RENON
RENON POWER

Technical Agreement

R-MP233125A0-US

MPack 233A

E-mail: support@renon-usa.com

Buyer:

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Supporter:

Renon Power

Technology Inc.

2025 3rd EDITION

Renon Power

We Care About Sustainability

With our own R&D team and automatic production factory, we are dedicated to delivering innovative, reliable, and affordable energy storage solutions to global customers.

At Renon, we believe that sustainable energy is the future. We are passionate about reducing carbon emissions and preserving our planet for future generations. That's why we invest heavily in research and development, leveraging the latest technologies to design and manufacture energy storage systems that are efficient, scalable, and adaptable.

Our products are designed to meet the needs of a wide range of applications, from residential and commercial buildings to industrial facilities and utility-scale projects. Whether you're looking to reduce your energy bills, increase your energy independence, or support your sustainability goals, Renon has the right solution for you.

Our commitment to quality and customer satisfaction is unwavering. We work closely with our clients to understand their unique needs and provide customized solutions that meet or exceed their expectations. We also provide comprehensive technical support, maintenance, and warranty services to ensure that our customers get the most out of their investment.

Join us on our mission to make renewable energy within reach.

PROVIDE INNOVATIVE, RELIABLE, AND AFFORDABLE ENERGY STORAGE SOLUTIONS TO CUSTOMERS WORLDWIDE.

Renewable · Reliable · Remarkable

CONTENTS

1. General Part

This Technical Agreement applies to the RENON MPack 233A (Product Model: R-MP233125A0-US) Energy Storage System (ESS). This document defines the technical specifications, scope of supply, and division of responsibilities related to the MPack 233A ESS, ensuring clarity and alignment between the buyer and supplier.

The agreement specifically outlines:

- Product specifications, including technical parameters, system functionality, and performance.
- Scope of supply detailing provided equipment, components, and accessories.
- Clear delineation of responsibilities between the supplier and the buyer.

This document shall be mutually reviewed, confirmed, and agreed upon by both parties prior to finalizing the order. Issues not explicitly addressed herein will be resolved through mutual consultation and supplementary documentation.

1.1 Scope of Supply by the Supplier

The Supplier shall provide the following equipment and components as part of the MPack 233A ESS:

Equipment	Description	Quantity	Remarks
Cabinet	Integrated system cabinet including Battery System, Master Control Unit, Monitoring & Communication System, Liquid Cooling System, and Fire Protection System	1 set	Includes all core components for energy storage and safety
Cables	Power and communication cables within the cabinet	1 set	Excludes cables between the system and external devices

Notes: Any additional equipment required for integration with external systems shall be provided by the buyer unless otherwise specified.

1.2 Work of the Project Site Performed by the Buyer

The buyer is responsible for the following tasks at the project site:

1.2.1 Installation & Electrical Connections

- Installing the MPack 233A ESS system in the designated location.
- Connecting PCS AC cables, power supply cables, communication cables, and grounding cables as required.
- Ensuring proper battery module connections inside the system.

1.2.2 Mechanical Installation

- Lifting, positioning, and securing the MPack 233A ESS at the site.
- Ensuring proper ventilation and cooling in the installation area.

1.2.3 Commissioning & Integration

- Providing necessary external power and communication infrastructure for the ESS.
- Cooperating with the supplier during system debugging and final testing.

1.3 Buyer's Responsibility for Site Preparation

- The foundation must be levelled and prepared in accordance with engineering specifications to support the weight of the system.
- Adequate drainage must be implemented to prevent water accumulation around the system.
- Proper earthing and grounding must be established to meet safety requirements.
- If the installation site exceeds the specified environmental conditions, the buyer must implement additional protective measures, such as shading, enclosures, or environmental controls.

1.4 Other Site-Specific Requirements

- Compliance with local regulations, safety codes, and grid connection standards.
- Any additional work not specified in the supplier's scope shall be performed by the buyer.

Notes:

- The supplier will provide technical support and software debugging during commissioning, but the buyer must ensure that all necessary site conditions are met before testing.
- Any additional installation requirements shall be agreed upon separately.

2. Terms and Definitions

2.1 Battery System

A collection of battery system that store electrical energy, composed of:

- **Battery Cells:** The smallest unit of energy storage in the system.
- **Battery Modules:** A combination of battery cells electrically connected in a protective casing.
- **Battery Rack:** A structure containing multiple battery modules to form a complete energy storage system.

2.2 Master Control Unit (MCU)

An integrated control system responsible for managing and optimizing the operation of the ESS. The **MCU includes** the following component:

- **Battery Management System (BMS):** Monitors and controls the battery's state of charge (SOC), state of health (SOH), temperature, and voltage to ensure safe operation and optimal performance.
- **Power Distribution Unit (PDU):** Manages and distributes power between the battery system, PCS, and external connections, ensuring stable operation.

2.3 Power Conversion System (PCS)

A bi-directional inverter that converts **DC power (from the battery) to AC power** for external use and vice versa.

2.4 Monitoring & Communication System

A system that enables **remote and local monitoring of the ESS,** facilitating real-time operation management and performance tracking. It consists of:

- Communication Interface: **Supports** Modbus (TCP/IP) or other industry-standard protocols **to integrate with external controllers and grid management systems.**
- Local Touchscreen Display: A device-mounted HMI (Human-Machine Interface) **for direct system control and monitoring.**
- Cloud-Based Software Platform: **Provides** remote monitoring, historical data analysis, and system diagnostics **via an internet connection.**

2.5 Fire Protection System

A **built-in safety system** designed to **detect, alarm, and suppress fires** within the ESS. It includes:

- Fire and smoke detection sensors to identify potential hazards.
- Automatic suppression mechanisms **to mitigate fire risks.**
- Compliance with relevant safety regulations and industry standards.

2.6 Liquid Cooling System

A built-in cooling system aim to guarantees precise temperature management to maximize battery lifespan and efficiency.

2.7 Energy Storage System (ESS)

The complete MPack 233A **integrated system**, consisting of:

- Battery System
- PCS
- MCU
- Monitoring & Communication System
- Fire Protection System
- Liquid Cooling System

2.8 SOC (State of Charge) & SOH (State of Health)

- SOC (State of Charge): The remaining available energy in the battery, expressed as a percentage of its full capacity.
- SOH (State of Health): A measure of the battery's overall condition, indicating how much capacity it retains compared to its original state.

2.9 Nominal Energy & Usable Energy

- **Nominal Energy:** The total rated energy capacity of the battery system.
- **Usable Energy:** The actual energy available for discharge, considering system limitations such as **depth of discharge (DOD)** and safety margins.

2.10 On-Grid & Off-Grid Mode

- **On-Grid Mode:** The ESS operates while connected to the power grid, supporting grid stability and energy management.
- **Off-Grid Mode:** The ESS functions independently of the grid, supplying power to isolated loads when the grid is unavailable.

