stopped in violent weather days. For example, in strong wind, heavy rain, or thick fog conditions.
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6.4.2 Hoisting

In the process of lifting the devices, each operation link should be carried out according to the following requirements:

- The devices should be lifted vertically, and no dragging on the ground or the top of the lower cabinet should occur when lifting, and the devices should not be dragged on any surface.
- The devices should be suspended after being lifted 300 mm from the supporting surface. Check the connection between the lifting tools and the devices. Lift only after confirming that the connection is firm.
- After the devices are in place, they should be put down gently and steadily. It is strictly forbidden to place the devices in a vertical place by shaking the lifting tools.
- The place where the devices are placed should be solid and flat, with good drainage, without obstacles or protrusions.
- The recommended hoisting position is showing as below.



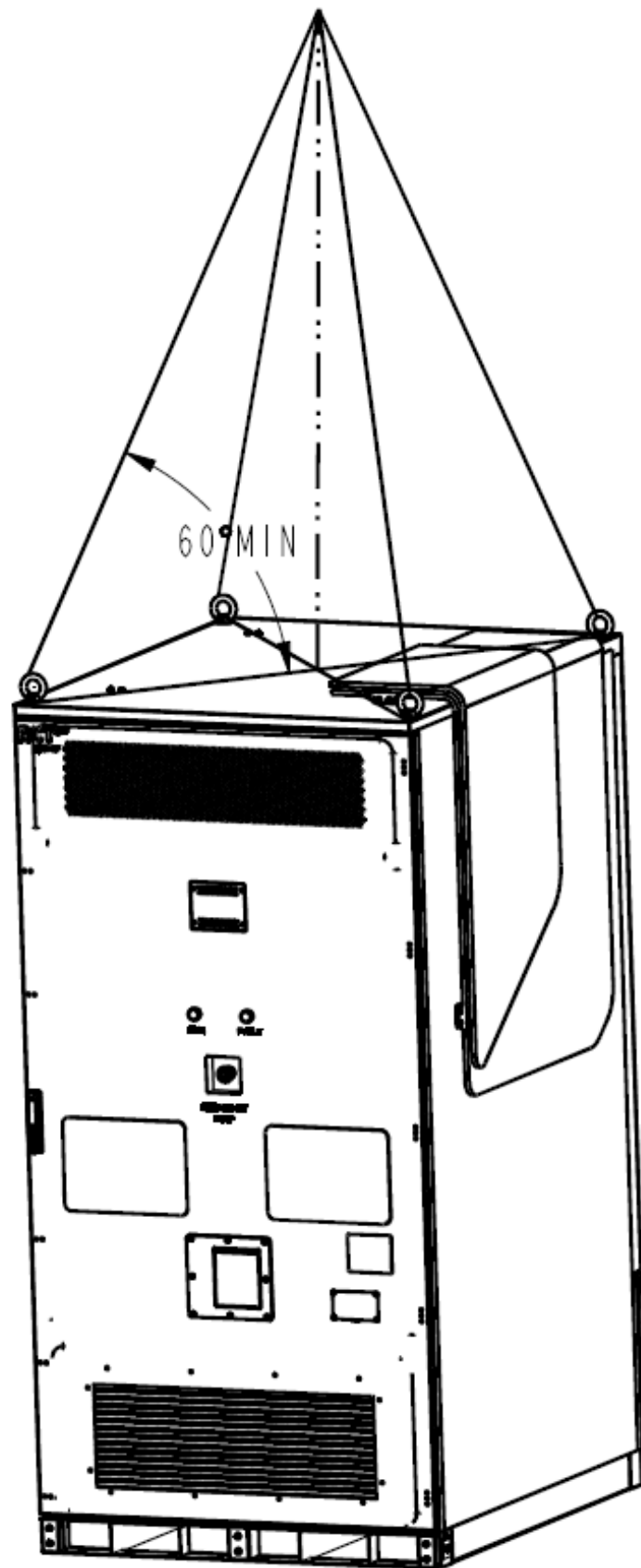


Fig. 6-6 Hoisting

6.5 Fixed Installation

The recommended screws are **M16** and **M18**. See the reference line drawing for the bottom view as below.