3. Technical Requirements

3.1 Scope of System Design

The MPack 233A is a **modular energy storage system (ESS)** designed for **both on-grid and off-grid applications.** It integrates a **high-efficiency lithium iron phosphate ($LiFePO_4$) battery system, power conversion system (PCS), monitoring & communication system, liquid cooling system, and fire protection system** into a compact and scalable solution. The system s**upports parallel operation of up to 6 systems**, allowing for increased capacity and flexibility in deployment.

3.1.1 Product Parameters

Parameter	R-MP233125A0-US
Modules Combination	1P52S
System Combination	5 in Series
System Nominal Energy (kWh)	233
Battery Capacity (Ah)	280
Nominal Battery Voltage (V)	832
Voltage Range (V)	702- 936
Communication Interface	CAN,RS485, LAN, LTE,Wi-Fi（Optional）
AC Nominal Voltage (Vac)	480(3P/3W)
Adjustable Power Factor	>0.99
Compliance Standard	ANSI/CAN/UL 1973:2022； UL 9540A:2019； ANSI/CAN/UL 9540:2020;UN38.3

3.2 Charge and Discharge Limitations

The charge and discharge performance of the **MPack 233A ESS** is determined by the **EMS**. The system dynamically adjusts charge and discharge power based on **state of charge (SOC), temperature, and BMS protection settings** to ensure safe operation and long-term battery health. The EMS coordinates various factors through hierarchical decision-making, with the logical priority hierarchy as follows: Safety Protection > Battery Hard Constraints > External Power Demand.

Hierarchy	Factor	Logical Description
1	Safety Protection	When a fault signal from the BMS, PCS, or grid is triggered, the EMS immediately terminates charging/discharging (highest priority).
2	Battery Hard Constraints	SOC/SOH/temperature limits provided by the BMS directly restrict the power command range of the EMS.
3	External Power Dispatch	Real-time demands such as power dispatch from third-party EMS are prioritized within safe battery limits.

3.2.1 Charge and Discharge Power Limits

Parameter	R-MP233125A0-US
Max.Power of battery (kW)	125
Max. Charge/Discharge Power (kW)	125
Maximum AC Charge/ Discharge Current (A)	162
Maximum DC Charge/ Discharge Current (A)	163

3.2.2 Temperature and SOC-Based Charge/Discharge Limitations

Discharge Power Limitations (Continuous Current in Amperes, A)

The following table shows the **maximum allowable discharge current** under different SOC and cell temperature conditions:

%/℃	0<SOC<5	5≤SOC<10	10≤SOC<20	20≤SOC<30	30≤SOC<40	40≤SOC<50	50≤SOC<60	60≤SOC<70	70≤SOC<80	80≤SOC<90	90≤SOC<100	SOC=100
T<-20	0	0	0	0	0	0	0	0	0	0	0	0
-20≤T<-15	0	28	28	56	84	84	84	84	84	84	84	84
-15≤T<-10	28	28	28	56	84	84	84	84	84	84	84	84
-10≤T<-5	28	56	56	84	84	84	84	84	84	84	84	84
-5≤T<0	28	56	84	84	84	84	84	84	84	84	84	84
0≤T<5	28	56	84	84	84	84	84	84	84	84	84	84
5≤T<10	28	84	163	163	163	163	163	163	163	163	163	163
10≤T<15	28	84	163	163	163	163	163	163	163	163	163	163
15≤T<20	28	84	163	163	163	163	163	163	163	163	163	163
20≤T<25	28	84	163	163	163	163	163	163	163	163	163	163
25≤T<30	28	84	163	163	163	163	163	163	163	163	163	163
30≤T<35	28	84	163	163	163	163	163	163	163	163	163	163
35≤T<40	28	84	163	163	163	163	163	163	163	163	163	163
40≤T<45	28	84	140	140	140	140	140	140	140	140	140	140
45≤T<50	28	56	56	56	56	56	56	56	56	56	56	56
50≤T<55	28	28	28	28	28	28	28	28	28	28	28	28
T≥55	0	0	0	0	0	0	0	0	0	0	0	0

Key Observations:

- Discharging is disabled below -4°F(-20°C) to protect battery cells.
- Between 41°F(5°C) and 104°F(40°C), full discharge power (163A) is available.
- Above 104°F(40°C), discharge power is gradually reduced, and at 131°F(55°C), discharge is completely disabled.

Charge Power Limitations (Continuous Current in Amperes, A)

The following table shows the **maximum allowable charge current** under different SOC and cell temperature conditions:

%/℃	0≤SOC<5	5≤SOC<10	10≤SOC<20	20≤SOC<30	30≤SOC<40	40≤SOC<50	50≤SOC<60	60≤SOC<70	70≤SOC<80	80≤SOC<90	90≤SOC<95	95≤SOC<99	99≤SOC<100	SOC=100
-1≤T<0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0≤T<5	28	28	28	28	28	28	28	28	28	28	28	0	0	0
5≤T<10	56	56	56	56	56	56	56	56	56	56	28	0	0	0
10≤T<15	56	56	56	56	56	56	56	56	56	56	56	28	0	0
15≤T<20	140	140	140	140	140	140	140	140	140	140	140	56	28	0
20≤T<25	163	163	163	163	163	163	163	163	163	163	163	56	28	0
25≤T<30	163	163	163	163	163	163	163	163	163	163	163	56	28	0
30≤T<35	163	163	163	163	163	163	163	163	163	163	163	56	28	0
35≤T<40	163	163	163	163	163	163	163	163	163	163	163	56	28	0
40≤T<45	140	140	140	140	140	140	140	140	140	140	140	56	28	0
45≤T<50	56	56	56	56	56	56	56	56	56	56	56	56	28	0
50≤T<55	28	28	28	28	28	28	28	28	28	28	28	28	0	0
T≥55	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Key Observations:

- Charging is disabled below 30.2°F(-1°C) to prevent lithium plating and battery degradation.
- Full charge power (163A) is available between 68°F(20°C) and 104°F(40°C).
- Above 104°F(40°C), the system gradually reduces charge power, and at 131°F(55°C), charging is completely disabled.

3.3 Operation Condition and Energy Retention

The **MPack 233A ESS** is designed to operate within specific environmental conditions to ensure optimal performance, longevity, and safety. This section outlines the operational requirements, energy retention capabilities, and transportation conditions based on industry standards.