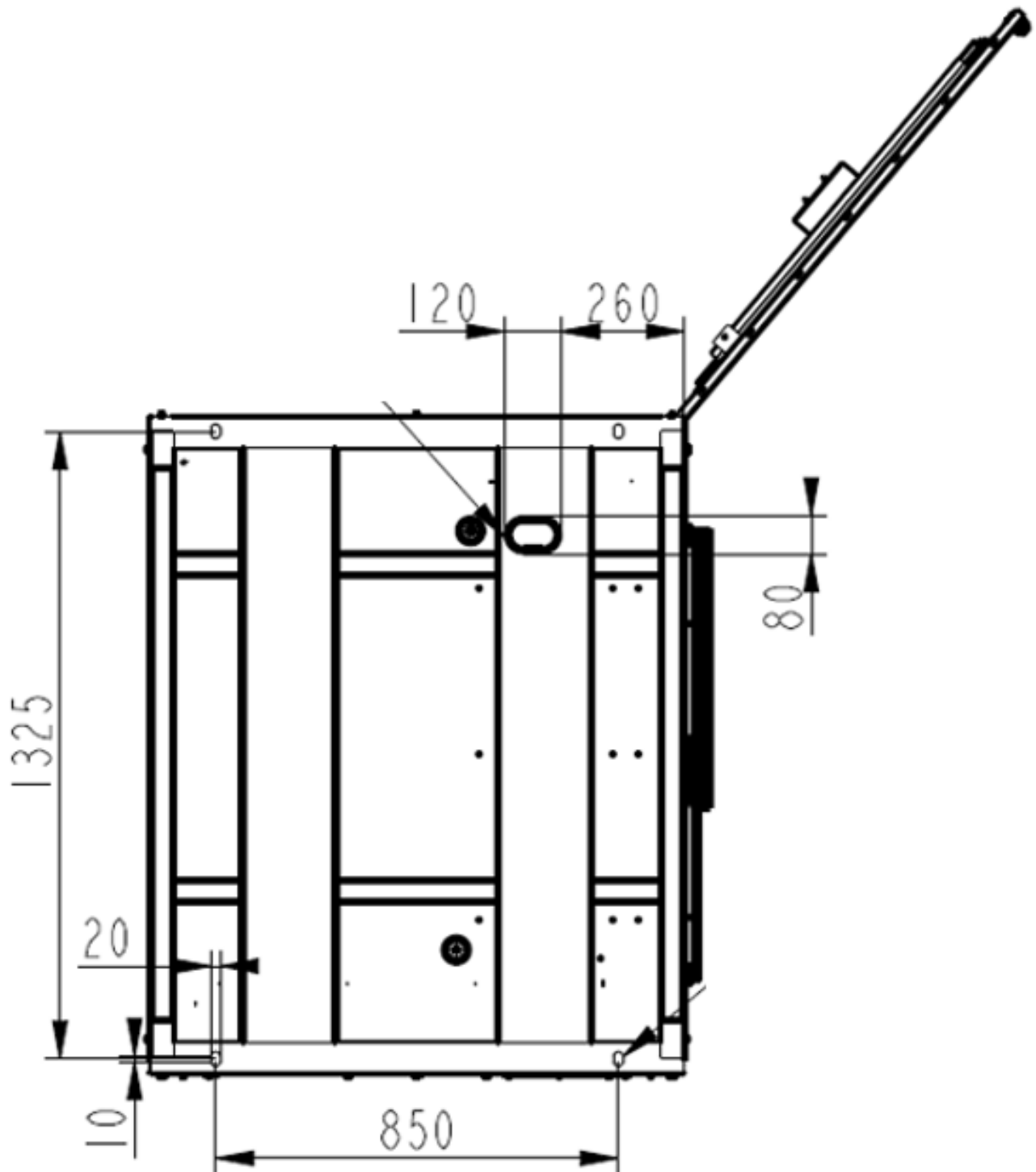


Fig. 6-7 Cabinet Fixation (Bottom View)

7 Electrical Installation

7.1 Precautions

 DANGER	High voltage! Electric shock! ■ It is strictly forbidden to directly touch the live parts in the unprotected state! ■ Before installation, ensure that the all switches are off.
 WARNING	Sand and moisture penetration may damage the electrical equipment in the cabinet, or affect their operating performance! ■ Avoid electrical connections during sandstorms or when the relative humidity in the surrounding environment is greater than 95%. ■ Perform electrical connection when there is no sandstorm and the weather is fair and dry. ■ Before wiring, check and ensure that the polarity of all input cables is correct. ■ During electrical installation, do not forcibly pull any wires or cables, as this may compromise the insulation performance. ■ Ensure that all cables and wires have sufficient space for any bends. ■ Adopt the necessary auxiliary measures to reduce the stress applied to cables and wires. ■ After completing each connection, carefully check and ensure that the connection is correct and secure.