3.3.1 Operation & Storage Environment Conditions

To ensure optimal battery performance, longevity, and safety, the ESS must be operated and stored under the following conditions:

Parameter	Requirement
Operating Temperature Range	-4°F~131°F，derating above 104°F； -20°C~55°C，derating above 40°C；
Storage Temperature Range	● Short-term storage (≤ 3 months): -22°F to 140°F (-30°C~60°C) ● Long-term storage (3<months≤12): -4°F to 86°F (-20°C~30°C)
Relative Humidity	0 to 95% RH (non-condensing)
Altitude Limit	≤13122ft (derating above 6561ft) ≤4000m (derating above 2000m)
Protection Level(Outdoor Rated)	IP54-rated

- Temperature Impact: If the ambient temperature exceeds 104°F(40°C), the system will automatically reduce power output to prevent overheating.
- Altitude Impact: If installed above 6561ft(2000m），the system efficiency may be reduced due to lower air density affecting cooling performance.
- Humidity and Corrosion Protection: The system enclosure is IP54-rated, protecting against dust and water ingress. However, for high-humidity or salt-laden environments (e.g., coastal areas), additional protective measures such as anti-corrosion coatings may be required.

3.3.2 Energy Retention Performance

The **MPack 233A ESS** is designed to **retain stored energy efficiently over time**, ensuring reliable performance when needed. The energy retention capabilities are defined based on industry-standard **self-discharge rates and idle consumption**.

Parameter	Retention Performance
Self-Discharge Rate (Monthly, at 77°F/25°C)	≤ 3%
Energy Retention After 24 Hours (Idle Mode)	≥ 99%

Note:

- Energy loss primarily results from BMS and PCS standby consumption.
- Higher temperatures can accelerate self-discharge rates, which should be considered for long-term storage applications.

3.3.3 Transportation and Handling Requirements

To ensure the safety and integrity of the MPack 233A ESS during transportation, the system must comply with international shipping and handling standards.

The MPack 233A ESS is not approved for mobile/vehicle-mounted energy storage applications.

Aspect	Requirement
Transportation Mode	Suitable for land and sea transportation
Compliance Standard	UN38.3
Handling Precautions	Must be transported upright; avoid excessive tilting
Packing Standard	Secured with anti-vibration mounts and shock-absorbing materials
Storage During Transit	-4°F to 113°F(-20°C to 45°C) ,avoid prolonged exposure to extreme heat or moisture
Base Requirements	The base surface must be leveled with a spirit level, ensuring flatness within 0.12in/3mm deviation.

3.4 The ESS Structure

This section outlines the internal structure, system topology, subsystem integration, and application topology of the MPack 233A ESS, clearly distinguishing between the responsibilities of the Supplier and the Buyer, facilitating efficient site installation and commissioning.

3.4.1 Internal Structure and Layout

The internal layout and component positions within the ESS cabinet are shown clearly in the provided layout diagram below. Major system components and their exact locations have been marked directly on the diagram for easy reference during installation, commissioning, and maintenance.

Door panel color: Signal White (RAL 9003)

Enclosure color: Light Grey (RAL 7035)

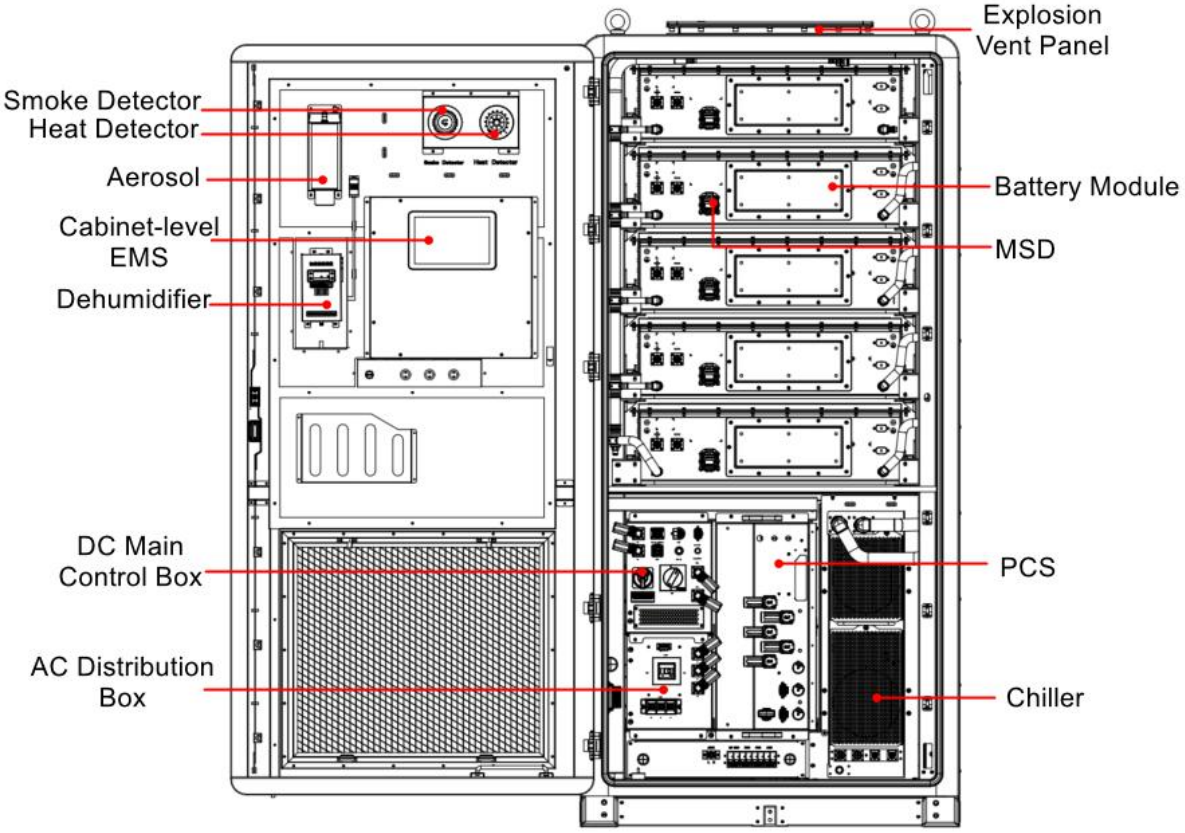


Figure 1 –MPack 233A Overall Layout

3.4.2 System Topology

The system topology provided below clearly distinguishes between Supplier and Buyer responsibilities. The Supplier's responsibilities include all equipment integrated within the ESS cabinet, while the Buyer is responsible for external connections and auxiliary equipment as clearly indicated.