7.2 Electrical Connection Overview

■ CESS 261-125-01D

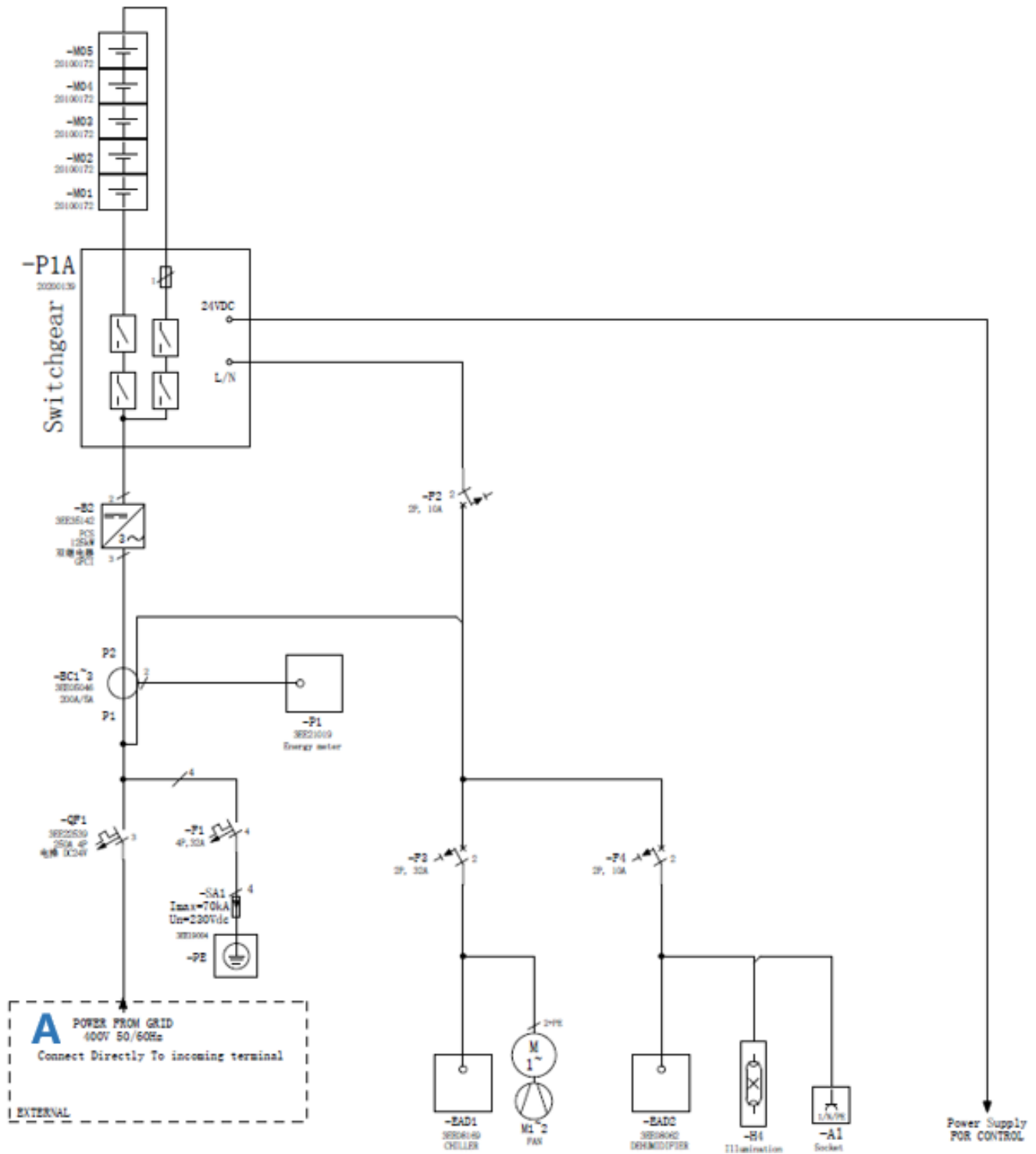


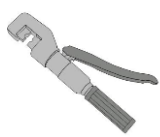
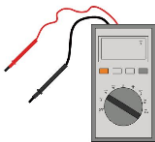
Fig. 7-1 CESS 261-125-01D Electrical SLD Overview

7.2.1 Wiring instructions

Item	Recommended specification
Grid port connection terminals A (Recommended for TN-S System)	A: 1*70mm² B: 1*70mm² C: 1*70mm² N: 1*70mm² PE: 1*35mm²

7.3 Preparation Before Wiring

7.3.1 Preparing Installation Tools

Item	Name And Graphics			
Installation tools	 Torque screwdriver	 Heat gun	 Wire stripper	 Hydraulic pliers
	 Torque wrench	 Screwdriver	 Multimeter	

7.3.2 Open the Door

Open the door before the cable is connected.

- Move upward the cover over the lock hole.
- Insert the door key and turn it clockwise
- Rotate the handle clockwise.

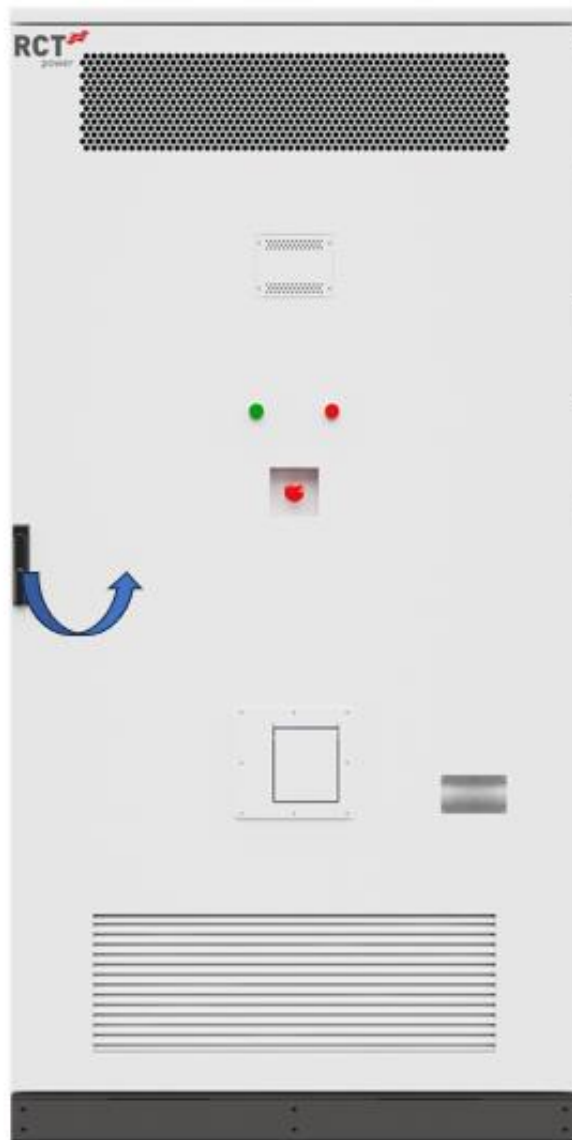


Fig. 7-2 Opening The Door

7.3.3 Preparing Cables

The cables must meet the following requirements:

The current carrying capacity of the cable meets requirements. Factors affecting the current carrying capacity of a conductor include but are not limited to:

- Environmental conditions
- Type of the insulation material of the conductor
- Cabling method
- Material and cross-sectional area of the cable

- Select cables with a proper diameter according to the maximum load, and the cables should be long enough.
- Only flame-retardant cables can be used.
- AC output cables of three phases must be of the same specifications and materials.
- All DC input cables must be of the same specifications and materials.