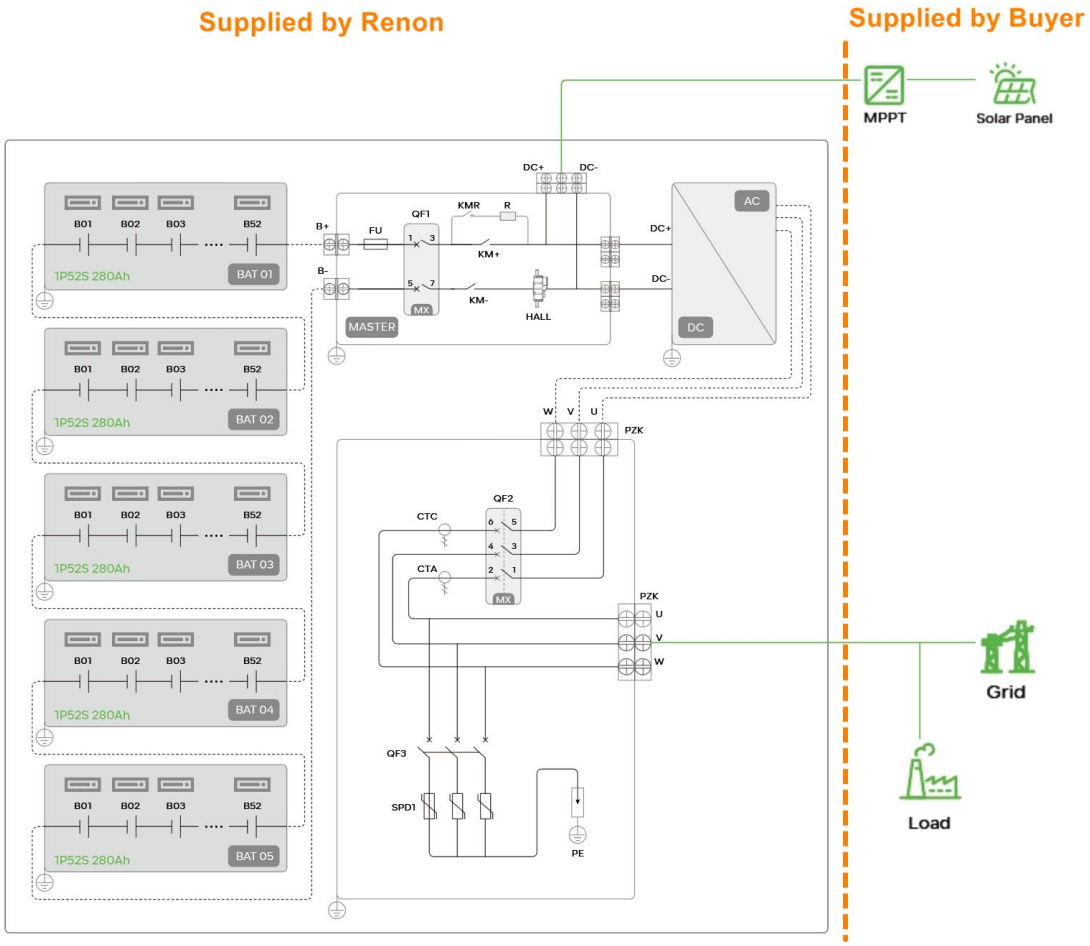
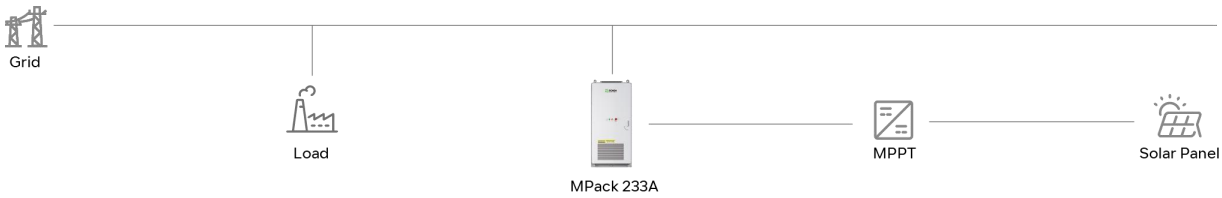


Figure 2 – MPack 233A Topology

3.4.3 Application Topology

MPack 233A ESS supports flexible configurations including on-grid, off-grid, and renewable integration scenarios. The application topology provided clearly demonstrates typical deployment scenarios, including necessary external connections and responsibilities.



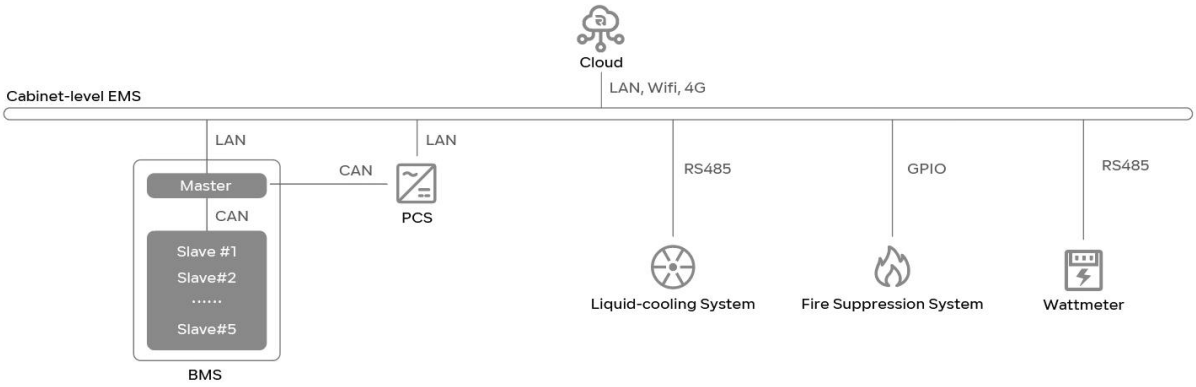
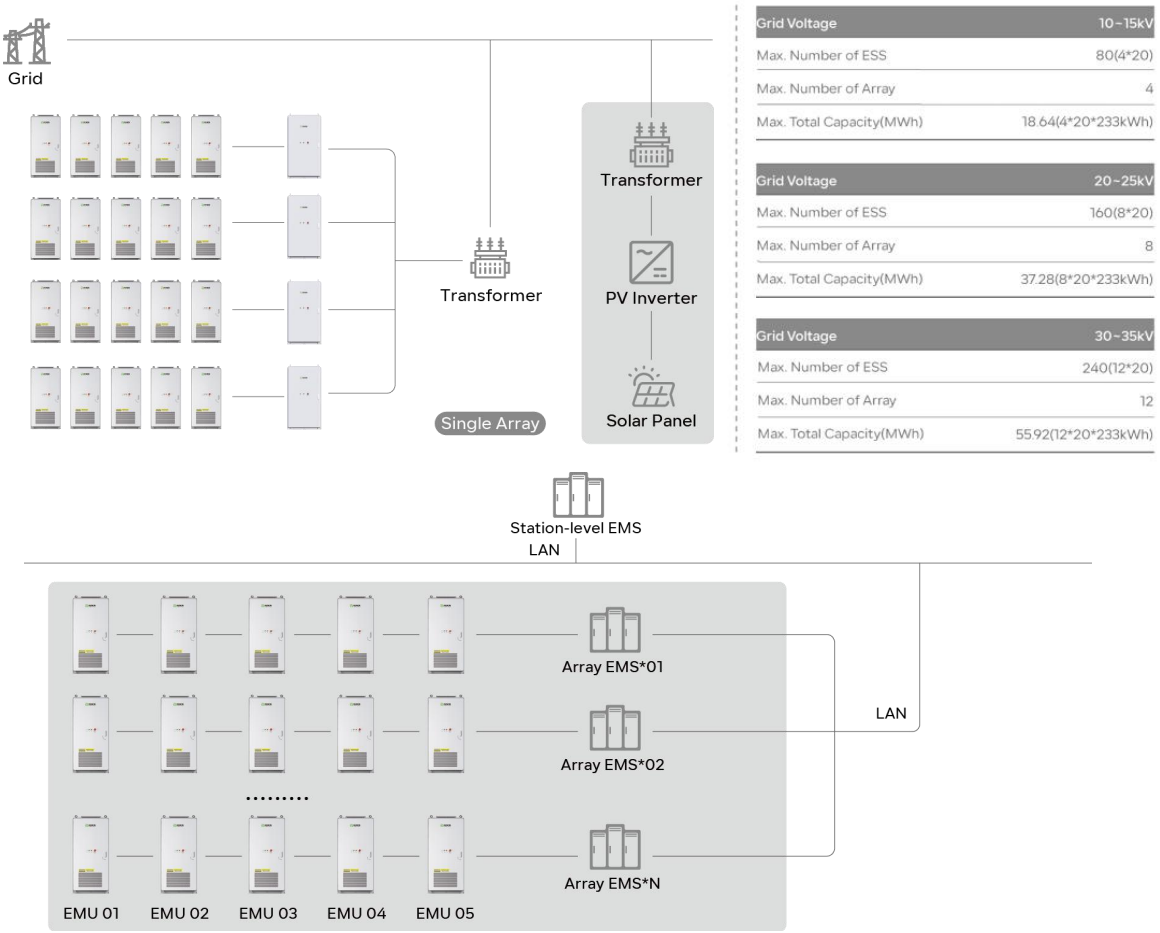


Figure 3 – Single System Layout & EMS Structure



Grid Voltage	10~15kV
Max. Number of ESS	80(4*20)
Max. Number of Array	4
Max. Total Capacity(MWh)	18.64(4*20*233kWh)

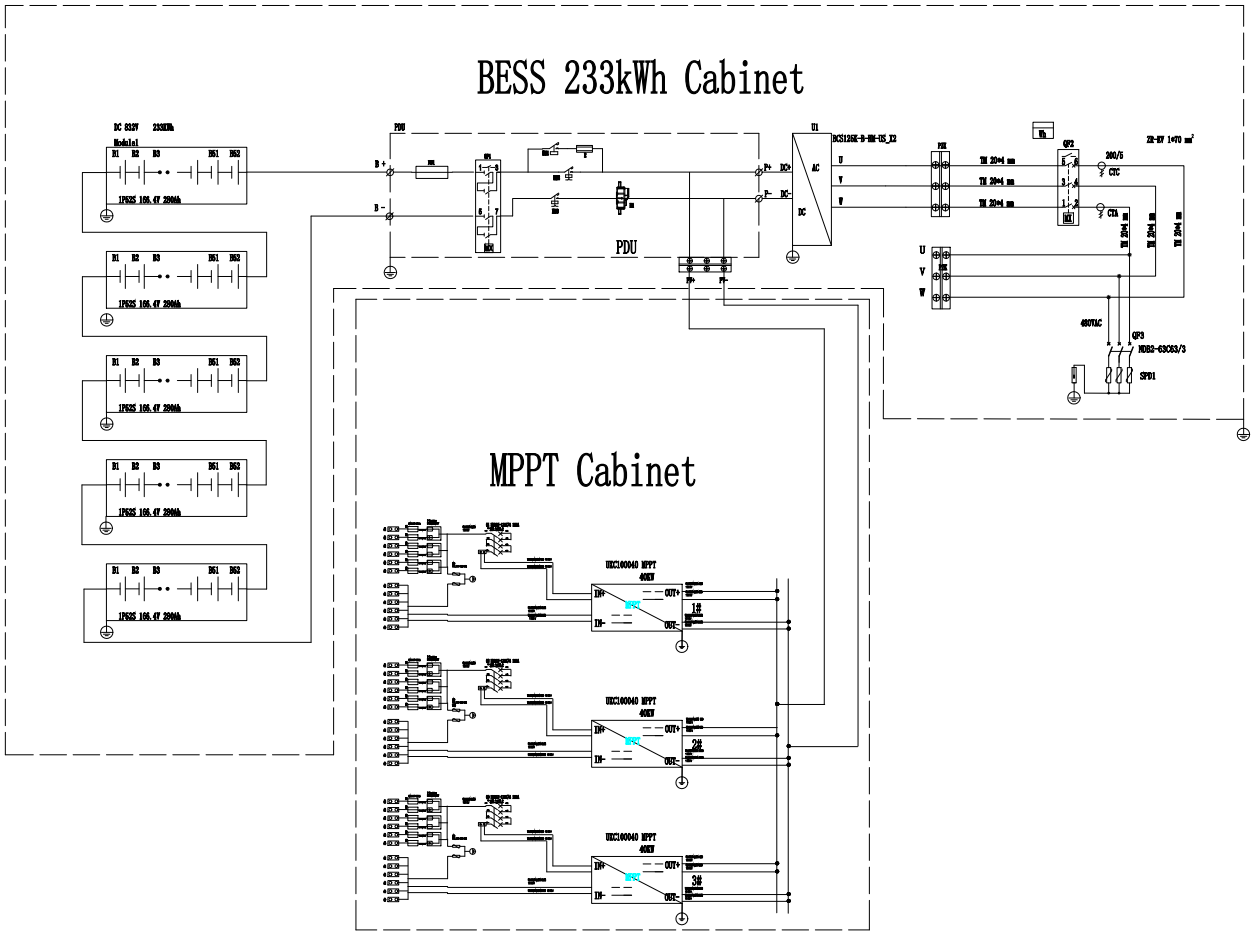
Grid Voltage	20~25kV
Max. Number of ESS	160(8*20)
Max. Number of Array	8
Max. Total Capacity(MWh)	37.28(8*20*233kWh)

Grid Voltage	30~35kV
Max. Number of ESS	240(12*20)
Max. Number of Array	12
Max. Total Capacity(MWh)	55.92(12*20*233kWh)