7.3.4 Crimp Terminal

Crimp OT/DT terminals

Follow the steps shown below to crimp terminal.

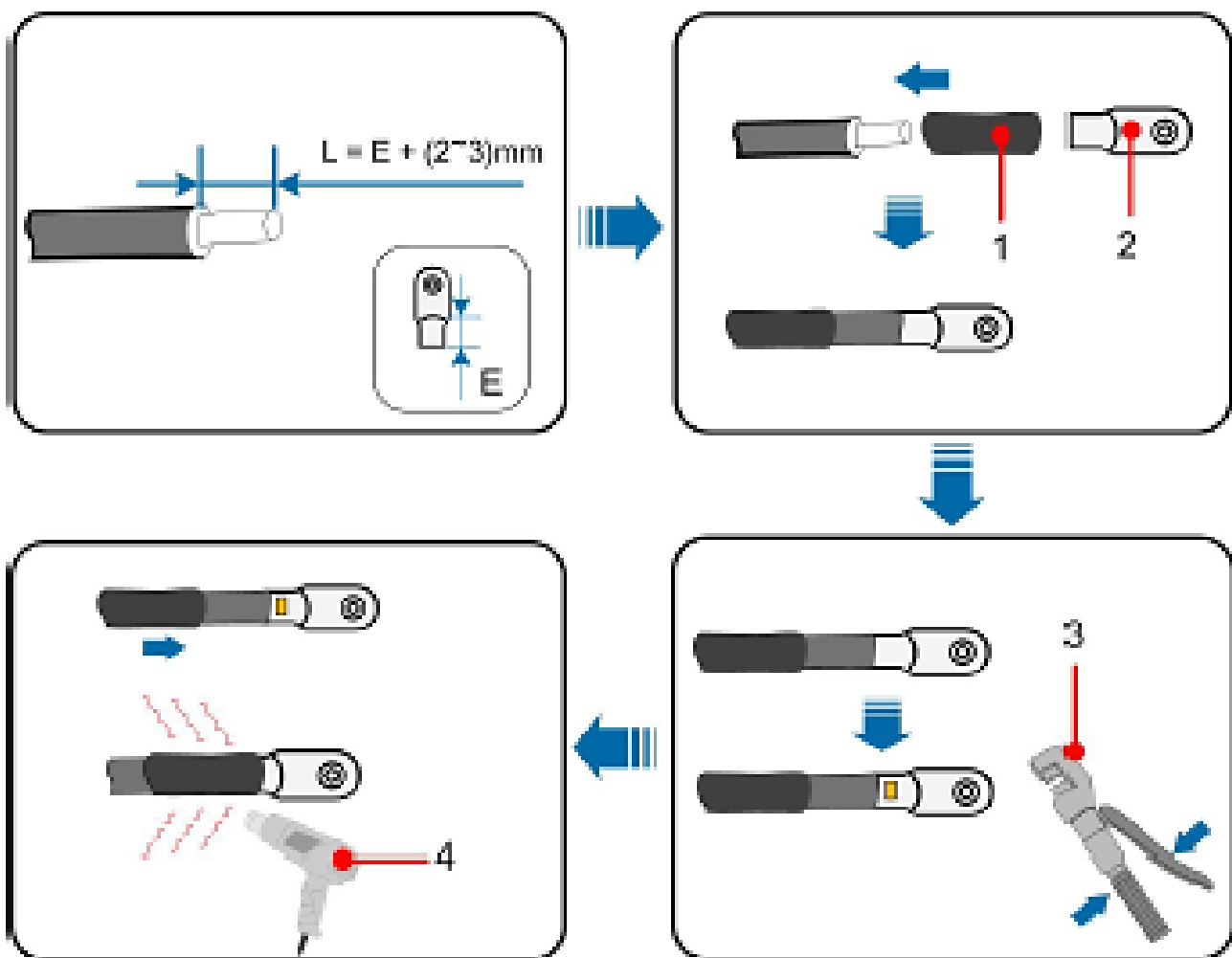


Fig. 7-3 Crimp Terminal

7.4 Electrical Interfaces

The main power cable specification is **70mm²** and is directly connected to a three-phase four-wire circuit breaker. For the circuit breaker selection (reserving the direct control function of the grid-side NS protection device), the optional functions include: undervoltage shunt release, general shunt release, remote electrical operating opening and closing control, and earth fault protection release. The ground wire specification is **35mm²**. The key parameters of the electrical interfaces are as follows:

Items	Key Parameters	General Requirements
Cable Specification	4*70mm ² + 1*35mm ² (3L/N/PE)	Copper conductor ≥ 99.9%, temperature resistance class ≥ 90°C Material: XLPE, PE Yellow- green grounding wire
Interface Form	Copper busbar terminal (bolt M8) Direct cable connection for molded case circuit breaker	Bolt Torque Marking: M8 = 12N • m
Grounding Design	The total grounding resistance of the system shall be ≤ 4Ω	The cabinet is reserved with an M8 screw hole for the grounding point.
Current-carrying Capacity	Continuous current: 200A Overload capacity: 600A/10s	Temperature rise ≤ 60K (at full load)
Electrical Protection	250A circuit breaker (4-pole, with residual current leakage RCD protection module, equipped with electrical operating opening/closing, undervoltage release, and shunt release)	Calculated at a rated current of 180A

***Note:**

- When the ambient temperature is higher than 40°C, the current-carrying capacity shall be derated by 1% for each 1°C increase; when the cable length is longer than 50m, the voltage drop shall be verified (≤2% of the rated voltage).

- When the grid-side protection detects an abnormal grid signal, the energy storage circuit breaker can be tripped under control; German NS protection function; the ripple control interface is reserved to the EMS end.
- Live parts of the circuit breaker shall meet the IPXXB protection requirement, that is the test probe with a diameter of 12mm shall not be accessible to prevent accidental contact.
- The total grounding resistance of the system at the installation site shall be $\leq 4\Omega$. If necessary, grounding resistance reducing agent shall be laid on the grounding electrode to reduce soil resistivity and ensure the long-term stability of grounding resistance. The grounding design of the energy storage cabinet shall ensure reliable connection of all metal parts to form a low-impedance equipotential grounding grid, and ensure reliable connection of working grounding and protective grounding for equipment including the cabinet, battery rack, PCS, etc.

7.5 4G Communication

The product's standard external communication uses an ethernet cable.

*If the 4G option is selected, users are required to prepare a local 4G SIM card and an external antenna on their own. For details, please contact after-sales support.

ANT: This port is used for connecting the antenna.

Nano-SIM: This port is used for inserting the SIM card.

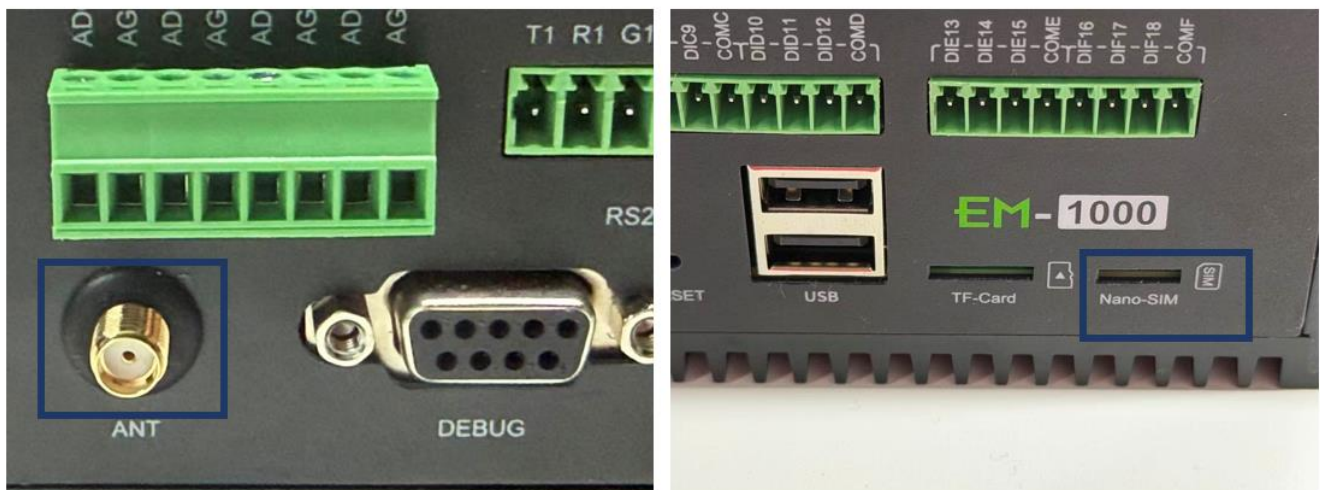


Fig. 7-4 4G Communication

8 Powering Up And Shutting Down



- CESS 261 IEC cabinet can only be put into operation after confirmation by a professional and approved by the local power department.
- CESS 261 IEC cabinet with a long shutdown time, check the equipment thoroughly and carefully to ensure all indexes are acceptable before powering it on.

8.1 Inspection Before Powering up

Before powering up the equipment, check the following items carefully.

- Check whether the wiring is correct.
- Check whether the protective covers inside the equipment are installed firmly.
- Check whether the emergency stop button is released.
- Check and ensure that there is no grounding fault.
- Check whether the AC and DC voltages meet startup conditions and ensure that there is no over-voltage with a multimeter.
- Check and ensure that no tools or components are left inside the equipment.
- Check all air inlets and outlets for blockage.
- Check that all connectors between the battery packs are fully plugged in, and then install the MSD.

If CESS 261 IEC cabinet has been stored for more than six months, the top radiator fan should be checked for proper rotation, noise or stalling before powering up.

8.2 Powering Up Steps

- **STEP 1:** Close the main circuit molded case circuit breaker QF1 (switch QF1 to manual mode, use the built-in opening/closing key, rotate clockwise until it turns red to complete closing). After closing, return the key to its original position and adjust the circuit breaker QF1 to automatic mode (Auto).
- **STEP 2:** Turn the circuit breaker switch handle in the middle of the front of the high-voltage box to the ON position.
- **STEP 3:** Close the X3 fuse terminal and the F1-F4 air switches; the water machine and dehumidifier will be powered on.
- **STEP 4:** Manually close the 24V miniature circuit breaker on the high-voltage box (flip up to turn on), rotate the 24V transfer switch QS1 on the high-voltage box to the ON position; the BMS and industrial computer will be powered on.
- **STEP 5:** Connect the laptop to the industrial computer. After the upper computer shows no faults, perform a one-click start; the high-voltage lamp HV will stay red.