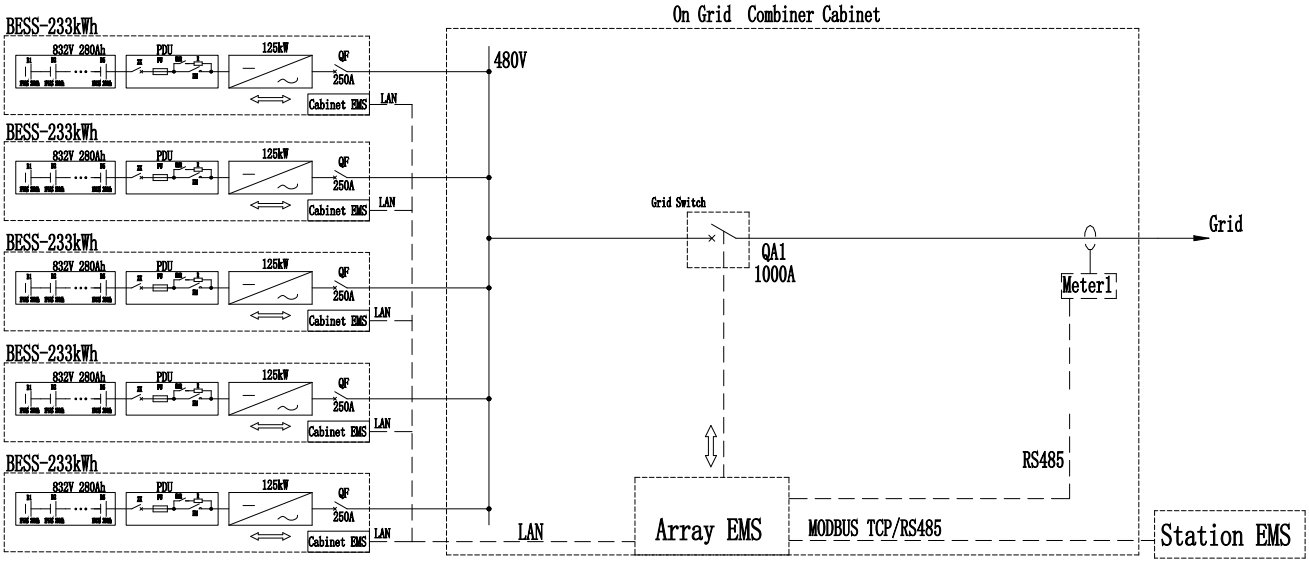
Figure 4– Max.Parallel Connection System Layout & EMS Structure

3.5 Electrical Wiring Diagram

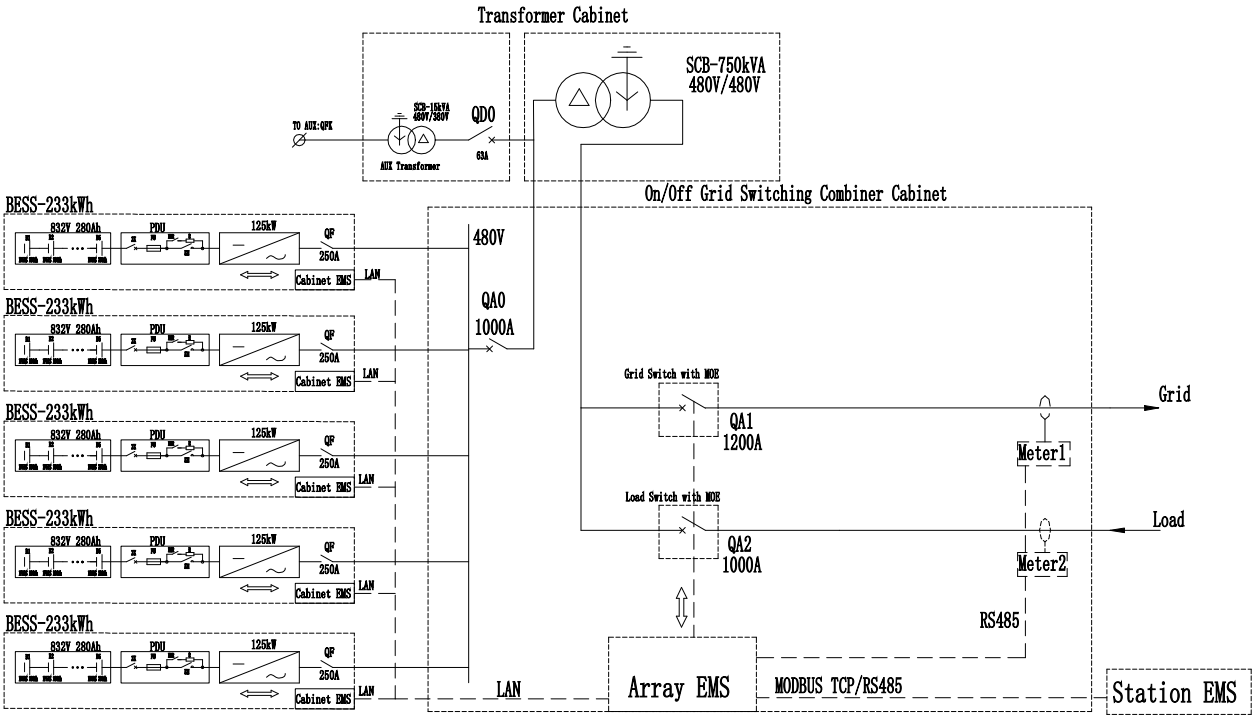
(1)Single battery cabinet&MPPT



(2) 233kWh*5 & On-grid Combiner Cabinet



(3) 233kWh*5 & On/off-grid Switching Combiner Cabinet



3.6 ESS External Interfaces

This section specifies all external interface requirements and standards for the MPack 233A ESS. Clear definitions are provided for power, auxiliary power, communication, and grounding interfaces to ensure smooth and standardized integration and construction at the site.

3.6.1 Power Interface

Each MPack 233A ESS unit provides **one set** of AC power interface for connection to the buyer's power system:

External Interface	Quantity	Description	Remark
AC Power Interface	1 set	Three-phase three-wire (L1, L2, L3), AC 480V/60Hz. Nominal current: 150A. Recommended cable type is flame-retardant copper cable, minimum cable cross-section ≥2AWG per phase (exact sizing per local standards and cable routing).	PCS output is three-phase three-wire; Neutral grounding should comply with local electrical codes.

3.6.2 DC Interface

External Interface	Quantity	Description	Remark
DC Interface	1 set	DC terminals: (DC+, DC-), 932V. Nominal current: 280A. Recommended cable: Flame-retardant copper, minimum cross-section ≥4/0 AWG per phase, rated voltage ≥1000Vdc (exact sizing per local standards and cable routing).	

3.6.3 Auxiliary Power Supply Interface

Each MPack 233A ESS provides an auxiliary power supply interface, which is used to access the auxiliary power supply from buyer.

External Interface	Quantity	Description
Auxiliary Power Supply Interface	1 set	Split-phase (L-L), AC 190-250V，50/60Hz, recommended cable: 12AWG with RV3.5-5 terminals

Note:

- This split-phase configuration consists of two live wires (L1-L2) , typical for North American residential/commercial installations.
- Buyer must ensure provision of suitable isolation transformer and adequate auxiliary power supply (minimum ≥5kVA recommended).