8.3 Shutting Down Steps

- **STEP 1:** Connect the laptop to the industrial computer and operate the one-click shutdown on the upper computer; QF1 will automatically open, and the high-voltage lamp HV red light will go out.
- **STEP 2:** Turn off the air switches F2, F3 and F4.
- **STEP 3:** Rotate the 24V transfer switch QS1 on the high-voltage box to the OFF position, manually turn off the 24V miniature circuit breaker on the high-voltage box (flip down to turn off), and disconnect the fuse terminal X3.
- **STEP 4:** Turn the circuit breaker switch handle in the middle of the front of the high-voltage box to the OFF position.
- **STEP 5:** Pull out at least one MSD.

9 Thermal Management System

The thermal management system is liquid cooling, which main function is to maintain the temperature of the battery system to an allowable operating temperature range. Following is the coolant pipe layout.

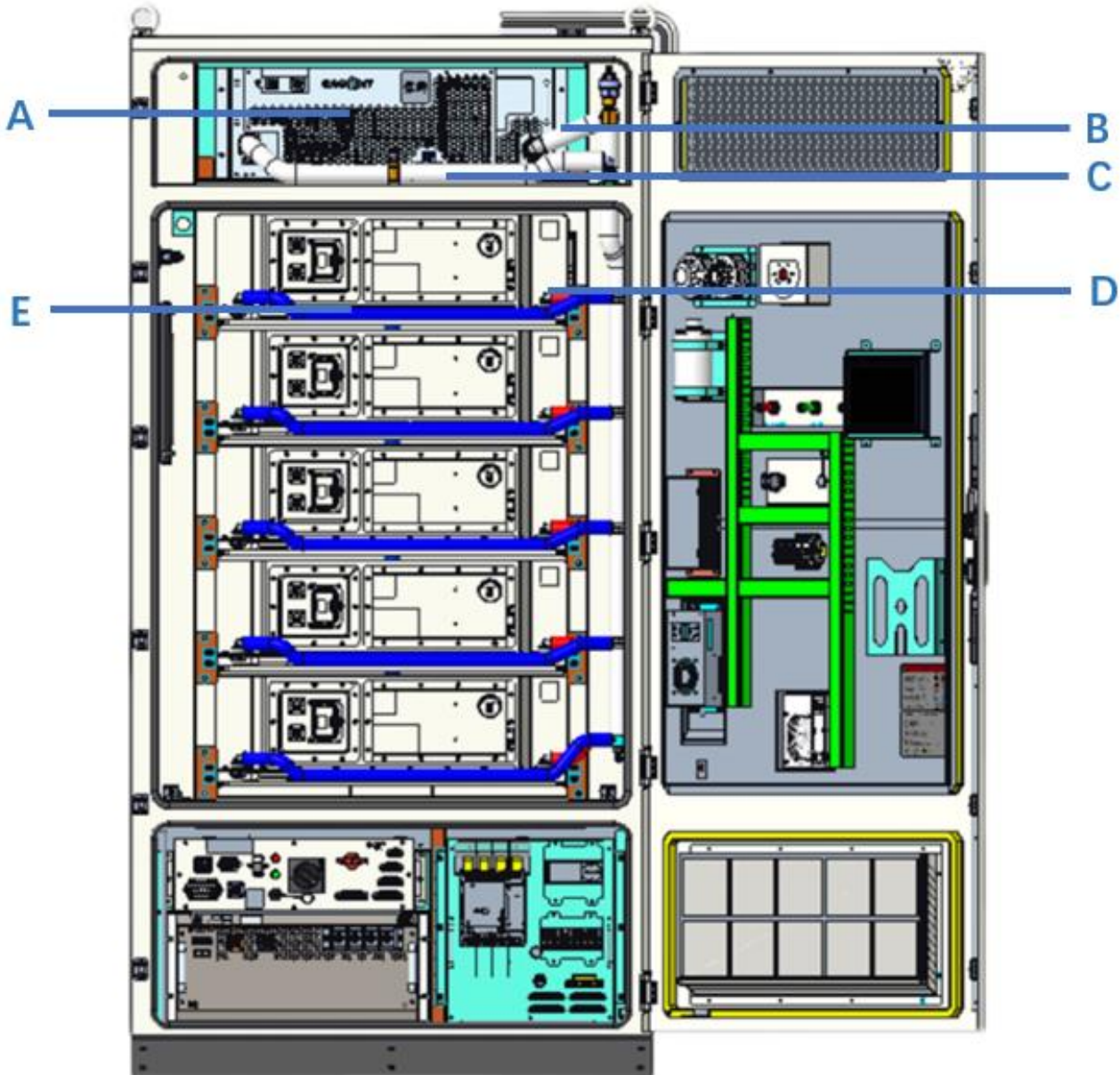


Fig. 9-1 Thermal Management System

Items	Description
A	Chiller (For Battery Packs)
B	Main Coolant Inlet Pipe Line
C	Main Coolant Outlet Pipe Line

D	Sub Coolant Outlet Pipe Line
E	Sub Coolant Inlet Pipe Line

Cooling power is auto-adjustable according to ambient temperature & discharge/charge status. The thermal management system components' working status is depend on the target battery cell temperature controlling by BMS.

10 Fire Fighting System

10.1 General Rules

Please comply with the fire laws and regulations of the country/region where the project is located.

Check and maintain the fire equipment regularly to ensure a normal operation of all functions.

10.2 Fire Suppression Equipments

CESS 261 IEC cabinet has an aerosol fire suppression system that can effectively extinguish the fire. It is equipped with **combustible gas detector**, **smoke detector**, and **temperature detector**. If any abnormality is detected, the system sends a signal to the station-level alarm host through the electrical compartment external terminal for early warning of fire.

 NOTICE	Combustible gas detectors need to be functionally tested and calibrated every year to ensure the detection accuracy.
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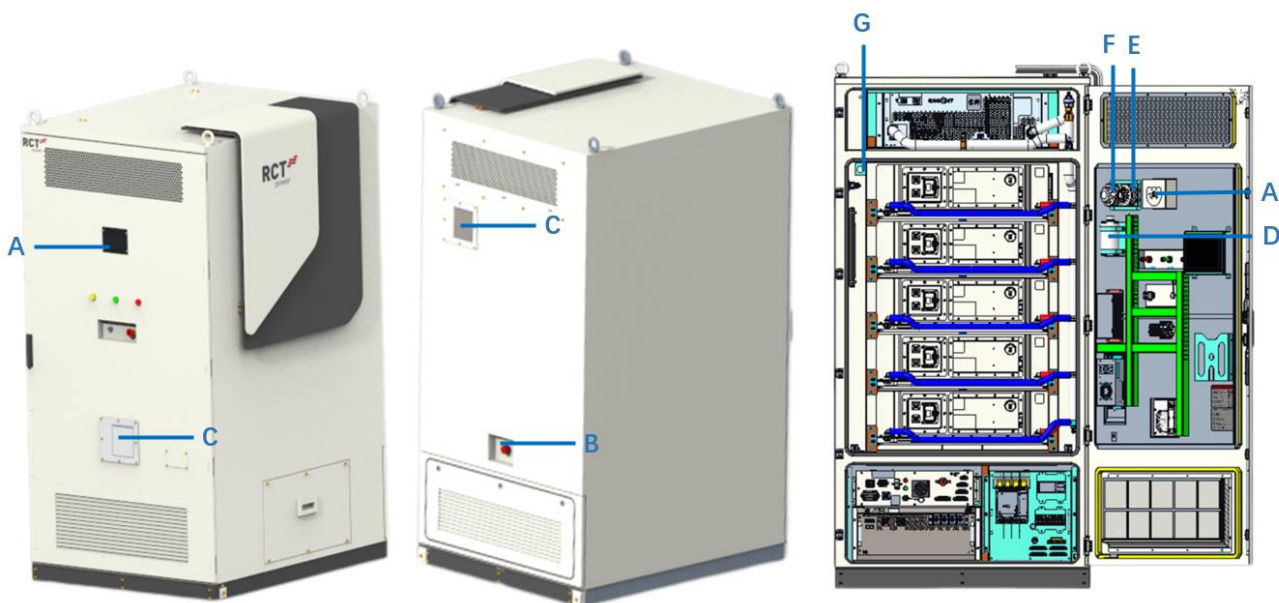


Fig. 10-1 Fire Suppression Equipments

Items	Description
A	Strobe and siren
B	Water Inlet
C	Exhaust

D	Aerosol fire suppression generator
E	Temperature detector
F	Smoke detector
G	Combustible gas detector

10.3 Exhaust System

When the concentration of combustible gas is detected to reach setting value, the combustible gas detector in the cabinet sends a signal to the EMS for fire warning, while the signal is transmitted to the EMS to shut down the system and turn on the exhaust system (start the air intake equipment and exhaust equipment).

- **Exhaust Intake:** Without fan
- **Exhaust Outlet:** With fan

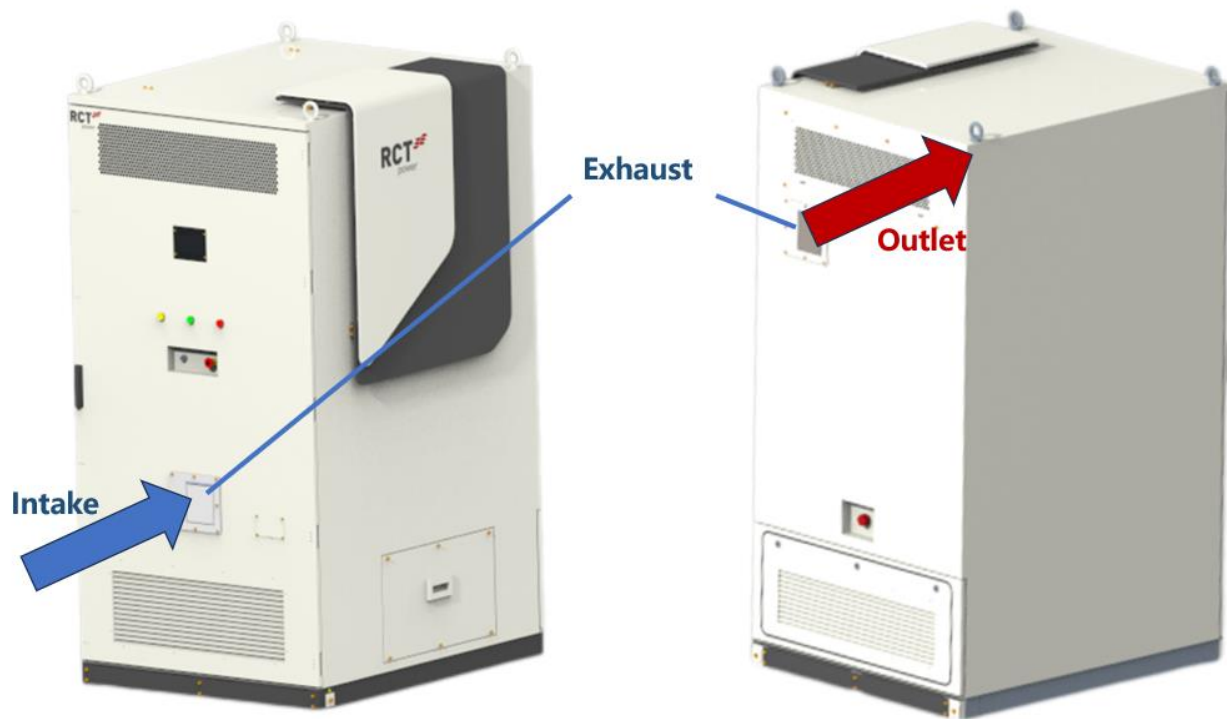


Fig. 10-2 Exhaust

10.4 Aerosol Fire Suppression System

CESS 261 cabinet is equipped with an aerosol fire suppression system. Aerosol generators are automatic units which are thermally activated. The aerosol fire suppression system is automatically activated when the smoke and temperature detector reach the setting threshold.