3.6.4 Communication Interface

Each MPack 233A ESS unit provides communication interfaces for data transmission, monitoring, and external system integration:

External Interface	Quantity	Description	Remark
Ethernet (LAN)	1 ports	RJ45 Ethernet ports supporting Modbus TCP/IP: - LAN#1: For external network connection (internet access provided by Buyer, bandwidth ≥4Mbps recommended).	Buyer provides network switch & internet access. Supplier provides internal Ethernet wiring.
RS485	3 branch circuits	RS485 ports reserved for external device integration and monitoring.	Optional, for additional external device integration. Buyer responsible for external connection.

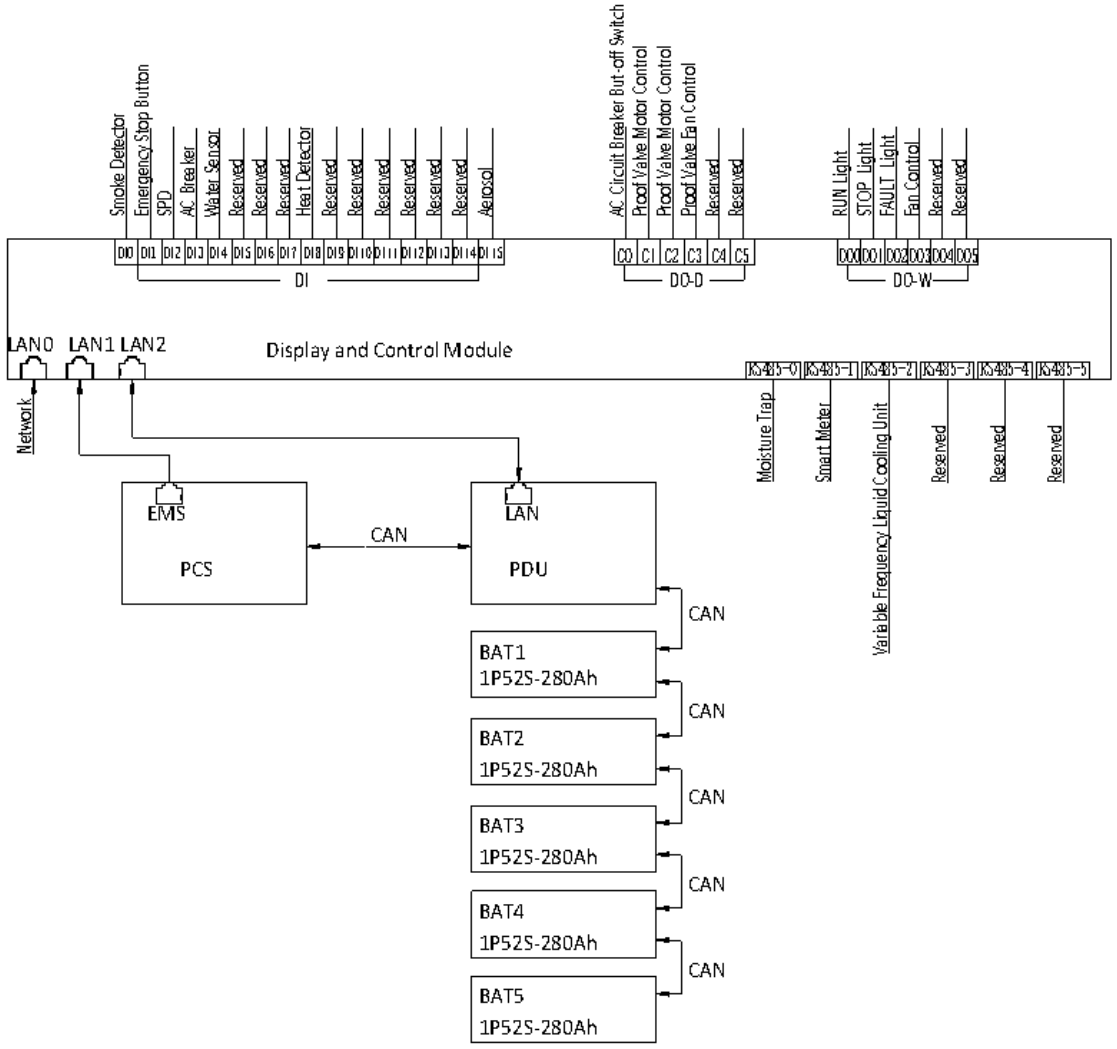


Figure 5 -Detailed Communication

Notes:

- Buyer shall ensure the availability of stable network connectivity.
- Supplier provides all internal communication cables and terminations within the ESS cabinet.
- External communication cables from ESS to Buyer's monitoring systems shall be provided by the Buyer.

3.6.5 Grounding Interface

Each MPack 233A ESS unit is equipped with grounding terminals for external grounding by the Buyer:

External Interface	Quantity	Description	Remark
Grounding Interface	2 pcs	Recommended cable type: flame-retardant grounding cable with minimum cross-section ≥1AWG, green insulation.	Ground resistance shall be ≤1Ω. Buyer responsible for external grounding construction and validation.

3.7 Data Provided by ESS

The MPack 233A ESS provides comprehensive real-time monitoring data locally via an integrated Human-Machine Interface (LCD display) and remotely through network interfaces using Modbus TCP/IP communication protocols.

The following table summarizes monitoring data provided by the ESS

Data Item	Unit	LCD	Remote Access	Remark / Access Rights
System Voltage (DC)	V	√	√	Real-time monitoring
System Current (DC)	A	√	√	
Energy Capacity (State of Charge, SOC)	%	√	√	
Battery Cell Temperature	°C / °F	√	√	Real-time monitoring, alarm triggers
System Operating Temperature	°C / °F	√	√	
System Alarms and Faults	Alarm Codes	√	√	Real-time fault diagnosis, notification
Communication Status	Status Indicator	√	√	Indicate network /Communication health
Fire & Gas Detection Status	Status Indicator	√	√	Real-time safety monitoring
Historical Performance Data	Logs/Charts	√	√	Local and remote query, historical logs

Remote Monitoring Access and Permissions:

- Remote monitoring interface supports secure access via Ethernet connection using Modbus TCP/IP protocols.
- Buyer authorized personnel can access real-time data, historical performance records, system alarms, and diagnostics remotely.
- Supplier retains remote access for system diagnostics, troubleshooting, and technical support purposes.

3.8 Fire Protection System

The MPack 233A ESS cabinet integrates a comprehensive aerosol-based fire extinguishing system designed to quickly detect and respond to potential fire hazards, thereby ensuring system safety and reliability.