Fig. 10-3 Aerosol Fire Suppression

11 Exclusion Of Liability

Although the information contained in this manual has been carefully checked for accuracy and completeness, no liability can be assumed for errors or omissions.

RCT Power reserves the right to change the hardware and software features described in this manual at any time without prior notice.

Warranty or liability claims of any kind are excluded due to one or more of the following reasons:

- Incorrect use or installation of the product.
- Installation or operation of the product in an unsuitable environment.
- The relevant safety regulations during installation and commissioning at the operation site are ignored.
- The product relevant safety notices and instructions contained in the product documentation are ignored.
- By installing or operating the product under insufficient safety and security conditions.
- By modifying the product or by unauthorised software installation.
- A defect in the product caused by the operation of the product or adjacent equipment outside the permitted limits.
- Damage caused by force majeure.

This manual, in whole or in part, may not be reproduced, transmitted, copied or translated into other languages in any form or by any means, without the prior written permission of RCT Power.

RCT Power does not accept any liability for damage caused by incorrect or lost data, due to incorrect operation or malfunction of the cabinet, the software, additional devices or personal computers.

12 Recycle



NOTICE

- The Company does not recycle batteries. Contact local recycling agencies to handle batteries.
- If there are no such agencies in your area, you can contact the nearest foreign recycling agencies.

Process:

Step 1: Contact the nearest recycling agency.

- According to the requirements of the recycling agency, electrical and iron components of the energy storage system should be dismantled and classified after a power outage.

Step 2: Recycling agencies assess the costs.

- All costs/revenues arising from recycling shall be borne by the user themselves.

Step 3: Recycling agencies carry out recycling.

- Collect all recycled lithium batteries in one area and have the recycling agency come to the site for centralized processing.
- Electrical components such as refrigerators and inverters do not contain flammable or explosive dangerous goods and can be scrapped and recycled in accordance with relevant laws and regulations of overseas countries.

Step 4: Recycling companies handle recycling.

- The recycled lithium batteries are at the disposal of the recycling companies.

13 Technical Parameters

Technical Data	CESS 261 IEC
Model Name	CESS 261-125-01D
GENERAL	
Nominal Energy	261kWh
Usable Energy (95% DOD)	247.95kWh
Maximum Charge\Discharge Rate	0.5P
Relative Operating Humidity	0% ~ 95% RH, non-condensing
Operating Temperature Range	-30°C ~ 50°C (>45°C derating)
Storage Temperature Range	-35°C ~ 55°C (Recommended 0°C ~ 30°C)
Operating Altitude	≤3000m (>2000m derating)
Dimension (mm)*	W1130 x D1385 x H2328
Corrosion-proof Grade of Cabinet	C4 (C5 optional)
Weight	Approximately 2700kg
IP Rating	IP54
Noise Level	≤70dB
Communication Protocol	Modbus TCP
Off-grid Operation	Yes
BMS	Integrated
EMS	Integrated
SAFETY FEATURES	
Flammable/explosive Gas Detection	Yes
Flammable/explosive Gas Exhaust	Yes
Smoke Detection	Yes

Technical Data	CESS 261 IEC
Model Name	CESS 261-125-01D
Temperature Detection	Yes
Fire Suppression	Aerosol
Siren and Strobe Alarm	Yes
Water Fire Suppression	Yes
Emergency Stop Button	Yes
DC Side	
Battery Pack Quantity	5
Battery Pack Structure	1P52S
Battery Energy per Pack	52.25kWh
Battery Type	LiFePO4
DC-side Rated Voltage	832Vdc
DC-side Voltage Range	689~930.8Vdc
Cooling Method Of Pack	Liquid-cooling
Cycle Lifetime Of Battery Cell	≥8000 cls (70%SOH, 25±2°C)
AC Side	
Rated AC Power	125kW
Rated AC Current	180A
AC Rated Voltage	400Vac (3P+N+PE)
Power Factor Adjustable Range	-1~+1
AC Line Frequency	50/60Hz
Long-term Overload Capacity	110%
STANDARDS	

Technical Data	CESS 261 IEC
Model Name	CESS 261-125-01D
IEC 62619 IEC 63056 (62477-1 & 62619 Cover) IEC 60730-1 Annex H EN 62477-1 EN 62040-1 EN 61000-6-2/-4 (EMC) EN 62933-5-2 VDE-AR-E 2510-50 UN 38.3	

***Note:**

- 1.The foundation dimension of the cabinet is **1130mm×1385mm**. If we consider the decorative trim and the door lock, the maximum dimension is **W1184mm ×H2328mm ×D1421mm**.
- 2.Please contact out sales if you want to know of other relevant certifications.
- 3.The decorative trim (Label) of this product is an optional configuration, the standard product do not have it.

14 Contact

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