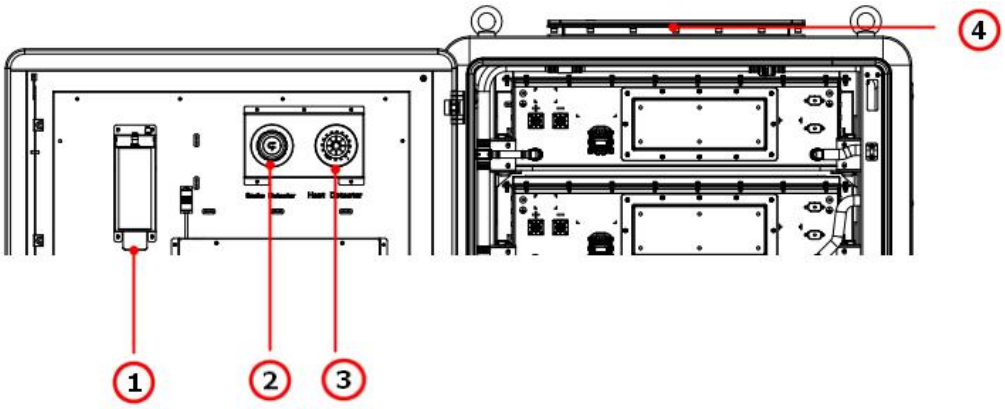


Figure 6 -Detailed Fire Protection System

Integrated Components and Functions:

No.	Component	Function/Remarks
1	Aerosol Fire Extinguisher	Aerosol-based automatic fire suppression triggered upon detection of smoke and/or excessive heat
2	Smoke Detector	Real-time smoke concentration detection
3	Temperature Detector	Real-time temperature monitoring and detection of abnormal heat conditions
4	Explosion Vent Panel	ESS explosion vent rapidly relieves pressure during thermal runaway.

Operational Features:

- Automatic detection and activation, no manual intervention required.
- Real-time status monitoring accessible via local LCD and remote monitoring interface.
- Provides immediate notifications and alarms upon activation, ensuring timely incident response.

3.9 Installation Site Environmental Requirements

This section provides essential physical specifications and site installation requirements to ensure smooth onsite planning and installation.

The buyer must ensure that the installation environment meets the following requirements to ensure the safe and reliable operation of the MPack 233A ESS.

3.9.1 General Environmental Requirements

- Ambient Temperature: The installation site should maintain a temperature range of 5°F to 113°F （-15°C to +45°C）.
- Relative Humidity: The system should be installed in an environment with a humidity range of 0 to 95% (non-condensing).
- Altitude: The installation site should not exceed an altitude of 13122ft (4000m).

3.9.2 Site Selection Considerations

The **MPack 233A ESS should not be installed in:**

- Areas with high dust, sand, or salt spray, such as deserts or coastal regions, unless additional protective measures are taken.
- Locations exposed to corrosive gases (such as H_2, SO_2) or explosive atmospheres.
- Spaces with insufficient ventilation, which could lead to overheating.

3.9.3 Physical Specifications:

Item	Specification
ESS Cabinet Dimensions (W×D×H)	43.3× 57.3 × 92.1in(±0.5in) (1100 × 1455 × 2340mm)(±10mm)
ESS Cabinet Weight	5952.5±3% lb(2700±3% kg)
ESS Cabinet Noise Level@1m	<75dB (A)

3.9.4 Installation and Spacing Requirements:

- Maintain minimum clearances for proper ventilation and maintenance access:
  - Front: ≥98.4 in (2500 mm)
  - Rear: ≥47.2 in (1200mm)
  - Sides: ≥3.94 in (100 mm)
- Installation surface must be flat, stable, and capable of bearing the system's full operational weight.
- Ensure the site provides adequate drainage and protection from flooding.

3.9.5 Handling and Installation Precautions:

- Utilize appropriate lifting equipment for handling; ensure safe operation following OSHA and applicable local safety standards.
- Avoid impact or collision during transportation and installation.
- It is suggested to use an internal combustion engine-driven forklift (however, under the condition that the side inverter wiring harness is connected to the bottom of the battery cabinet, the use of a forklift is not allowed). Choose a forklift with a load capacity ≥6613.8lb (3000kg), and the fork arm length should be ≥ 63in (1600mm). The width between fork arms should be 25.6in-29.5in (650mm-750mm).
- It is recommended to use crane lifting. Ensure that the lifting strap specifications match the load, without aging or damage. Slowly lift the junction cabinet 7.9in-11.8in (200mm~300mm) off the ground. Choose a crane with a load capacity≥11023lb (5000kg), using four lifting ropes, each rope should have a load capacity suggestion ≥3306.9lb (1500kg).
- Comply with provided installation manual.

4. ESS Control

4.1 Control Modes and Authority

The MPack 233A ESS supports both local and remote control modes, providing flexibility and security in system operation management. Clear control authority definitions are outlined as follows:

- Local Control

  Local operation is executed via the ESS cabinet-mounted Human-Machine Interface (LCD touchscreen), enabling on-site manual control, monitoring, and emergency intervention.
- Remote Control

  Remote operation utilizes secure network communication (Ethernet Modbus TCP/IP) to execute control commands and real-time monitoring. Authorized personnel can remotely start/stop, configure operation modes, adjust operational parameters, and monitor system status.

Priority and Switching between Control Modes:

- The system defaults to Remote Control mode under standard operation conditions.
- Local manual intervention always has higher priority over remote control for safety and emergency situations. Local actions will immediately override any remote commands.
- After local manual control intervention, remote control can be re-enabled by authorized personnel via the local interface.

4.2 Automatic and Manual Control Priority

- ESS operates in Automatic Control Mode during regular system operations, governed by pre-set operation parameters and protection algorithms.
- Local Manual Control mode, initiated at the ESS cabinet interface, will override automatic or remote operations immediately upon activation. This ensures personnel and equipment safety during emergencies or maintenance scenarios.
- Returning the system from Manual Control back to Automatic Control mode must be manually confirmed by authorized operators after ensuring safe operation conditions.

4.3 Core Functions of the Local EMS

The local Energy Management System (EMS) collects real-time data from battery storage and power distribution via protocols like Modbus and OpcUa, with capability to forward data to third-party systems for coordinated equipment control and remote adjustment. Featuring WiFi/4G dual-mode communication, it supports customizable charge/discharge strategies, rigorous user access control, and safety alarms triggered by voltage/current anomalies, while its intelligent algorithms enable load tracking and demand management to optimize energy costs.

5. Installation Instruction

For detailed installation guidance, cable connection methods, and equipment commissioning procedures, please refer to the **Installation Manual - MPack 233A - US**.

(Supplier): _____	**(Buyer): _____**
Representative:	Representative:
Signature:	Signature:
Title:	Title:
Date:	Date:

6. Revision Table

The document revision history is tracked in the following table:

Revision Number	Date (MM/DD/YYYY)	Description
1.0	May 10, 2025	Initial version
2.0	July 04, 2025	Add the Introduction of the local EMS function.
3.0	July 22, 2025	Updated the battery cabinet rendering.

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